Exploring computer mediated communications in Facebook for an insight into enhancing uptake and usage in Higher Education for social, educational and institutional benefit

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DECLARATION

"I certify that the work contained in this thesis, or any part of it, has not been accepted in substance for any previous degree awarded to me, and is not concurrently being submitted for any degree other than that of Doctorate in Education being studied at the University of Greenwich. I also declare that this work is the result of my own investigations, except where otherwise identified by references and that the contents are not the outcome of any form of research misconduct."

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ABSTRACT

In the UK, technology enhanced learning is seen as a way of enhancing student engagement and collaboration. Recent literature suggests that some of the attempts to integrate social media into formal teaching in higher education (HE) have suffered from student privacy issues leading to low student participation. This thesis explored the use of Facebook in HE, discussed shortcomings in digital signal transmission affecting intersubjective accord and employed Goffman's embarrassment avoidance framework, communication privacy management and social penetration theories to model student behaviour on and offline to offer insights into the realities of student Facebook usage in HE.

The research followed a pragmatist paradigm and focused upon Facebook usage in a post-1992 university, exploring student emotions and privacy boundaries. Facebook data recording and an online survey provided data from 22 students. Results from the sample indicated a preference for face-to face teaching methods, similar levels of trustworthiness accorded to staff as they would for senior colleagues at work and that those who became embarrassed more easily shared fewer items on Facebook. When making a privacy boundary decision, the nature of the shared object had a greater influence than the personal network with which it was to be shared.

The conclusion is that Facebook has limited potential at the front of the classroom, however private Facebook study groups can be a source of peer feedback and social support with the potential to increase individual learning outcomes, cohesion and interaction, directly and indirectly benefiting HE. This thesis suggests changes to HE social networking policies to encourage student participation in social media and that greater emphasis should be placed upon copresent methods of teaching.

CONTENTS

FIGURES

TABLES

GLOSSARY OF TERMS

API	Application programming interface. This is a set of functions and procedures that allow the creation of applications to access data from an operating system, database or other service.
Asynchronous	This describes communications where data is transmitted intermittently rather than in a steady stream.
Blog	A Web-based personal publication system that allows users to post their diaries, photos, and video clips online.
CSMA/CD	Carrier-sense multiple access with collision detection is a medium access control method used in early Ethernet local area networks to prevent two communicating nodes using the shared medium simultaneously.
Friend	A Facebook Friend is the term applied to a relationship between Facebook users that restricts sharing of posts to those people.
Full duplex	A communication channel that can operate in two directions simultaneously e.g. a telephone call.
Half duplex	A communication channel that can operate in two directions but only one way at a time e.g. a walkie-talkie.
Html	Hypertext markup language, a semantic language used to compose online content e.g a web page.
Hyperlink	A link from a hypertext document, i.e. a webpage, to another location, activated by clicking on a highlighted word or image.
JAVA	A general purpose, high-level programming language developed by Sun Microsystems.
Markup language	Used for the processing, definition and presentation of text. The language specifies code for formatting, both the layout and style, within a text file.
MP3	MPEG-1 or MPEG-2 Audio Layer III, more commonly referred to as MP3 (or mp3), is an audio coding format for digital audio.
PC	A personal computer, usually a fixed device.

Simplex	A communication channel that can operate in one direction only e.g. terrestrial radio broadcasts.
URL	Uniform resource locator, is a reference to a web resource that specifies its location on a computer network.
VLE	A virtual learning environment is an online system that allows lecturers to share educational materials with their students online. Examples include Moodle, WebCT and Blackboard.

1. INTRODUCTION

The Machine is much but it is not everything;
There is something like you on the screen,
But you are not seen,
There is something that sounds like you,
But you are not heard. (Hawkwind, 2016)

1.1 Introduction and chapter outline

This work begins with a wry paradoxical anecdote, one that I believe is increasingly prevalent yet simultaneously less amusing as time goes on. The second section describes my social media experiences and internal tensions caused by the inseparability of social media and work. It describes tensions experienced at work by student usage of social media and explains where my research ideas and perspectives were grounded. This is followed by a discussion of how prolonged exposure to digital communication is affecting human behaviour and why I chose a particular group to study their social networking behaviour. I describe emotions as drivers of behaviour and focus specifically upon embarrassment and how this led to my combination of Goffman's descriptions of embarrassment avoidance mechanisms, missing cues and intersubjectivity to analyse social networking behaviour. The third section outlines the original direction for this thesis and why I had to change direction radically. The fourth section describes the research problem and describes gaps in the current literature and the uniqueness of this research. The fifth section develops formal research questions, the answers to which may prove useful to policymakers and practitioners within HE. The last section contains a guide to the remaining chapters of the thesis.

1.1.1 Cyberspace, the final frontier?

Recently I saw a quote by William Gibson that likened cyberspace to a consensual hallucination. I typed the words 'consensual hallucination Gibson' into the Google search engine and followed the first result to goodreads.com. I hovered over the title, Neuromancer, and a pop-up window appeared with details of the book and a button

labelled, ‘Want to read?’ Clicking that button led me to a page requesting me to sign up or log into Facebook to continue, with the promise that it would allow me to:

> Sign up to see what your friends are reading, get book recommendations and join the world’s largest community of readers.

I was dumbfounded - nothing about Neuromancer, instead a portal into cyberspace. Would I need to enter cyberspace to find out about cyberspace? I chose not to. Why? To avoid a message being broadcast to every one of my Friends[1] saying, ‘Mark has just joined Goodreads.’ Did I want my personal network of Facebook friends to know that? Was it any of their business? Is Goodreads an ethical company? Would sharing this information increase or decrease my reputation? What might Facebook do with this information (The Guardian, 2018)? It was easier not to share this experience than to evaluate all possibilities. If Facebook forced me to make this complex decision following a trivial search, were other users experiencing similar dilemmas when sharing information online?

This thesis examines internal factors that may hinder some student users from participating in the use of Facebook for educational purposes. It widens the context of the question by examining the use of Facebook in UK higher education (HE) from institutional and communication perspectives and examines the operation of social networking systems to discover the role they play in human communication.

1.2 Personal and social media context

I began teaching computer communication engineering at a large post-1992 university in 1997 where the Internet was always on and I am still teaching engineering today. I joined MySpace and Second Life after their launch in 2003 and created profiles. In 2004 Facebook and Gmail were released followed in 2005 by Twitter. I created accounts within each of these systems and shared knowledge of social networking with

[1] Throughout this work, whenever Friend is capitalised, it is intended to refer to the situated Facebook meaning of Friend, rather than its pre-Facebook meaning.

students. I became Facebook Friends with the members of my family who had Internet access, created albums of photos depicting my interests and regularly spent time online social-surfing. I only ever Friended people that I already knew in the physical world.

One time, I Friended some of my colleagues and students on Facebook, noted by Sibona (2014: 1684) as the two groups most likely to be 'unfriended', and after that I was often interrupted at home by messages from current and ex-students. I have always been happy to interact with students during work hours, but when at home I want to separate myself from work as much as possible. Every time I logged in there were updates from ex-students or staff members such as 'Joe Bloggs has just become friends with Jane Doe' appearing in my News Feed. Blurring of professional boundaries was common and there came a point when I was being regularly interrupted, more often than not by students wanting to tell me something mundane, raising tensions. At login, when my online presence became visible to others, I would be messaged by these unwelcome visitors asking how I was or when an assignment was due, also noted by Stirling (2014). This could have waited until class time or been sent via an email. It seemed that students did not think twice about messaging their lecturer out of class time. The contact violated my home boundary, my work-life boundary and temporal boundary. I was visible everywhere by everyone and my work-life balance was contaminated (Kent, 2014).

After this I ignored Friend requests from students rather than refusing them to avoid embarrassment, for my refusal would indicate I had actively denied them entry to my personal Facebook network of Friends. As for the existing student Friends, should I 'unfriend' or block them and then face possible embarrassment owing to the public visibility of these actions (Sibona, 2014: 1676-7)? Should I create a second Facebook account for home? These two ideas were noted by Vitak et al (2012).

I knew it was possible to create a taxonomy of friends using Facebook's rather coarse privacy settings, see section 2.4.4, but even to an experienced social networker, this was technically confusing, tedious, emotionally awkward, and challenged my concept of friendship. Context collapse was causing boundary conflicts (Frampton and Child, 2013; Stirling, 2014) between my work and social lives and rather than defining a set of personal network groups to separate my cyberspace-invaders and then deciding for every Facebook post which groups should see it, I gradually retreated from using my

Facebook account to the point where I currently am, communicating by email once again. The last time I used Facebook socially was a year ago to pass an important message to a family member who had mislaid their mobile phone and was spending time with one of their friends who I knew had a Facebook account.

Shelton (2017) and his participants described experiences similar to my own concerning Facebook. They too had experienced something 'messy' (Selwyn, 2016: 1006) as Facebook interfered with heretofore rigid boundaries between work and home life. With a sigh of relief I realised it wasn't just me. If using Facebook had preyed upon more than one lecturer's emotional behaviour, there was something larger at play, some phenomenon with the potential to affect other individuals in a similar manner. If those other affected individuals included students, could I assume that they too experienced similar tensions in their social media usage?

1.2.1 Tensions at work

Some of my colleagues were opposed to social networking in class as a source of distraction (Fewkes and McCabe, 2012) after observing students who engaged with social media whilst simultaneously participating in class (Jacobsen and Forste, 2011). Faculty looked down its nose at it, frowned upon it and policy forbade it in certain computing areas, but not mine. Some lecturers banned its use in class, others encouraged it. Literature suggested that social networking might offer opportunities for enhancing key competencies such as communication (Wang et al., 2012) and active learning (Herse and Lee, 2005), so the range of opinions evidenced those tensions.

I wanted an evidence-based response to whether student use of social networking had the ability to enhance their learning and simultaneously benefit higher education. My personal, operational and theoretical knowledge of social networking systems (SNS) over the last 20 years combined with a computer engineering background led to the focus of this work, the pedagogy of the Facebook in higher education. Could social networking serve any useful purpose in the classroom and beyond? Would students want to participate? Would it fit in with their lives? I decided to examine CMC in order to gain an insight into whether increased uptake and usage could provide social, educational and institutional benefits.

My subject area is in the operation of computer networks and the applications that run on them. Teaching engineering involves creating mathematical models of inanimate objects to understand their operation so I was in a suitable position to carry out empirical research but in order to gain subjective results, the research needed to include the experiences of students who were using Facebook. Network engineering had given me little experience in social research but I wanted to answer my question from a mixed perspective, that of the technology and that of the users themselves, therefore I elected to take a pragmatist approach to the problem. My innate curiosity into why things work, or sometimes do not work, from an engineer's perspective, coupled with a desire for professional development, framed my decision to join the Doctor in Education programme and find answers. This study of online social networking took a sociological approach in line with Giddens' definition of sociology,

> *as a social science, having as its main focus the study of social institutions brought into being by the industrial transformation of the past two or three centuries* [italics in original] (1987: 9).

1.2.2 **Digital behaviour**

Cultivation theory suggests that lengthy exposure to television imperceptibly 'cultivates' viewers' perceptions of reality (Chandler, 1995). Gerbner and Gross (1978) studied the effects of violence depicted on television on its viewers (Lange, Baker and Ball, 1969; Gerbner, 1972a; Gerbner, Eleey and Tedesco, 1972; Gerbner, 1972b; Gerbner and Gross, 1976). Gerbner and Gross categorised television viewers by their daily watching habits; light viewers, one to six hours and heavy viewers, seven to fifteen hours (1974), with one third of all American adults watching an average of four or more hours per day (1976). Gerbner's focus was the impact on the viewer's perception of social reality caused by television violence (Griffin, 2012). Gerbner theorised that lengthy exposure to violence on television caused viewers to believe that the world was a more violent place than it really was and make decisions based upon that false belief (Hughes, 1980). Gerbner's work was taken seriously and reports were commissioned by the National Commission on the Causes and Prevention of Violence (Gerbner, 1969; Lange, Baker and Ball, 1969) and also the Subcommittee on Communications of the Committee on Commerce, U.S Senate (Gerbner, Eleey and Tedesco, 1972). Mediation of human behaviour by news and digital media was also explored by de Zengotita (2005).

Cultivation theory might classify members of Generation Z (Horovitz, 2012), those who reached adolescence in the 2010s, who have had lengthy exposure to digital systems rather than television programmes, as heavy surfers. It is possible that the social reality of heavy surfers becomes distorted by their digital experiences as Turkle found when researching with digital toys. Most participants in her experiment would not hold a Furbie[2] upside down for long after it started to cry and say it was scared (Turkle, 2011). I overheard a teenager saying, "He was speaking in capital letters," that I interpreted as, "He was shouting". In polite text-based computer conversation, TYPING IN CAPITAL LETTERS is reserved to indicate shouting. This was the application of mood to speech. Had the teenager confused typing with speaking or was this a lengthy way to say somebody was really shouting? Bringing digital behaviours and assumptions to bear on the analogue world is a prediction of cultivation theory. A conversation I had with a junior school teacher revealed that some pupils were writing essays using text-type language e.g. 'r u home m8?' and illustrates how digital norms surrounding the casual nature of text messaging have impacted upon formal composition in schools.

Perhaps if individuals who have completely accepted Internet-based communications as a normal adjunct to copresent communication spend more time socialising by means of an online social network than by corporeally copresent methods, some online behaviour patterns, developed alongside technological and contextual constraints such as content filters, parenting rules etc., but lacking organic sociocultural experiences to draw upon, might prove challenging when replicated in the analogue world (de Zengotita, 2005).

When a heavy surfer comes offline to socialise in person, some behaviours learnt in the digital world might help define and frame their offline reality causing some online-learned behaviours not to operate as expected when applied to the physical world, when socialising in person, in the same physical space at the same moment in time. The first

[2] An owl-like digital toy that seems to learn English under a child's tutelage.

cohorts of Generation Z are now undergraduates and easy access to this group formalised my decision to study their social networking behaviour.

1.2.3 Emotions as drivers of behaviour

Darwin (1872) discussed a human emotion that did not seem to have an analogy in animals, embarrassment, and he attempted to discover its causes. Twain agreed, observing, 'Man is the only animal that blushes. Or needs to' (1897: 256). Goffman theorized a link between the interior emotion of embarrassment, manifesting itself with external observables that included blushing, and individual human behaviour (1956) but much of the literature citing his work has focussed upon his dramaturgical description of life, likening individuals to actors, their location as a stage and observers as their audience, but has overlooked his work related to embarrassment which I believe was central to his analysis of human behaviour in his early publications. Later, Goffman (1967) discussed other emotions such as pride that may also play a part in the determination of individual behaviour.

After reading *The presentation of self in everyday life* (Goffman, 1959), it became increasingly clear to me why I had shaped parts of my life as I had; my social behaviour was largely driven by the desire to avoid embarrassment but reasons for such behaviours fall into the realm of psychology a discipline I have little knowledge of. I was more interested in the consequences of embarrassment than its causes. Much of the current literature focuses on the causes of embarrassment but little exists concerning the effect of embarrassment on online social behaviour. If Goffman's work could model my emotions and subsequent behaviours, was it applicable to students too?

1.2.4 Goffman and embarrassment

Throughout this work, the meaning that I ascribe to intersubjectivity is a situated and interactional state when two or more individuals establish semantic accord (Cooley, 1922; Garfinkel, 1984; Gillespie and Cornish, 2010), see section 2.9.3. Erving Goffman's early writing (1956; 1959; 1963) took a dramaturgical approach to the description of copresent behaviour of human beings during social interaction and explored the differences between, and behavioural uses of, the *given* and *given-off* (Mead, 1934) expressions that maintain intersubjective accord between speakers.

Speech and writing are explicit *given* expressions, deliberately intended to convey information to others whereas *given-off* expressions are implicit and consist of body language and other subtle signals such as perspiring or blushing that others interpret as symptomatic of the state of the individual producing these expressions. He suggested that to maintain the impression that individuals wish to present to others, they make moment by moment decisions about their actions based on the clear reception of these signs received from others present and use this to determine their next action. Furthermore, he believed that in particular social contexts it was the wish to avoid embarrassment, humiliation or loss of face that directed the locus of human behaviour.

If the moment-to-moment copresent actions of humans are driven by emotional constraints, Goffman's framework might predict and explain deviations in the social behaviour of individuals in online social groupings because social networking sites have a limited ability to transmit the given-off expressions that ordinarily enhance intersubjective accord between individuals when copresent. This has merited my use of his work in this investigation. It may be that a culturally and contextually dependent set of behavioural scales representing social conscience (Glautier, 2007) develops within every individual from birth which continually adapts and learns from its surroundings to weigh and define their social behaviour (Durkheim, 1982), be those surroundings physical or online.

Although the North American/ European world discussed by Goffman has advanced technologically over the last 50 years, the reasons underlying human behaviour may have remained the same. Computer mediated communications are enabled by the Internet and the World Wide Web. The Internet was a North American project and the World Wide Web was proposed at Cern in Switzerland, making the 'interweb' a North American and European construct, leading to the conclusion that, to some extent, the mediating factor of CMC is also North American/ European in nature. This is contextual evidence that Goffman might be applicable to the study of human behaviour in computer mediated environments.

I was not discouraged by the age of his work as Goffman remains one of the most cited authors in sociology (Caren, 2012) and his work has been used for examination of the connections between individuals and larger social systems (Fine, 2014) and a sociology of occasions (Wynn, 2016). I was not overly influenced by the superficial

dramaturgical turn in his writing about events and behaviours, but have used it in this work because his writing style served to make his writing accessible to a wider base of readers than sociologists. It is mainly the dramaturgical approach that has been discussed by some of his critics who appear to have focussed on this aspect of his work (Susen, 2016; Schudson, 1984).

Embarrassment was the emotion chosen to study as the type of minor social infractions occurring on social media result in embarrassment rather than other dysphoric emotions such as shame or guilt. Goffman's framework for embarrassment avoidance suggested one part of my experimental design, to measure a group of students' sharing of objects on Facebook and compare this against the group's self-reported levels of embarrassment. His discussions concerning intersubjective accord and the part it plays in regulating social behaviour formed the basis of another experiment.

1.3 Original thesis direction

This section provides an overview of my original direction for research and the steps taken to overcome this will be expanded upon later in this work. When I embarked upon this thesis, I had intended to carry out a grounded theory investigation into the differences in social media usage between light and heavy Internet users, whether their usage level affected their communication preferences, their daily analogue activities and their preferences for learning. I would employ a constructivist approach to discover answers to my thesis question which is, "To what degree are social networking systems, such as Facebook, suitable systems for augmenting teaching in HE?"

I had noticed from my personal Facebook account that certain users communicated more heavily than others, received more responses and tended to post items to Facebook of differing perceptual characteristics. My background in computer networking allowed me to examine the data traffic that flowed into a computer during a Facebook session and to collect this data directly from the web page. Frequency analysis of my Facebook Friends' online activities was possible and a pilot study in March 2013 showed that I could extract this data from the Facebook system. Following the successful collection and analysis of live data, I developed methods and tools for anonymization of the live data, leaving only the data necessary for analysis.

From my personal knowledge of the members of my Facebook Friends group, I observed relationships between their online and offline activities and I could see differences between those who used the Internet heavily and those who were less heavy users. I examined the literature concerning data analysis and found two techniques that might be suitable, correspondence analysis (CA) and multiple correspondence analysis. Many of the statistical techniques available are suitable for testing existing hypotheses, however correspondence analysis is an exploratory data technique that examines categorical data when specific hypotheses are yet to be presented and no clear a priori expectations exist (Storti, 2010).

The work of White and Le Cornu (2011) and their classification of Internet users as existing along a continuum between Visitor and Resident (VR) was to be employed as the quantitative variable and survey questions were split into two sections, those concerning online behaviour and those concerning the demographics of the Facebook users. CA results may have been able to show similarities and differences between the heavier and lighter social media users. The capture of live Facebook data would increase the validity of the results rather than relying on Facebook users' self-reported online habits (see Junco 2013), as had been the case with the social media studies I had already encountered.

The goal of the original thesis was therefore to employ CA to examine Facebook live conversation activity data to classify individual user social media activity and matching categorical survey data using the association between various levels of Internet usage on a VR scale and degree of likelihood of observing online and offline behaviours (e.g. online activities, communication methods, offline embarrassment).

Unfortunately, there were two major unexpected changes that took place between requesting permission to proceed with this research in and receipt of approval. The first was a stipulation of the university's Research Ethics Committee that I could not use any of the students that I was currently teaching as research participants. The second and most serious issue was a change in the method that Facebook used to deliver web pages to its users which took place during August 2014, just before formal approval for my research was granted in September 2014. My data gathering tools and techniques for collecting, decoding and anonymising Facebook data stopped working between

conducting successful trial runs prior to August and receiving ethical approval in September.

These two changes took place too late in the thesis timetable to reapply for ethical permission so it was not possible to take a different approach to data collection. I would have to adjust the entire research methodology in the hope that sufficient data could be collected for meaningful analysis. A complete description of the original experiment, tools developed and changes made to overcome this are available in the Methodology chapter and also in the Appendices.

What follows in this thesis is a description of the modified research that led to the completion of this work, albeit with major changes to both the literature involved and the methodology.

1.4 Research problem/ gap

This work makes contributions to the field of embarrassment in computer mediated environments and how it affects the use of social media by students in higher education. It indicates that social media can, in particular circumstances, convey sufficient information between users to establish the intersubjective accord necessary for Goffman's work (1956; 1959; 1963) on embarrassment avoidance to become applicable to online behaviour.

Much of the literature citing Goffman makes extensive situated use of his dramaturgical turn (Sannicolas, 1997; Brissett and Edgley, 2005; Edgley, 2016; Ytreberg, 2016) or just criticises him for the very same thing (Schudson, 1984; Susen, 2016) but very little has employed the framework, alluded to at the end of *Embarrassment and Social Organisation* (1956), in combination with his observations on given and given-off cues as contributors to intersubjective accord, for quantitative social interaction analysis.

Many of the studies of social networking in higher education have interpreted information sharing from an external perspective of risk and harm and very little work exists to describe the relationship between embarrassment felt by students, disclosure boundaries for digital objects on Facebook and whether such behaviour is carried over to their everyday analogue life of study. Much of the literature on embarrassment in

social media has focussed on the causes of embarrassment but there is little concerning the effect of embarrassment on online behaviour. This work is original because it uses data collected from the Facebook social media network to focus on the effects of embarrassment on the social media habits of students and the transferability of human emotions between the online and offline worlds. It is also original in employing Goffman's embarrassment avoidance framework to produce quantitative results from the observation of human behaviour.

Little of the literature on Facebook usage has made use of user interaction data and I shall discuss practical issues related to the capture of such data. Ethical guidelines related to harvesting, analysis, sharing and publication of data gathered from online social networks are in their infancy (Parker, 2010; Coughlan and Perryman, 2015a; Social Data Science Lab, 2016) and privacy violation of participants in a Facebook study was discussed by Zimmer (2010). Informed precautions were taken to avoid participant identification following publication of the results. The use of live data provided a greater level of validity in the data gathered and subsequent results.

This powerful and ubiquitous communication tool would be valuable to tame for positive use in education, and framed my main research question. To what degree are social networking systems, such as Facebook, suitable systems for augmenting teaching in HE?

1.5 Research questions

The objective of this thesis was to discover the suitability of Facebook, and its communication capabilities for augmenting teaching in HE in order to discover any social, educational and institutional benefits and drawbacks. In order to widen the research, I examined the literature for the broad purposes of HE and how Facebook is used in HE and focussed the research upon whether the learners involved would accept Facebook in HE teaching and learning.

A primary research question was to discover whether students preferred face-to-face learning or remote learning. Social benefits of social networking cannot be achieved without individual user participation in sharing activities (Ellison, Steinfield and Lampe, 2007; Kirschner and Karpinski, 2010). Any general reluctance among students

to accept Facebook for academic use would lower participation in Facebook activities, and thus reduce any collective social benefits.

I also wondered whether a student may feel embarrassed about sharing their Facebook items with their lecturers and particularly whether students feel that their use of Facebook may be compromised by allowing staff to have Friend access to their account. As an illustration of this, I possess photographs and stories that I would only share with individuals whose ideas and preferences I had a good knowledge of but I would become embarrassed if they were seen outside of my immediate friends and family. I would never post these to my Facebook account in case they were seen by colleagues, students or more distant friends and family. This framed my second research question.

Facebook blurs the traditional boundaries between lecturers and students (Bateman and Willems, 2012) and challenges traditional lecturer-student relationships when faculty enter the student Facebook place (Best et al., 2011; Allen, 2012). It may be that student privacy and disclosure boundaries are dominated by the relationship with the potential audience rather than the nature of the private item. The efficacy of the privacy tools available on Facebook to maintain desired disclosure boundaries was also worthy of investigation and framed the third research question. These were developed into the following three research questions.

RQ1. Do students prefer analogue methods of learning to digital methods of learning?
RQ2. Does ease of embarrassment predict the number of Facebook items that students share?
RQ3. Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?

Answers to these questions may expose internal factors that might contribute to student reluctance to use Facebook for academic purposes and thereby make Facebook an unsuitable tool for enhancing education in HE.

Whilst the questions do not individually address particular learning or educational outcomes, such as whether students who make extensive use of Facebook perform better on a particular course in a particular study area, together the results will show the

areas that policymakers and practitioners within HE could concentrate upon to integrate social media usage into teaching and learning for institutional and pedagogic benefit.

1.6 Chapter guide

Chapter two discusses technology enhanced learning in higher education and student Facebook groups then explores some of the factors that deter students and staff from using Facebook for academic purposes. This is followed by a technological examination of characteristics of digital transmission and their impact upon social networking systems and applies those findings to human communication via social media to discover whether CMC could provide sufficient sense of 'the other', or presence, for intersubjective accord to dominate interactions between individuals. It discusses and justifies the use of Goffman's perspectives on the self, copresence and intersubjectivity to model human behaviour and examines the literature surrounding Goffman and embarrassment. The aims and objectives of higher education are discussed in relation to the affordances of Facebook. This is followed by justification and development of the research questions and the theoretical frameworks applied to produce hypotheses. It concludes with a discussion of the hypotheses that inform the research questions.

Chapter three takes the hypotheses then presents the paradigm and research design, measures and operationalisation, samples and participant demographics. It contains a discussion of the original pilot studies into Facebook data collection that eventually failed to produce data and how this failure was overcome then describes the instruments to collect data from Facebook and the survey design. The procedure, timeline and analytical techniques that were carried out on the data to answer each hypothesis are discussed. The chapter concludes with a discussion of the ethical issues faced before, during and after the research and issues surrounding dissemination of results without danger of participant identity and data disclosure.

Chapter four presents the results and information synthesized from survey and Facebook observational data. This is followed by an analysis of the results in relation to the research questions with interpretation and evaluation of the resulting information, paying particular reference to the literature. The chapter concludes with a critical

discussion in the light of material presented in the second chapter and experimental outcomes.

Chapter five draws final conclusions based upon the answers to my research questions and offers advice to education managers and practitioners of changes that HE may consider in its approach to social networking. Proposals concerning the difficulties of obtaining live data from particular social networks are explored with the inclusion of caveats and alternative approaches. It discusses my development in parallel with this work and the benefits I have reaped. Finally it suggests further directions for research, notwithstanding the failure to collect the rich data I had originally hoped for, and poses additional questions that ought to be answered if we desire an informed understanding of how social networking is negotiated by students in higher education and whether it can enhance learning.

2. LITERATURE REVIEW

> ...[I]f a new technology extends one or more of our senses outside us into the social world, then new ratios among all of our senses will occur in that particular culture. It is comparable to what happens when a new note is added to a melody. And when the sense ratios alter in any culture then what had appeared lucid before may suddenly become opaque, and what had been vague or opaque will become translucent (McLuhan, 1961: 41).

2.1 Introduction and chapter outline

This review of literature covers the current thinking and literature that surround the research questions. The aim of the thesis is to discover the degree to which Facebook, and its communication system, is suitable for augmenting teaching in HE. There are three research questions to answer. The aim of the first is to discover whether presence is a factor in student choice between analogue methods of teaching and remote methods, the second is to discover whether the fear of potential or actual embarrassment affects how students share Facebook data, the third aims to discover whether students have different disclosure boundaries when sharing information with their personal networks and on Facebook and whether those boundary decisions are dominated by the nature of the shared object or those with whom the object is shared.

Section 2.2 discusses technology enhanced learning in higher education, the value of telepresence, current uses of Facebook in HE including successes and failures encountered and then continues with a discussion of Facebook student groups in section 2.3. Section 2.4 discusses social networking systems in terms of their transmission deficiencies and how these relate to human communication in order to establish whether CMC can convey sufficient sense of 'the other' for mental attunement between users to permit Goffman's work to be applied to human behaviour. This is followed in section 2.5 by a review of the work of Goffman, his perspective on embarrassment and the role it plays in regulating human behaviour. In section 2.6 the aims and objectives of higher education are discussed and contrasted against the affordances of Facebook. The research questions are discussed in the final three sections in turn, paying attention to the frameworks used to model student behaviour and the individual hypotheses that inform the research questions are developed and explained.

2.2 Technology enhanced learning and higher education

Traditional teaching methods have relied on building networks of learners face-to-face in a physical place known as a classroom. At the end of teaching, the learning networks fragment and eventually disperse when students and staff go home. Both teachers and learners return to their families and friends until the next class takes place. Social media has permitted the networks of learners to continue to interact beyond the constraints of the physical classroom. The classroom now faces a challenge in the form of competition from digital places with different social norms (boyd, 2010). Generation Z students are digitally competent and 99% own a mobile phone (ONS, 2015).

Prior to Facebook's introduction, electronic systems were used in a variety of educational contexts beginning in the 1960s, with varying degrees of success. Early experiments using computers in schools for computer-assisted instruction in mathematics and reading (Suppes, 1980) began in 1963, however such experiments were limited due to the time-sharing, mainframe nature of the computer at that time and high cost of processing time. In 1975 cheaper microcomputers became available and the computer ceased to be a luxury and began to be a necessity in education (Molnar, 1997).

Universities have been making use of social media, technical systems for collaboration and community (Joosten, 2012), for various reasons. In the USA, Loyola and Drake Universities were using a variety of platforms to cater for different communication purposes by 2012; the Milwaukee School of Engineering had designed its own social networking platform; the University of Leicester reported that their students were more likely to search for timetables and open days via social media rather than contacting the university themselves; the University of Warwick checked what had been said about itself online daily to avoid the spread of incorrect information and also to answer student questions (The Guardian, 2011). The University of Greenwich and the University of the Arts set up working parties to investigate and promote the use of social media. Research carried out by the Centre for the Analysis of Social Media in collaboration with the University of Sussex investigated how digital spaces were becoming important places for interaction (Demos, 2014). Work is underway in schools (Fitter et al., 2018), colleges and higher education institutions (Kaufman and McNay,

2016) on the use of robots to increase the feeling of social presence for students who cannot attend in person (Furnon and Poyet, 2017).

Telepresence is a broad term that encompasses embodied experiences in computer mediated environments (Friesen, 2014) and technologies that can project a person to a remote environment (Draper, Kaper and Usher, 1998). Telepresence, has been used successfully for teaching opera singing (Alpiste Penalba et al., 2013), dentistry (Mårell-Olsson, Norberg and Jahnke, 2014) medical training (Huang, Liaw and Lai, 2016) and teaching of languages (Tanaka et al., 2014). The success of telepresence in teaching may be due to an increased sense of reality promoting Flow (Csikszentmihalyi, 1975; Jackson and Csikszentmihalyi, 1999) which has been shown to enhance learning outcomes in virtual reality environments (Papastergiou, 2009; Faiola et al., 2013). Blended learning, a combination of face-to-face and digital methods, has been cited as the most promising use of online learning in higher education (Means et al., 2010).

Technology enhanced learning (TEL) was defined as learning *with* technology rather than learning *through* technology (HEA, 2015). Some of the aims of TEL are to increase the student experience and enable greater time and greater effort on learning appropriate to the subject. Other online benefits include interaction and collaboration which can sometimes suffer when enacted face-to-face. The benefits of TEL can only be achieved when those who are setting strategy and practitioners in universities have evidence to make appropriate decisions about how to make the best usage of technology.

> Does technology enhance learning? It's not unreasonable to ask this question, but unfortunately it's the wrong question. A better question is: how can we design technology that enhances learning, and how can we measure that enhancement? (Director of TELRP, in Kirkwood and Price, 2013: 2).

Kirkwood and Price (2014) reviewed TEL and questioned the nuanced meaning of *enhanced*. I argue that qualitative enhancement of the student experience through TEL is easier to achieve, but perhaps harder to measure, than quantitative enhancement of grades. This thesis only notes quantitative enhancement of outcomes and concentrates on qualitative enhancement of the student experience.

The 'flipped classroom' has met with some success, where learning is carried out online and learners use class time for discussion (Norton, Sonnemann and McGannon,

2013). Other successful uses are to disseminate announcements and support online discussions (Selwyn, 2009). Tilton (2014) notes that Facebook is a focus of awareness for campus events and issues, a meeting place for the student community and a proxy for the student community which sounds rather similar to the functions of the student union when I was an undergraduate in the 1980s. Successes in teaching language (Ooi and Loh, 2010; Hu, 2014), social sciences (Rahman, 2014), and physics (Marquez Jr, 2016) and the provision of support for learners in remote areas (Arvanitis et al., 2017) have been reported from overseas higher education institutions (HEIs). Facebook has been reported as having the potential to increase student to staff interaction and engagement (Pai et al., 2017). Petrovic et al (2014) reported successful use of Facebook alongside Moodle with the most important feature of Facebook being peer-to-peer feedback.

In one review of computer-supported collaborative learning (Prinsen, Volmann and Terwel, 2007), female students reported that CMC was a better alternative to corporeal copresence than did their male counterparts. Online discussions often continue after class has ended (Pai et al., 2017) and after the course has finished (Chen and Bryer, 2012). Akcaoglu and Bowman (2016) ran an instructor-led Facebook group and the students who participated saw an increase in their grades. One music college discovered that more than half of their students used Facebook to find out more about classical music (Jabeen, Kousar and Shreerekha, 2014). Facebook extended the classroom and allowed students to participate more than within traditional classes (Ventura and Quero, 2013).

Dyson et al. (2015) used Facebook as an asynchronous discussion forum to support a psychology class and found that few students viewed the material and the reason was assumed to be related to privacy issues. Junco (2012) found that students who used Facebook for games and checking their friends negatively correlated with engagement but those who spent more time commenting on posts had a positive correlation with engagement. Facebook can only support a limited range of resources and there is no fixed structure for discussions (Wang et al., 2012). Students wish to separate their learning from their social lives (Jones et al., 2010). Older learners share fewer items than younger ones (Al-Saggaf and Nielsen, 2014) and masters students reported unease when using social media for learning, not reported by undergraduates in the same study

(Wang et al., 2012). Students use Facebook for keeping in contact with friends from home (Pînzaru and Mitan, 2013; Awl, 2011), meeting other students and planning social events and 'definitely not for *formal* teaching' [italics in original] (Madge et al., 2009: 148). Students in Madge et al.'s study used Facebook to talk about their study, arrange study meetings and escape from university work but did not want to be contacted on Facebook by university staff. If a member of university staff enters the students' backstage, this has the potential to be unsettling for all, a finding echoed by Melton, Miller and Salmona (2017). Their quantitative study found that students felt similar levels of comfort with employers having access to their Facebook accounts. This may explain some reluctance of students to Friend their lecturers for fear of potential embarrassment caused by a faculty member viewing their profile, pictures or other information that is only acceptably shareable within an established peer group of Friends.

Some studies have shown positive social outcomes of using Facebook to promote student satisfaction, affective learning (Said and Yusup, 2017) and student-to-faculty relationships (O'Sullivan, Hunt and Lippert, 2004; Mazer, Murphy and Simonds, 2007; Mazer, Murphy and Simonds, 2009). Madge et al. (2009) reported that Facebook can be a source of social and academic support. Facebook does not have a rigid structure like a VLE so may be customised to suit student usage (Roblyer et al., 2010).

2.3 Facebook student groups

Learning communities can foster participatory learning, allowing students to learn from each other and with each other, in line with Vygotsky's theory of social constructivism (1978). Learner-driven Facebook use has had some successes (Kent and Leaver, 2014; Gardner, 2014) by allowing students to bond within their own self-selected groups. Successes have been reported when the Facebook student group (FSG) is created initially as an open group to allow students to join without the need to friend an academic or other student and then closed to prevent others joining (Wang et al., 2012). This may be beneficial as there is some evidence that students may not want their lecturers or peers to also be their Facebook friends (Hewitt and Forte, 2006; Madge et al., 2009; Kent, 2014). FSGs are open educational practices, supporting learning and increasing student to student interaction (Coughlan and Perryman, 2015b), leading to

cohesion in university group work and student retention (Yorke and Longden, 2008). Esteves (2012) set up FSGs but the students reported that Facebook had too many distractions to be useful for academic purposes and was easier to use for chat and sharing than the VLE, however the VLE was better as a repository of study resources. Boykova (2015) reported that within FSGs the activity was student-led (Ventura and Quero, 2013) and often included links to extracurricular activities to enhance studies.

2.3.1 What is the student Conversation?

Wise, Skues and Williams (2011) have suggested that students only use Facebook as a private chat room. Is it the same chatter inside the old student union building or at the back of the class? Students friend each other on Facebook and this may be one of Goffman's backstages (1959: 114) where 'suppressed facts make an appearance' and there is evidence that students use Facebook as a backchannel during lectures (Selwyn, 2009; Baron et al., 2016) and to discuss coursework matters (Vie, 2008; Madge et al., 2009). College students believe that other college students are the main audience for their profiles (Jong et al., 2014; Birnbaum, 2009). Students communicate mainly with friends at university and from home (Pempek, Yermolayeva and Calvert, 2009). Kirschner and Karpinski (2010) discovered that Facebook users spent less time studying than non-users and tended to talk about work rather than actually doing any work (Vie, 2008; Madge et al., 2009) but those who used Facebook in class attained lower grades than those who took manual notes (Wood et al., 2012; Jacobsen and Forste, 2011). Shelton (2017: 316) describes student-led uses of Facebook as being more successful than those initiated by lecturers and less likely to raise ethical concerns related to student-staff professional relationships and instances of staff seeing posts that they 'didn't want to see'.

2.3.2 Staff and Facebook

Some staff have found it easier to communicate with students using Facebook than to find them in class (Bosch, 2009). Staff are recommended to develop a profile that is appropriate to being public (Coughlan and Perryman, 2015b), avoid commenting on student personal items and remain passive during student interaction (Teclehaimanot and Hickman, 2009). Use of Facebook in class has led to boundary conflicts (Gutschmidt, 2012; Pai et al., 2017). Reluctance by faculty members to use social

media is partly due to not wishing to share their social space with students (Raynes-Goldie and Lloyd, 2014), the learning necessary to become proficient (Pai et al., 2017) and also the fear of embarrassment from inability to use social media and other new technologies in class (Monahan, 2017). Staff may feel reluctant to use technologies if they 'encounter difficulty' (Agbatogun, 2013: 352) and exposure to 'professional vulnerabilities' (Cramp, 2015: 6). Staff using social media must bear in mind that it can collapse multiple audiences into one single audience, raising boundary conflict issues.

In Shelton's study of lecturer abandonment of technology in teaching, one lecturer discusses social networking and student 'desire to separate their social communications and their learning and recognised that students had a growing sense of their online identities' (Shelton, 2017: 314). For staff, it has also been noted that 'conflicts and tensions arise as the structure of networks clashes with the hierarchical structure of traditional education' (Siemens and Weller, 2011: 166).

2.3.3 **Social capital**

Social capital was defined by Fine as '*any* aspect of the *social* that cannot be deemed to be economic but which can be deemed to be an asset' (2010: ix) [italics in original]. This encompasses acquaintances, friends and family but also includes personal identity, culture and trust of others. Social presence has been reported as an important aspect of the learning experience (Chickering and Gamson, 1987; Richardson and Swan, 2003) and increased social presence has a beneficial effect upon scholarly engagement and learning outcomes (Kuh et al., 2008). Gleason and Greenhow (2017) discussed increasing social presence using social robotic telepresence systems in classrooms to enable embodied communications, noting that in higher education, this work is in its infancy (Tanaka, Nakanishi and Ishiguro, 2014; Cain, Bell and Cheng, 2016; Bell et al., 2016) but promises advantages over videoconferencing systems to enhance social presence in doctoral education.

Many of the studies of the pedagogical value of Facebook share one common factor, an increase in social capital for their users (English and Duncan-Howell, 2008; Cain and Policastri, 2011; Buzzetto-More, 2012; Coklar, 2012; LaRue, 2012; McCarthy, 2012; Wang, 2012; McLoughlin and Lee, 2014). Social capital was shown to positively correlate with student retention (Coleman, 1988) and subsequent studies (Yorke and

Longden, 2008; Thomas, 2015) have confirmed this. Student retention is a performance indicator published by HESA, allowing HEIs to be compared against each other in the university league tables and is also used when funding is calculated at the end of each academic year (MacAskill, 2012). It is in HEIs interest to retain the greatest number of students as possible for these reasons.

2.3.4 Section conclusion

Technology can be employed in teaching to project the learner into remote environments, either for direct experiential learning or to bring remote learners into the classroom, increasing their sense of social presence. The lack of control for teaching staff over the location of content makes Facebook less useful than the VLE. Both students and staff worry about privacy from each other when using Facebook although this worry can be eased by the use of closed FSGs. Students mainly access Facebook through their mobile phones and keep in touch when not in class using comments and posts, talking about their studies, arranging social events and making contact with home (Madge et al., 2009). Lampe et al. (2011) suggested that students view university as a social experience rather than an academic one and this fits well with most of the literature. Social capital has been shown to correlate well with student retention and can be enhanced using social robotic telepresence systems in classrooms.

2.4 Social networking systems

This section discusses the affordances of social media then discusses Facebook, its origin and the opportunities for embarrassment felt by its users. Facebook's News Feed algorithm and the privacy settings offered to its users are discussed before examining how human interactions can be affected by the shortcomings of digital transmission systems.

Durkheim ([1893] 1964) wrote about social communities and argued that something larger than a collection of individuals arose in large groupings, society. McLuhan (1964) wrote extensively about the effect of radio and television on society and even postulated that electricity allowed humans to extend their senses by dramatically increasing the speed and reach of human communication but did not discuss how this may affect the human emotionally. Turkle (2011) examined the effect of information

technology on humans and concluded that technology has demonstrated the potential to mediate human behaviour. In a controversial study by Facebook on its users (Kramer, Guillory and Hancock, 2014), regulation of News Feed items was found to affect the emotions of those users, see section 3.10.

Prior to 2003, the Internet's primary use was for finding information using search engines, the most popular being Google which began in 1997. Communication was carried out using email, bulletin board systems and text-only chat rooms. White and Le Cornu (2011) argued that the Internet changed radically after 2003 from a global information search tool to a scaffold that possessed the ability to support social networking where individuals could manage their online identities 'not constrained by physical geography'. The social networking website SixDegrees was launched in 1997 and allowed users to create a profile and share it with others. In 2003, LinkedIn and the social bookmarking site Delicious were launched, followed in 2004 by Digg, Flikr, World of Warcraft and Facebook then YouTube and Bebo in 2005 with Twitter following in 2006 (White and Le Cornu, 2011). Some other popular sites are listed along with their launch dates; Tumblr, BizSugar and StumbleUpon 2007, Quora 2009, WhatsApp, Viber and Instagram 2010, SnapChat and Google+, 2011, Vine 2012, Periscope 2014. User statistics for SNS are Facebook 2.13 billion (Facebook, 2017a), YouTube 1.5 billion, WhatsApp 1.2 billion, Facebook Messenger 1.2 billion WeChat 889 million, Twitter 328 million, SnapChat 255 million (Constine, 2017).

A social networking system (SNS) offers members the opportunity to create an online presence or profile, share digital objects, such as photographs and video (boyd and Ellison, 2007), save and bookmark sets of social relationships and by means of regular updates and asynchronous communication, a greater number of close social relationships may be maintained than in traditional face-to-face interactions (Donath and boyd, 2004). Social networking sites invite individuals to project an online persona or 'digital identity' using text, images and video and to form complex social networks unbound by geographic location (ibid.). The common denominator of social networking is to 'consume and distribute personal content about the self' (Ellison et al., 2011: 19). Boyd (2010: 39) described social networking sites as a 'genre of networked publics', social groupings that have been geographically reshaped by affordances of CMC, allowing individuals to gather together for 'standard' social purposes such as

conversation, sharing of experiences and objects, simultaneously allowing individuals to connect to a wider world beyond the physical distance their analogue social groupings would naturally allow. Dunbar (2011) contends that our online friends are the same people as our offline friends and CMC has not increased the number of friends per individual with whom they hold meaningful relationships as this is a function of human brain size (1992; 2012) rather than the network, and social network capabilities. He further contends that SNS have merely slowed the rate of relationship decay, especially with those who are a great physical distance apart.

This suggests that the different possibilities and methods for interaction offered by networked publics may distort the rules and dynamics of participation because of the ability, or perhaps inability, of the communication channel to convey a sense of the other, social presence (Short, Williams and Christie, 1976). Donath and boyd noted that it has become harder to use time and space in the 'physical world' to separate incompatible identities (2004: 77). Any change in interaction development happens in two places, at the human-computer interface and in the minds of the communicators.

> The metaphor of 'place' is therefore one which lends itself very easily to the experience people have when they are engaged and interacting socially with others via a computer (White and Le Cornu, 2011).

2.4.1 **Facebook**

Harvard students Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz and Chris Hughes started Facebook in 2004 with the intention of digitizing the freshman-year 'facebook' to allow students to not only view each other's photographs but also to 'flirt, network, [and] interact' (Hirschorn, 2007: 2-5). By 2005, Facebook was made available to people outside of universities and its popularity began to grow extremely rapidly. In May 2012 Facebook went public (LaPointe, 2012). By October 2012, the number of monthly active users (MAUs) of Facebook had grown to one billion (BBC, 2015) with 55 % of users logging in daily (Constine, 2017). Although some younger users had started turning to other SNS (CNET, 2013), by December 2017 Facebook had 2.13 billion MAUs (Facebook, 2017a), more than one quarter of the world population (Worldometers, 2017) with 66% of them accessing it on a daily basis (Mashable, 2017). With such high numbers of users, Facebook might be counted as a *social fact* (Durkheim, 1982), a *sui generis* external factor able to drive the behaviour of

individuals in predictable ways whilst encompassing a collective desire for friendship and sociability that cannot be explained by the human desire for sociability alone (Simmel, 1971 [1910]).

In the UK, 7.7 million individuals aged 18 to 24 years use Facebook, 51% female and 49% male (Statista, 2017) and Facebook is widely used by students in higher education (McLoughlin and Lee, 2014: 43). In 2015-16 there were 2.28 million students studying in the UK aged 18 to 24 years (HESA, 2017) and 87 percent of individuals who use the Internet aged between 18 and 29 have an active Facebook account (Omnicore, 2017) so it is possible that around two million UK students use Facebook.

2.4.2 Facebook and embarrassment felt by users

There are many instances of embarrassment reported by Facebook users. Items posted by parents and photos showing users with alcohol or drunk (West, Lewis and Currie, 2009) were described as embarrassing and users wanted to remove them. Information about users may be posted to unintended others, potentially leading to lost jobs and embarrassment (Winter, 2014). Embarrassment on Facebook is common according to research participants,

> I don't think I've posted a status on Facebook in two years. I have nothing worth saying on Facebook. I feel embarrassed almost to post anything on Facebook… in Richardson (2016: 777).

Another participant describes self-embarrassment on Facebook,

> …some of the stuff that I post here I couldn't say to my best friend and that's one of the things with fb [sic] isn't it, don't post something that you wouldn't be able to say in real life [...] I read some of the posts I've made and its embarrassing… in Flaxman (2014: 223).

Another participant discusses embarrassment,

> Embarrassing pictures, not necessarily pictures that I am ashamed of, but pictures that are not advantageous for me at all. But if I have a teacher in my friendslist, [sic] for example, I am thinking twice before I post something, like do I want him/her to see these pictures of me or it would be better to avoid that situation... in Szűcs (2016: 36-37).

‘Fraping’ can be embarrassing for users who forget to log out of Facebook and allow others to post inappropriate comments as if originating from the account holder (Moncur, Orzech and Neville, 2016).

These accounts indicate the potential for self-embarrassment on Facebook and indicate that embarrassment is the key dysphoric emotion generated by social media. For this reason, it was chosen to study the role played by embarrassment for users of Facebook.

2.4.3 **News Feed algorithm**

Facebook uses a News Feed algorithm (Facebook, 2013; 2014a; 2016a) to determine the order and nature of posts seen by each user (Facebook, 2016b). Metrics derived from each user’s profile information and post interaction history form the inputs to the News Feed algorithm to calculate whether to include, remove, promote or demote posts to increase the chance that users will interact with their News Feed by sharing, liking or commenting.

Like television, Facebook’s News Feed is a push technology where content is curated for users rather than requiring users to seek it themselves (Kent, 2014). Web push technologies were contrasted against web pull technologies by Kendall describing pull technologies as those where users ‘summon the information they desire’ (1999: 266) whereas push technologies are concerned with what the web provider believes that their users want to see, based on information collected about and from their users. Push technology providers, such as Facebook, can influence their users towards products or decisions by ‘filtering data and messages’ (ibid: 285). This has been highlighted as influential in the 2016 American elections (Davis, 2017) and also in the recent Brexit referendum in the UK (Del Vicario et al., 2016) where selective exposure to push content tends to reinforce users’ worldview and may lead to polarised groups. Bode (2012) suggests that Facebook use can have a positive political effect upon its users. The pushed Facebook content is determined by the Facebook News Feed algorithm. Facebook users are delivered what Facebook ‘thinks’ they want and the transparency of this delivery may go unnoticed by the users, with possible consequences of manipulation of user decisions.

2.4.4 **Privacy settings**

Facebook has provided a range of privacy settings to hide or display content and profile information of its users from other users, however the range of settings has evolved over the time that this thesis has been formulated. Before 2014, by default, when anybody joined Facebook,

> his or her posts were automatically set to 'Public.' That meant all photos, status updates, everything you put on the social network could be seen by anyone on the Internet. (Huffington Post, 2014)

In 2014, the Audience Selector Tool (Facebook, 2014b) was made available, allowing each post to be made visible to anyone on or off Facebook, just Friends, or according to a custom list by checking a box below that post. When a piece of information is set to be shared with Friends only, that set of individuals is an example of a personal network. The chosen setting is applied to any subsequent posts until the setting is manually changed. Once an item has been shared on another user's Timeline, the recipient was free to share that item with whomsoever they chose, making the original security setting completely redundant. It was impossible to hide 'public information', which included the user's name, profile picture, cover photo, gender, username, user ID (account number), and networks of Friends. If a previous post was shared with a Custom audience such as Friends except Acquaintances or Close Friends, this tool could not change the audience for those past posts. Tagging of people in photographs was also extremely complex to manage.

> If you tagged someone in the post, the audience of the post will still include the person you tagged and people they include in posts they're tagged in. This tool only controls the audience for posts you've shared. If you've been tagged in someone else's post, they control the audience for their posts. (ibid.)

In 2017, there was still vague advice from Facebook concerning what could and could not be deleted, see section 2.8.5, although the company offered more advice on how to secure posted content from others.

The complexity and vagueness of privacy settings has been widely criticised (Paul, 2015; Time, 2016; Stern and Kumar, 2017) and can confuse users attempting to secure their information and retain control of their shared disclosure boundaries (boyd, 2008). Facebook users may define their privacy/disclosure boundaries using the privacy

settings. Territory coordination is the act by which individuals manage their virtual territory (Lin, 2013). For a student who is not completely conversant with the security settings, territory coordination between differing personal networks, such as faculty staff and Friends, can be difficult and it may be easier not to allow them any access whatsoever or just not to post that particular item. This type of coping strategy is problem-focused as opposed to emotion-focused (Folkman, 2013) as the individual deals with the problem rather than attempting to control the emotion of embarrassment.

2.4.5 **Shortcomings of computer mediated communication**

Computer mediated communication has been labelled as poor, relative to copresence and phone communication, in both media richness theory (Daft and Lengel, 1986) and social presence theory (Short, Williams and Christie, 1976) as it cannot convey all aspects of communication that occur during a corporeally copresent encounter because certain given-off signals (Goffman, 1959: 14) or cues, such as handover signals, that occur naturally are not conveyed. Daft and Lengel's media richness theory states that all communication media have differing abilities to carry information and that equivocality of messages can be reduced by the transmission of more cues and data, with face-to-face communication at the top of the scale. Kock (2005) proposed a competing media naturalness theory which hypothesizes that our choice of communication methods is made to resemble, as much as possible, natural face-to-face communication.

Message clarity can be compromised during conversations between groups having different communication norms. Facebook cannot transmit the visual cues, such as glances, posture and facial expressions given off during the composition of a post that would otherwise help viewers to decode and make sense of what is written and also what is not written. Cue omission can lead to misunderstandings between what was meant by the originator of an online message and how viewers make their own sense of it. A semantic system of reserved signs, known as emoticons, was introduced by Scott Fahlman (1982) to allow readers of a particular bulletin board to distinguish humorous comments from serious ones. A smiley `:-)` was inserted into the text to signify that the author's intent for interpretation of the post was that it should be received with amusement or humour.

Metacommunicative signs ‘serve as nonverbal surrogates’, and may carry ‘additional social cues’ (Derks, Bos and Grumbkow, 2008: 99). Emoticons such as ‘lol[3]’ in emails may improve their reception (Dunbar, 2011: 83). Many other examples of emoticons to convey mood exist and are still used widely in text-only communications and cartoon versions of the original emoticons have been created in most social media platforms (Erickson, 2010).

Whilst metacommunicative signs inform the reader of the composer’s intention for the reader, carefully composed and legible text has no need for emoticons. Rousseau wrote,

> Feelings are expressed in speaking, ideas in writing. In writing, one is forced to use all the words according to their conventional meaning. but in speaking, one varies the meanings by varying one’s tone of voice. (1781: 21-22)

Derrida (1982: 316) stated,

> ‘For the written to be the written, it must continue to 'act' and to be legible even if what is called the author of the writing no longer answers for what he has written ... whether he is provisionally absent, or if he is dead’.

He explains that ‘expression ... is meant, conscious through and through, and intentional’ (1973: 33) and that the meaning of words does not purely rely what they mean but what an individual *defines* them to mean.

We derive our meaning of words from context (Thomas, 2013) and decode their meaning to discover ‘the most relevant and plausible interpretation of the intended meaning by using contextual information’ (Taguchi, 2005: 544). This would imply that increased context increases the chance that the correct meaning is selected. Conversely, the lower the contextual information, the greater chance that misunderstandings will occur. In long passages of online text, meaning can be easily sought but for online casual conversations that are often short, meaning can be difficult to decode, leaving a vacuum that is often filled by emoticons. Crystal suggested that text-based CMC is a ‘new species of communication’ that he called Netspeak (2006: 48), however Baron’s

[3] Lol is an acronym for ‘laughs out loud’

(2004: 416) study of instant messaging concluded that conversations contained a 'blend of both spoken and written language conventions' which may reduce contextual cues for readers by combining monologic and dialogic practices. Baron's conclusions seem to indicate that CMC has blended Rousseau's distinction of speech for feelings and writing for ideas, a similar conclusion reached by Tagliamonte who concluded that CMC of students contained a 'flagrant mix of formal and fashionable features' (2016: 29).

2.4.6 **Digital versus analogue interactions**

Goffman was concerned with face-to-face interactions between two or more individuals which he described as 'copresence' (1963: 17), a state that is achieved when one individual senses that other individuals perceive them and these other individuals actively perceive the first individual. Goffman describes social encounters as consisting of 'effectively expressed claims to an acceptable self and the confirmation of like claims on the part of the others' (1956: 268).

Copresent dialogue is live and supported by multi-channel, synchronous, full duplex, real time communications that can transmit given and given-off signs between the participants. During conversation, not only do we listen to the speaker but we watch their delivery and may use the remaining senses too. CMC currently offers half-duplex, non real-time, asynchronous mainly text-based communication between users (Kalman et al., 2006) and fails to capture and transmit visual, vocal and other expressive cues that occur during copresent social interaction to enrich or qualify the flow of ideas.

> The expressiveness of the individual, and therefore the capacity to give impressions, appears to involve two radically different kinds of sign activity: the expression that he *gives*, and the expression that he *gives off* (Goffman, 1959: 14) [italics in original].

In copresence, information is conveyed to others by given expressions, mainly verbal, whereas given-off expressions include tone of voice, posture and facial expressions (Goffman, 1959; 1967) which are not conveyed by Facebook's current public communication affordances.

Culnan & Markus (1987) argue that such a 'cues filtered out' approach allows for positive development of relationships when some of the cues, both physical and social,

as found in face-to-face communication, are omitted, possibly helping some individuals overcome social barriers by allowing them to feel less self-conscious and communicate more freely (Bosch, 2009). The lack of cues can cause individuals to disclose their inner feelings more readily than during copresence (Walther, 1996). The unease experienced in copresence by self-conscious individuals because of the perceived gaze of the audience does not occur in SNS and eliminates these feelings of unease. A study by Naqshbandi et al. (2017) found that extroverts, agreeable and lonely individuals are most likely to benefit from Facebook in improving their academic results The missing elements of communication that are not transmitted by SNS may be acting as an 'involvement shield',

> because it points out a very characteristic attribute of situated conduct. Since the domain of situational proprieties is wholly made up of what individuals can experience of each other while mutually present, and since channels of experience can be interfered with in so many ways, we deal not so much with a network of rules that must be followed as with rules that must be taken into consideration, whether as something to follow or carefully to circumvent. (Goffman, 1963: 42).

Situated conduct is the behaviour of individuals in a particular social context to manage the image projected to the others present (Goffman, 1959; Scharff, 2008). The shielding offered by Facebook may assist in development of relationships when compared to an analogue approach, particularly for shy people (Pai et al., 2017), making Facebook an accessible situation (Wang et al., 2012) where some of the physical restrictions of copresence do not apply. Facebook allows its users to play out various roles which are mapped onto the user profile that can be seen by different individuals possessing separate social roles (Trottier and Fuchs, 2014). These roles are enacted by the pictures and information each user personalises their Facebook account with and the nature of the items they post and share (Birnbaum, 2009).

2.4.7 **Cue transmission**

Communication involves the exchange of verbal and nonverbal symbols (Stacks and Salwen, 2014) between individuals. For successful communication to take place, each communicant must assign the same meaning to each symbol used as the other communicants. In order for a sign to be interpreted for its intended meaning, it is necessary for it to be received correctly without distortion during transmission. The

most common symbols are explicitly based on words, as in speech and writing (Crowley and Heyer, 2015); others are more implicit, such as the cues based upon body language and gestures (Goffman, 1959; Martinez et al., 2016) that individuals use to clarify context and turn-taking (Levinson, 2016) in conversation.

Speech contains cues that are non-verbal behaviours but serve to pass messages in a 'socially shared coding system' (Burgoon and Hoobler, 2002: 244) to enrich the interpretations of the received speech. Discourse markers or filled pauses (e.g. ok, well, now, um, etc.) are used, often unconsciously, to help the speaker search for words and organise their discourse (Tagg, 2012).

Computer systems currently find these cues difficult to capture and convey because of their varying and often subtle nature (Goffman, 1959; 1967; Holland and Taylor, 2016). Text-based CMC manages to convey the explicit verbal part of communication but not the subtle nonverbal symbols associated with body language (Kehrwald, 2011). It is to fill this vacuum that netiquette (Shea and Shea, 1994) was born.

Cue omission deregulates genetically developed analogue human interaction expectations (Goffman, 1959) and different degrees or norms of intersubjectivity may be developing in its users as a result of high CMC usage (Turkle, 2011). In time, a new intersubjectivity, shaped by new cues, for the new digital public, may replace corporeal intersubjectivity that was grounded in copresence.

It may be the lack of natural cue capture and transmission by the current social networking computer paradigm that is distorting social norms and that cue-omission may be a significant factor in the popularity of the larger SNS. Perhaps Facebook's popularity is due not only to what it does do for its users, but also what it *does not* do.

2.4.8 **Digital communication**

Conversational dialogue requires rules and protocols to allow copresent verbal communication to have a structure, for without these, communication would be chaotic. A question anticipates and invites a response looking forward in 'sequence time' (Goffman, 1981: 5) to receiving an answer. The response provided by an answerer looks backward at the question. The question and response form a dialogic unit, each

part spoken by different individuals, forming an 'adjacency pair' (ibid.:6), with the question always occurring before the response. This creates two events in time, the first of which creates a 'conditional relevance' over the second event that occurs as a consequence of the initial event.

In the Facebook News Feed, users are allowed to create various dialogic events within the constraints of the allowed communication possibilities. An immediate difference is that the Facebook posts are textual in nature, supported by objects such as pictures or videos. Text-based communication involves typing which takes around ten times as long to speak the same words and allows the composer more time to consider their communication (Walther, 2007). A second difference is that Facebook posts are not specifically designed as questions, however the inbuilt opportunity for other Facebook members to respond to any type of post indicates that a user creates the initial event in the expectation of a response from other members. A third difference is the unavailability of non-verbal cues, the given-off signals (Goffman, 1959: 14), naturally available in corporeal interactions.

2.4.9 **Latency in online communication**

When individuals communicate face-to-face, generally the conversation flows easily and in an ordered fashion with pauses between turns at talking being deliberate and usually meaningful (Tagg, 2012). Visual cues allow speakers to determine when it is their turn to speak and when to hand over. In asynchronous communication systems, such as radiotelephone conversations, turn-taking is performed using additional instructions such as appending *over* to a message to indicate to the other party that it is their turn to speak (ICAO, 2007).

In computer mediated conversation, the delay in receiving explicit textual or other responses may produce odd distortions to the rules of turn-taking in a similar manner to long distance communication where there is a noticeable lag in each party receiving the other's words. A telephone conversation held over a transatlantic satellite link introduces a round-trip delay of around half a second and this is sufficient for breakdowns in turn-taking (Goffman, 1981). This lag can affect understanding between those communicating as pauses between face-to-face speakers embody a situated

meaning which, when these occur during remote communications, may disrupt the flow of ideas (Bosker et al., 2013).

2.4.10 **Section conclusion**

Social networks provide their users with new methods and opportunities for communication without tying them to a physical place which has changed the meanings and numbers of relationships enjoyed with others. Computer mediated communication has increased the pace of communication and patterns of use are changing the location and size of personal networks.

Facebook has amassed over two billion users who are given the opportunity to share both their experiences and personal profiles. Facebook's News Feed algorithm determines the content pushed to users. Facebook offers a range of tools for users to manage this information, however these tools have been described by some users as complex and vague.

All digital communications share particular shortcomings due to the nature of communication networks, as well as the social networking applications themselves. Among these shortcomings are network transmission latency, delay in the recipient receiving the messages on systems where the recipient needs to log in to a computer system to retrieve messages, time to compose messages plus a lack of channel ability to carry much more than text, images, audio and video (Collins, 2014).

Pauses introduced by latency may negatively impact the semantics of conversations. The lack of cues led to users inventing metacommunicative signs to help convey emotion and mood to enrich the experience for recipients. Facebook has several barriers to matching the richness of face-to-face or copresent communication. Facebook posts are not questions but invite comments in the same manner with the initial post having conditional relevance over any responses. Facebook communication is text-based and typing may allow users more time to contemplate their posts but the lack of non-verbal cues may distort the intended meaning for recipients. The asynchronous nature of Facebook posts may be responsible for increased communication by the self-conscious and socially awkward as they cannot perceive negativity as they type or post.

During copresent communication, we are able to perceive more than the spoken word but the minute clues that are given-off by those involved, such as shrugs, eye movements and discomfiture such as sweating, are not readily transmitted by computer communication systems which are designed to digitise speech, words and pictures, only the given signs. Online communication must therefore be less rich and offer fewer clues to support or deny the actor's given signals. This is in firm agreement with social presence (Short, Williams and Christie, 1976) and media richness (Daft and Lengel, 1986) theories.

Social networks have earned the right to be termed *places* (Dunbar, 2011; White and Le Cornu, 2011), for it is somewhere we 'go' and the English language has not yet got a separate common word for this place where we experience our 'consensual hallucination' (Gibson, 1984: 69). It would appear that social networks do not currently share quite the same properties as public places due to the simplex nature of the system channel when viewing another user's profile or objects which denies copresence, however knowledge of the opportunity to embarrass ourselves using social media is sufficient to warrant further investigation.

2.5 Erving Goffman

This section begins with a brief discussion of social interactions then discusses Goffman's applicability to this work. Microsociology, embarrassment, shame and guilt are discussed before examining the work of others, both for and against Goffman, to uncover their perspectives on his work.

2.5.1 Perspectives on social interaction

Garfinkel (1984) created the concept of ethnomethodology, which is concerned with how people use different methods to make sense of their social situation and then are able act upon it accountably (Mann, 2008). Garfinkel argued that Goffman's *interaction order* (Giddens, 2000) was underpinned by the ethnomethodological order. Each individual involved in an interaction knows what they are doing based upon a shared understanding of the situation employing a mixture of explicit rules and background knowledge (Marshall, 2008; Collins, 2014). It is how we make sense of our social lives from moment to moment and make decisions on how to act or behave.

Goffman focused upon the role that embarrassment played in maintaining the interaction order and how it had the power to direct the actions of individuals, according to Garfinkel's ethnomethodological order.

Foucault discussed biopower (1978) and theorised that it operated at two poles, the human body and the human species and noticed its disciplinary effect on individuals, all the way up to society. He theorised that this type of power is not imposed by some dominant group but rather originates from the discourses and everyday norms that are features of our social interactions and is everywhere being 'exercised from innumerable points, in the interplay of nonegalitarian and mobile relations' (Foucault, 1978: 94). It is this power that underpins the constant reinvention of the self from moment to moment and the manifestations of the power underpinning the desire to avoid embarrassment which was the focus of Goffman's early work.

2.5.2 **Applicability of Goffman to this work**

Goffman's work was concerned with 'Anglo-American society' (Smith, 2003: 264) in the post-war period and may make the findings of this thesis only applicable to a particular demographic group. There is some evidence that his work was highly situated so may not be globally applicable. Goffman himself admitted that *Behavior in Public Places* (1963) was based upon experience 'mainly with middle-class conduct in a few regions of America' (ibid': 5). Later he even stated that sociologists who engage in positivist methods were employing a 'sympathetic magic' that would produce no knowledge of social behaviour (1971: 21). Goffman died in 1982 aged 60, one year after the first IBM PCs were introduced. He did not write about computer-mediated communication.

I defend the use of Goffman's framework in this work by pointing out that in the time since the publication of Goffman's early work, the human has not changed, but the opportunities offered by technology for communication have changed greatly and can transmit many, but not all, of the signals present during copresent interaction. Full copresence involves each of the five human senses, and implies that those involved are in very close proximity to allow touch, taste and smell signals to be received by all. Once the distance between individuals is increased until each is out of physical reach of the other, data from touch and taste cannot be received and unless a particularly strong

smell is present, there can be no data received from our noses. This leaves our senses of sight and hearing as the only available channels for defining 'the situation'. Goffman based his framework mainly on observations he made of social, rather than intimate, interactions between the inhabitants of a small Scottish island (Manning, 2007) and he confines his discussion mainly to what is seen and heard. I argue that many of our daily encounters with non-intimate friends only involve the senses of sight and hearing, two channels that are supported well by CMC (boyd, 2007; 2010).

The personas that result from a less-than-complete definition of 'the situation' (Goffman, 1959: 246) will inevitably suffer from some inaccuracy, however I argue that Facebook is sufficiently well-established that digitally mature individuals are aware of its potential for disseminating material rapidly and also that they own personally private information that they would not want to be made public. Furthermore, digitally mature individuals understand the Facebook 'situation' and are likely to base any Facebook-involving decision on this knowledge, particularly when the decision involves originating or sharing information.

The construction of online personas using Goffman (1959) to explain how the identities are symbolically constructed has been employed widely (boyd, 2004; 2007; Robinson, 2007; Hogan and Quan-Haase, 2010). If identities online can be described by Goffman's description of the self, it is realistic that his framework for individual behaviour regulation, a part of Garfinkel's ethnomethodology and driven by factors described by Foucault as biopower, could be applied to the online behaviour of individuals communicating online. Although self-awareness is decreased during online interactions (Tracy and Robins, 2004; Vasalou, Joinson and Pitt, 2006), it may be possible to observe actions that rely upon the anticipation of future embarrassment as this is internal and does not rely upon the presence of others, merely imagining the reaction of others.

Goffman stated that '[t]here is no interaction in which participants do not take an appreciable chance of being slightly embarrassed or a slight chance of being deeply humiliated (1959: 243). Embarrassment has been cited as a frequent emotion that occurs during online interaction, see section 2.4.2, and for these reasons it was made central to this study of online behaviour.

2.5.3 **Goffman and microsociology**

Goffman made observations at a microsociological level which were able to provide sociologists with a vocabulary that did not previously exist to describe the minutiae of human behaviour, known as microsociology (Gurvitch, 1949). Goffman wrote that the key factor to the structure of social encounters is,

> the maintenance of a single definition of the situation, this definition having to be expressed, and this expression sustained in the face of a multitude of potential disruptions. (Goffman, 1959: 246)

At any social occasion, every individual persona presented at that event must be accurately perceived by the audience to maintain one single definition of the event itself (Fine, 2014). For individuals who wish to conform to the norms of a particular social group, free will is filtered or constrained to produce socially acceptable signs learned by the process of acculturation into that group.

Goffman's exploration of self-other relationships focused upon emotion management, with particular emphasis on the role played by embarrassment. Scheff (2006) takes Goffman's microsociology further, analysing the emotional grounding of social processes, and explores other emotions including love, hate, shame, anger and grief, and their role in the formation of individual behaviours. Scheff (2017) describes Goffman's work on impression management and how it challenged the shame taboo, with particular focus upon embarrassment and humiliation and states that sociologists should reassess the early work of Goffman with regard to his focus upon the emotional factors that affect impression management. Gilligan (1997) believed that shame was the root of violence. This work concentrates purely on the role of embarrassment in social situations whilst noting that embarrassment is not the only emotion at play during social interaction.

Goffman described the interior components of embarrassment, including anticipation of embarrassment, and intersubjective accord as being key contributors to the locus of an individual's behaviour in particular social roles. His belief was that when a member of a social group enters the presence of that social group, individuals choose their behaviour in such a manner as to avoid crossing the shared behavioural boundaries of other group members, adapting to the perceived requirements of the group.

Much of the literature citing Goffman has employed the perspective of dramaturgy (Baert, 1998; Williams, 1988; Giddens, 2000). In the preface to *Self* (1959), Goffman announces that he will use terms derived from theatrical performance to derive his principles. He defines terms including 'performance' and 'routine' shortly afterwards (ibid: 26-27). This implies that the terms are allegorical and dramaturgical metaphors for the self (Lemert and Branaman, 1997), serving purely to represent human interactions and provide a verbal vehicle for their analysis. His dramaturgical vocabulary is useful to help in understanding and describing the interplay and context involved in social group dynamics. The dramaturgical perspective imagines the individual as an actor or performer on a stage, alone or as part of a 'performance team' (ibid: 85), the audience (ibid: 28-82) being members of various personal networks, which may consist of friends, colleagues or acquaintances. I have only employed his dramaturgical perspective where it assists in describing interactions, not as a framework nor as an analysis or modelling tool. The preface of *Self* (1959) clearly separates the framework developed within from the literary perspective.

Part of my experimental design employs his cross-cultural, embarrassment-led framework for sociological analysis (1956: 266) based upon an embarrassment avoidance framework. I aim to discover whether individual behaviours are filtered subject to a common social embarrassment avoidance process that shapes seemingly random actions at the microsociological level into observable bulk behaviours at a macrosociological level within a cultural group in particular social contexts where non-moral transgressions occur more frequently than moral transgressions, such as during social media interactions.

2.5.4 **Embarrassment, shame and guilt**

The dysphoric emotions of shame, guilt and embarrassment, negative self-conscious emotions (Barrett and Campos, 1987; Fischer and Tangney, 1995), are the affective dimension of realising how others perceive our actions (Scheff, 2000; Turner and Stets, 2006; Collins, 2014). Of the three, shame is the most powerful and likely to cause enduring negative feelings about oneself. One definition of the distinction between shame and guilt is offered by Lewis:

> The experience of shame is directly about the self, which is the focus of evaluation. In guilt, the self is not the central object of negative evaluation, but rather the thing done or undone is the focus. In guilt, the self is negatively evaluated in connection with something but is not the focus of the experience. (1971 : 30)

Tangney et al. (1996: 1257) agree and observe that moral transgressions, such as theft, are likely to invoke feelings of guilt and shame fairly equally whereas non-moral transgressions involving inappropriate social behaviour, such as talking out loud whilst watching a theatre performance, are more likely to elicit feelings of embarrassment than shame or guilt. Shame is associated with feelings of a broken or inadequate self when the worthless self is exposed to self scrutiny or indeed the scrutiny of others (Berkovski, 2016). Guilt is also associated with low feelings of self-regard and involves feelings of regret or remorse for the action that caused the guilt and is likely to promote restorative action and confession.

Both shame and guilt are emotions associated with serious moral transgressions and likely to last for a lengthy period of time. Feelings of shame are likely to come on rather quickly and can be accompanied by surface manifestations such as blushing and minor losses of control such as stammering. Shame and guilt may be felt when one is alone; embarrassment requires an audience. Jaffe et al. (2014: 15)[4] examined the number of words in 64 languages for guilt and shame from an evolutionary perspective and concluded that the relative importance of shame and guilt was evenly distributed across languages with some belonging to guilt societies, others to shame societies, with no strong adaptive advantage to either shame or guilt. Guilt societies are 'grounded on the creation and the reinforcement of the expectation of a punishment after a specific forbidden behavior [sic]' (Bracco, Piccinno and Dorigatti, 2013: 27) whereas shame societies encourage individuals to behave in such a way that they avoid forbidden behaviours lest their reputation becomes damaged.

[4] Page numbered as per the online page.

Embarrassment has been described as a deleterious emotional state that is experienced by individuals in social situations when they perceive their behaviour as awkward or incongruous (Parrot and Smith, 1992; Miller, 1996; Tracy and Robins, 2004). Embarrassment occurs most often when the regard or perceived image that others have for an individual is damaged (Tracy and Robins, 2004) and those others are more likely to be outside of the immediate family. Like shame, embarrassment causes blushing but is not a shallower version of shame for shame is associated with moral failures (Buss, 2001) whereas embarrassment 'motivate[s] conformity to many cultural rules that hold less moral import' (Fessler, 2007). Embarrassment-inducing events tend to be failures of a non-moral persuasion (Tangney et al., 1996) and are associated with fleeting and context-specific transgressions. With embarrassment, the loss of self-esteem is short-lived (Buss, 2001; Kristjánsson, 2010) whereas with shame, the loss of self esteem lasts much longer (Miller, 1996).

When compared together, people tend to feel more deserving of forgiveness following a self-embarrassing event than one that invoked feelings of guilt or shame and similarly believe that to others their behaviour appeared ridiculous or laughable and that it would soon pass (Tangney et al., 1996). Ridicule and laughter are not associated with shame or guilt inducing events (Buss, 2001) and neither are dependent upon intersubjective accord (Wierzbicka, 1999).

2.5.5 **Humour and embarrassment**

Goffman discussed humour briefly at the end of *Interaction Ritual* (1967) and suggested that the humour of concerned onlookers laughing with the affected individual might be a defusing mechanism for embarrassment as 'both help in denying the same reality' (1967: 112) and may help to relieve the tension of the situation and trivialise the incident. This was confirmed by studies (Salovey and Rosenhan, 1989; Feinberg, Willer and Keltner, 2012) which concluded that the audience of an embarrassed individual judged that person to be more prosocial and less antisocial than other individuals who either displayed no emotion or a different emotion. Prosociality can mediate some observers of an embarrassing incident in such a manner as to move them to offer resources and wish for affiliation with the embarrassed individual, helping to re-establish the social equilibrium of the group. Billig (2001) disagreed with Goffman and pointed out that the embarrassment of another may be a source of enjoyment when

the laughter is aimed at that other, whereas on the part of the embarrassed individual, their laughter may be a submission display (Weisfeld and Weisfeld, 2014). Billig (2001) distinguishes between laughter *at* an embarrassed individual which is carried out by those witnessing the event and laughter *with* an embarrassed individual which is an empathetic response to put that individual at ease. He also notes that Goffman only focussed on the latter.

2.5.6 **Embarrassment**

> The reason we spend such time and care managing our impressions is to avoid embarrassment and humiliation as best we can (Goffman, 1959: 245).

This generalisation might be applied to each of the events that Goffman described in *Self* (1959) and implies that all social interaction carries the risk of embarrassment and humiliation (Scheff, 2017). Embarrassment can discredit the identities of the embarrassed as they internalise the imagined devaluation of their presented self. Miller observed that 'for many of us, a quiet but compelling drive to avoid embarrassment pervades our daily life' (1996: 164). Goffman describes and analyses three aspects of embarrassment (1956: 265).

1. By whom is the embarrassing incident caused?
2. To whom is it embarrassing?
3. For whom is this embarrassment felt?

Goffman discussed occasions of embarrassment during social encounters and created a taxonomy where it can be abrupt or continuous. He described embarrassing incidents, intense moments of discomfort, as distinct from embarrassing situations which tend to be milder but continuous (1956: 265).

It was Goffman's belief that:

> events which lead to embarrassment and the methods for avoiding and dispelling it may provide a cross-cultural framework of sociological analysis (1956: 266) .

That framework supports the major section of this work. Embarrassment is an emotional reaction to self-elicited events (Romani, Grappi and Dalli, 2011), caused by

transgressions or disruptions to the social norm (Feinberg, Willer and Keltner, 2012), as opposed to shame.

Goffman's early work (1956; 1959) focuses on the individual, embarrassment and its effect on the individual and others, audience or team, who witnessed the embarrassing incident, however the embarrassment that is caused to a group by one of its members is not of interest in this study. This work has its focus on the individual who is aware of their potential to cause a social 'gaffe or *faux pas*' (Goffman, 1956: 265) and thus the individual fulfils each of the three points above by having the potential to cause an incident, by being the individual who will be embarrassed by this incident and the one that felt the embarrassment. Individuals will come to know that there are certain daily situations and relationships that make them uneasy but these must be encountered as they are obligatory, but will go out of their way to adjust or bypass embarrassing situations. This becomes complicated when the current projected self becomes contaminated with an alternative self, which is valid contextually with another social group but cannot exist alongside that current self, resulting in embarrassment. The individual can maintain a set of roles, each appropriate to a particular social group, but poor audience segregation, such as using fingers to eat at a formal luncheon, leads to role dilemma. Embarrassment does not occur spontaneously, it is triggered socially and 'part of this orderly behaviour itself' (ibid: 271) and the effect on the individual is to be held in tension between the expectations of the observing group's social assumptions.

> [W]e must be prepared to see that the impression of reality fostered by a performance is a delicate, fragile thing that can be shattered by very minor mishaps. (Goffman, 1959: 63)

The consequences of embarrassment can be particularly powerful, as in the case of a teenager who is reported to have committed suicide due to personal facts being revealed on the social networking website ASKfm (The Guardian, 2013).

2.5.7 **Others on Goffman**

When I first read *Self* (1959), I found it to be the easiest sociological text to understand that I had ever encountered and it is maybe this ease that has irritated some of Goffman's critics. As I progressed through the book, I found myself agreeing with his discussions time after time and I am not alone; Lemert (1997: ix) reports 'a shudder of

recognition'. Some observers such as Psathas have criticised Goffman for his lack of scientific rigour, describing him as 'unsystematic to the point of chaos' (1980: 51), however Goffman was unique and the reader must take from his work their own direction for research rather than expecting all or indeed any of the groundwork to be done already. *Self* (1959) describes social interactions and how embarrassment regulates certain individual and group social behaviours but Goffman does also discuss the role played by shame and humiliation (Scheff, 2017), but not to the extent of his discussions of embarrassment (Scheff, Phillips and Kincaid, 2006). Goffman describes social interactions that he believes are based upon embarrassment avoidance and shows how the projected self is developed from this strategy.

Goffman 'did not intend to be a social theorist' (Baert, 1998: 80) and did not believe that social theory existed (Branaman, 2001) and was 'sceptical about the possibility of discovering such a general theory' (Manning, 1991: 2-3). Hartland discusses how Giddens appears to have been influenced by the writings of Goffman:

> In Giddens' case, the systematic nature of Goffman's analyses of the interaction order flows from the way in which Goffman can be integrated into a larger theory of the constitution of social order. Goffman's work provides Giddens with an account of routine, which is a central piece in Giddens' sociological jigsaw by dint of the way it is used to relate psychological and structural phenomena (2000: 292).

Giddens states that:

> Social institutions are formed and reformed via the recursiveness of social activity. The techniques, strategies, and modes of behaviour followed by actors in circumstances of co-presence [sic], even in the most seemingly trivial aspects of their day-to-day life, are fundamental to the continuity of institutions across time and space. In his studies of co-presence, Goffman demonstrates that the predictability of much of social life, even on a macro-structural plan, is organised via the practices involved in what he chooses to call the interaction order. But this order is never separate from either the ordering of behaviour across contexts of co-presence, or the ordering of such contexts themselves in relation to one another (2000: 172).

The map of human conduct is not contained within the self, rather its origin is the desire to mimic and absorb the social values of the group(s) we inhabit or frequent. Scheff (2001) agrees that Goffman had for the first time given a structure and a vocabulary to the inner workings of humans that could be put to use in the social sciences. Schudson (1984: 637) questions Goffman's exclusive focus on the emotion of embarrassment,

pointing out that there are outliers in either direction, some of whom feel embarrassment acutely and others for whom it is of little consequence, but generally agrees with it.

Schudson does appear troubled by Goffman's dramaturgical analogies of actors and audiences (ibid: 643), so much that I believe he took Goffman's idea of the self being enacted as a performance literally, as a deliberate act; for most people, the self that is presented to a particular audience occurs naturally although it is always possible to manipulate our behaviour deliberately for personal gain. He notes that Goffman did not focus upon other aspects of the human experience such as heroism and fanaticism and concludes that 'Goffman is a theorist of civility' (ibid: 647)

Cooley (1922) noted the invisibility of the forces at work behind social interaction and this was taken up by Foucault when he wrote that power is strongest when it is able to mask itself: 'Its success is proportional to its ability to hide its own mechanisms' (1978: 86) and within humans manifests itself as a desire to voluntarily conform to social norms as self-discipline and self-surveillance.

Gouldner (1970) saw Goffman's self driver, otherwise known as human nature, as becoming muddled up with 'capitalist' or 'market society' nature which only becomes true if we deliberately manipulate our given-off signals in order to mislead for financial gain. Brittan (1977: 112) drew similar conclusions insofar as Goffman's view of human nature being 'nicely adapted to the workings of a society in which all social relationships are market-oriented', however his work focussed on the consequences of embarrassment rather than an indicator of the inner feelings of an individual. Susen (2016) criticises Goffman but mentions embarrassment only twice and never as the driver of behaviour and does not discuss cues or given and given-off signals. Instead he focuses solely upon the dramaturgical perspective of the creation of the self.

I argue that Susen, Gouldner and Brittan took the perspective of examining the formation of the self *per se*, rather than behaviours of the self and do not detract from Goffman's embarrassment avoidance framework which implies that the cultural context within which an individual develops and inhabits is immaterial and such adaptation is in fact 'cross-cultural' (Goffman, 1956: 266) which agrees well with Weisband and Franck (1976) who observe that 'different social norms establish different conditions of

embarrassment'. Schudson (1984) and Scheff (2001) do point out that there are other facets of human emotion that Goffman did not discuss as drivers of individual behaviour in alternative social contexts but these do not detract from the usefulness of an embarrassment-avoidance strategy correctly applied to particular social occasions (Scheff, 2017) where the personal stake is embarrassment.

Placed in an alternative society to the capitalist, market-oriented one that Gouldner and Brittan described, the individual could find their place using the very same driver, embarrassment reduction, and still develop a contextually correct set of social behavioural rules.

Heath (1988: 137) agrees with Goffman's focus on embarrassment stating that it,

> lies at the heart of the social organization of day-to-day conduct. It provides a personal constraint on the behavior [sic] of the individual in society and a public response to actions and activities considered problematic or untoward. Embarrassment and its potential play an important part in sustaining the individual's commitment to social organization, values and convention. It permeates everyday life and our dealings with others. It informs ordinary conduct and bounds the individual's behavior [sic] in areas of social life that formal and institutionalized constraints do not reach.

Feinberg, Willer and Keltner (2012: 92) agree with Goffman, arguing that embarrassment is 'a display that helps restore fluid social interaction where it has gone awry' and it can show that an individual cares about others and also that the individual values the relationship. Embarrassment is a socially useful emotion for it occurs when an individual perceives that at least one other individual is, or has become, aware of the incident that caused the embarrassment (Tangney et al., 1996; Miller and Leary, 1992). Cases of extreme embarrassment produce objective signs in the individual, such as blushing, that may have a social function. Goffman discussed the link between the interior emotion of embarrassment to external observables which he described, not exclusively, as:

> blushing, fumbling, stuttering, an unusually low- or high-pitched voice, quavering speech or breaking of the voice, sweating, blanching, blinking, tremor of the hand, hesitating or vacillating movement, absentmindedness, and malapropisms (1956: 264).

Goffman continues,

> In cases of mild discomfiture, these visible and invisible flusterings occur but in less perceptible form (ibid: 97).

Blushing can last for several minutes, providing a visual signal to others who, sensing the embarrassed individual, update their definition of the 'situation they are in' (Charon, 2004: 31). The internal emotion of embarrassment becomes recognisable by its surface manifestations which are given-off in the auditory, visual and perceptory domains and as such can be perceived by anyone else in sufficient proximity to observe these signs.

2.5.8 **Section conclusion**

Goffman proposed an embarrassment-avoidance based framework for sociological analysis (1956: 266) and this is one facet of my investigation into student acceptance of Facebook in HE. Garfinkel's ethnomethodology describes the rules behind social interactions, Foucault described where the power to conform originates and Goffman observed and theorised just one of the emotions that is used to regulate individual behaviour. The negative emotions of shame, guilt and embarrassment apply to different aspects of social transgressions. Whilst shame and guilt are long-lasting and humourless emotions, often connected with moral failures, these may be felt when we are alone and neither depend on any level of intersubjective agreement to occur. Embarrassment is short-lived and whilst causing a loss of self-esteem, the feeling is fleeting and occurs when a minor social boundary has been crossed and requires an audience with whom there exists a particular level of intersubjective accord to observe the infraction for an individual to become embarrassed. Scheff (2017) believes that Goffman was influenced by the work of Cooley (1922) and coincides well with Elias' (2000) work on shame and concludes that shame is a taboo subject in western culture.

The desire to avoid embarrassment in certain social situations was seen by Goffman as the driving force behind individual social behaviour and that may also apply to online social behaviour. Some of his work on behaviour can be applied to copresent interaction and the importance of simultaneously seeing those who are seeing us as contributors to intersubjective accord cannot be underestimated. Some commentators on Goffman's work (Schudson, 1984; Susen, 2016) have misinterpreted the contribution his work has made to sociology and have had difficulty coming to terms

with his dramaturgical and sometimes casual style of writing which has been described as cold by some, however I believe that he was a commentator on society rather than an ethnographer. Few have denied his emphasis on risk reduction strategies to avoid embarrassment and its suitability for social science research (Miller, 1996; Giddens, 2000; Scheff, 2001; Turner and Stets, 2006; Scheff, 2017).

2.6 Aims and objectives of higher education vs. Facebook

This perspective of the thesis question discusses whether the current capabilities and affordances of Facebook might meet the documented objectives of HE. An impersonal perspective was necessary to measure the congruence between the aims, objectives and requirements of HE, both pedagogic and social, and the ability of Facebook to meet them, for without this, it will have limited use in education.

This section begins with a review of the purpose of HE, standards of education, student facilities, knowledge exchange, student engagement, the student experience and legal constraints and discusses them with respect to social networking. The affordances of Facebook are compared and contrasted against established HE metrics, modified for the purpose of this work, to assess Facebook's potential contribution to meeting or furthering any of these aims.

2.6.1 The purpose of higher education

In the UK, the Dearing report (1997) defined higher education as that which takes place above Level 3, regardless of whether that education happens in a HEI or not. It identified four main purposes of HE which are discussed briefly in turn:

1. [T]o inspire and enable individuals to develop their capabilities to the highest potential levels throughout life, so that they grow intellectually, are well-equipped for work, can contribute effectively to society and achieve personal fulfilment (ibid: 72).

In order to bring about the learning society envisioned by Dearing, individual learners would need to commit themselves to lifelong learning implying that there would be the need for access to HE in one form or another for much of the population throughout their lives. The report noted that the backgrounds of learners entering HE was becoming more diverse. The Robbins report (1963) contained two objectives for developing individuals

that Dearing noted as important, imparting the skills necessary for employment and promoting the general powers of the mind. Alongside these, key skills in IT, numeracy and communication were cited as being central components of any programme of study. Self management of intellectual development and careers and effective team working were also seen as key requisites of study at HE level.

2. [T]o increase knowledge and understanding for their own sake and to foster their application to the benefit of the economy and society (The National Committee of Inquiry into Higher Education, 1997: 72).

Dearing noted that research and scholarship, whilst not the exclusive domains of HE, set HE apart from other sections of the UK education system and should underpin teaching at HE level. HE was also determined to be the home for the search for knowledge for its own sake to preserve the cause of knowledge advancement in our society. HE also needed to develop and apply research findings in technology, social sciences and humanities and become efficient at knowledge transfer.

3. [T]o serve the needs of an adaptable, sustainable, knowledge-based economy at local, regional and national levels (ibid: 72).

Globally, HE was becoming an essential player in knowledge-based economies, providing citizens with a path towards an improved quality of life. Dearing stated that HE should not be employed exclusively to produce senior managers but should also develop graduates for a range of activities. Knowledge exchange between HE and industry by virtue of research output having potential manufacturing and social applications was seen as important alongside the training of skilled researchers, although Dearing noted that there was potential to improve the collaboration between HE and industry. Whilst HEIs were playing a major role locally, their geographic scope might be extended by greater use of information technology to reach individuals physically separated from an HEI. Globally recognised research output could become a conduit for inward investment into the UK by companies based overseas. Such investment would not be confined to research but could extend to HE itself, selling education overseas either by establishing centres abroad or through collaborative arrangements, leveraging IT and CMC towards this end.

4. '[T]o play a major role in shaping a democratic, civilised, inclusive society' (ibid: 73).

In order to fulfil this last role, HE should promote common values associated with high level study, including:

- ‘a commitment to the pursuit of truth;
- a responsibility to share knowledge;
- freedom of thought and expression;
- analysing evidence rigorously and using reasoned argument to reach a conclusion;
- a willingness to listen to alternative views and judge them on their merits;
- taking account of how one's own arguments will be perceived by others;
- a commitment to consider the ethical implications of different findings or practices’ (ibid.: 79).

HE has a responsibility to share these social values with their students and to act as ‘the conscience of the nation’ (ibid: 80).

It is not just students who benefit from HE, employers benefit from a highly-qualified workforce; industry develops research output into practical revenue and citizens benefit from improved qualities of life brought about by the output of industry.

Out of the four guiding principles set out by Dearing, Facebook could facilitate remote study for those students engaged in lifelong learning, perhaps obviating the requirement for some of the physical attendance on campus. It may also help to develop some of the IT skills cited as central to programmes of study. Communication within and between teams could also benefit from effective computer mediated communications. In the same way, it is possible that knowledge transfer could be facilitated using Facebook as the communication channel between stakeholders. The reach of HE may be extended using CMC to students who do not wish to attend a UK campus in person, such as those offered by the Open University (2018) and a wholly online BSc Computer Science course to be launched in 2019 by the University of London (2018). For collaborative provision overseas, Facebook could provide informal communication channels between key staff members and between students at remote centres. Whilst Facebook alone could not share social values grounded in education, it could certainly facilitate conversation, discourse and debate between students both on and off campus. Facebook may also have affordances that could enhance and augment other aims of HE, as discussed below.

2.6.2 **Standards of education**

UK university engineering degree programmes have key competencies that successful graduates must assimilate and two common key skills are ‘effective communications’ and ‘team working’ (Male, 2010). Both of these may be enabled and enhanced using appropriate online communications (Pai et al., 2017). A study of Taiwanese university students (Jong et al., 2014) found that among classmates who had good relationships with each other, there were discussions using Facebook related to their studies, but this usage was ranked fourth out of seven motives for using the platform, behind ‘relationship maintenance, pass time [sic] and entertainment’ (ibid: 208), but warns that aspects of social connectivity and privacy ought to be carefully considered. Sánchez, Cortijo and Javed (2014) used a survey to examine student perceptions of the use of Facebook for academic purposes and discovered that students are influenced to adopt Facebook in order to maintain contact with those whom they share interests and values.

2.6.3 **Student facilities**

The facilities available to students can be divided into physical and virtual resources. Traditionally, physical spaces have housed physical objects, e.g. libraries housing books, laboratories containing scientific equipment and classrooms for groups of students and academics. Facebook has been used effectively by libraries to make contacts with students (Mack et al., 2007). In recent years, many UK universities have augmented their physical resources with virtual resources, perhaps to compensate for shortcomings in physical space and increased student numbers (Craig et al., 2009). All universities now operate a website to attract prospective students, to provide services to staff and current students and to showcase their achievements. Most UK HEIs now operate a VLE to host and organise learning resources. There may be opportunities for enhancement of student facilities such as the provision of virtual spaces, e.g. blogs and forums, for students to interact when the physical spaces are closed or otherwise unavailable. Alerts may be broadcast effectively to students using Facebook as most students check their social media several times per day (Junco, 2012).

2.6.4 **Knowledge exchange**

High quality knowledge exchange requires methods of transmission that are economic and efficient. Both physical and virtual resources can facilitate knowledge transfer, however there are economic and practical differences to each approach. Facebook offers students and academic staff the ability to communicate in the form of comments and shared objects. Generally, trials of Facebook as a learning platform rather than the VLE have not succeeded but a combination of the VLE to store and deliver resources alongside the use of Facebook for social purposes has met with success.

2.6.5 **Student engagement**

Student engagement was defined by Astin (1984: 297) as 'the amount of physical and psychological energy that the student devotes to the academic experience' and he created five tenets of engagement:

1) Engagement refers to the investment of physical and psychological energy.
2) Engagement occurs along a continuum.
3) Engagement has both quantitative and qualitative features.
4) The amount of student learning and development associated with an educational programme is directly related to the quality and quantity of student engagement in that programme.
5) The effectiveness of any educational practice is directly related to the ability of that practice to increase student engagement.

Student engagement was refined (Kuh, 2009) to be the time and effort invested by students in pedagogical activities empirically linked to positive educational outcomes. Some of the factors in engagement are involvement in the academic experience and co-curricular activities, interactions with both faculty staff and fellow students (Kuh, 2009; Pascarella and Terenzini, 2005). Junco (2012) looked for relationships between frequency of Facebook use, participation in Facebook activities and student engagement and discovered that of itself, Facebook does not detract from studies and can be used in ways that can advantage students.

2.6.6 **Legal constraints – DPA and GDPR**

In the UK, the Data Protection Act 1998, principle seven states that,

> 'Appropriate technical and organisational measures shall be taken ... against accidental loss ... of ... personal data' (Great Britain, 1998).

Universities face imposition of a fine of up to £500,000 by the Information Commissioner's Office for loss of control of student data. University data protection policy prevents student data such as results, names or other personally identifiable information from being lost. Any data entered into Facebook becomes the property of Facebook for use in its advertising and may also be shared beyond the scope of the original message. This loss of control restricts the usage of Facebook as a platform for sharing student information of every kind and may restrict sending of messages to students to inform them of a change of room. Permission must be given by a student for their photo to be used for any online purpose and their name must not accompany the picture or alternatively, if the name is used, there must not be an image of that student. Staff must be absolutely sure that they have permission to share sensitive data and be able to defend that decision. Data must not be processed outside of the EU without the consent of its owner, however Facebook operates globally. The DPA does not apply to students who are free to post whatever they wish to whomsoever they choose.

In 2018, the DPA will be replaced by the General Data Protection Regulation (ICO, 2017a) which has a wider definition of personal data than at present and universities will be held even more accountable for the data they hold. It will also raise the upper limit for data breaches from £500,000 to £20 million.

2.6.7 **Evaluation of good practice**

Seven objective measures conceived before computing became mainstream in HE were employed to discuss the capabilities and affordances of Facebook. Chickering and Gamson's (1987) good practices in undergraduate education have been used to evaluate online education (Bangert, 2004; Champion and Novicki, 2006), and Gagne's (1977) nine events of instruction have been used for digital evaluations in HE (Zhu and St. Amant, 2010; Gökdemir, Akdemir and Vural, 2013).

Each of Chickering and Gamson's seven measures were modified for the purposes of this discussion, replacing the words 'Good practice in undergraduate education' with 'Facebook'. Gagne's (1977) nine events of instruction were also modified, prefacing each event with the words, 'Facebook is capable of'. These sixteen modified measures are answered one-by-one with reference to literature, demographic information and legal frameworks. The results were used to evaluate whether Facebook has affordances that might enhance HE.

2.6.8 **Chickering and Gamson**

1. Facebook encourages contact between students and faculty. There is contradictory evidence whether students felt more comfortable approaching lecturers in the classroom after interactions with them on Facebook. Bosch (2009) discovered that staff were reluctant to accept students as Friends and students were similarly reluctant to accept lecturers. Akcaoglu and Bowman (2016) found that after using a lecturer-led Facebook group for teaching, there were negligible changes in student perception of their lecturers. Duffy (2011) found that staff who create a second Facebook account could enjoy good Facebook relationships with their students and avoid boundary conflict for themselves and their students (Bateman and Willems, 2012). Robblyer et al. (2010) examined the uses of Facebook by two groups, students and faculty staff in a snapshot study and contend that students use email and Facebook equally to communicate whereas faculty staff prefer using email, with neither group using Facebook for educational purposes, the main uses being social in nature. Staff agreed that Facebook was not for education, more so than students, however privacy did not appear to be an issue in this study.

2. Facebook develops reciprocity and cooperation among students. Facebook can be used successfully when individual users feel comfortable Friending other users and has been shown to increase cooperation between students (Madge et al., 2009; Coughlan and Perryman, 2015b; Said and Yusup, 2017).

3. Facebook encourages active learning. Facebook has been used by lecturers to store and disseminate learning resources (Schroeder and Greenbowe, 2009; Wang et al., 2012). Private study groups have had success for students learning a foreign language (Ooi and Loh, 2010; Hu, 2014).

4. Facebook gives prompt feedback. Feedback can be given to students in the form of short messages or using conferencing tools, although the DPA (1998) precludes its use for this purpose in the UK to distribute personally identifiable information. Any promptness would ultimately depend on the response of the lecturer (Albayrak and Yildirim, 2015).

5. Facebook emphasizes time on task. Learning is related to the time spent studying (Carini, Kuh and Klein, 2006) and discussions held on Facebook have engaged students with their learning outside of the classroom (Wise, Skues and Williams, 2011; Pai et al., 2017).

6. Facebook communicates high expectations. Facebook may convey messages exhorting students to excel in their learning within the provisions of the DPA (1998), however it may serve the opposite purpose as it has no requirement for formal rigour. Posts and comments do not need to be written academically and are usually written informally rather than in academic terms (Madge et al., 2009; Melton, Miller and Salmona, 2017). The Golem effect (Babad, Inbar and Rosenthal, 1982), where low expectations placed upon individuals leads to poorer individual performance, may reduce student attention to grammar and spelling. Rosenthal and Jacobson (1968) claimed that when teachers have high expectations of their students, they will treat them in a nicer manner, teach them more material, give them more opportunities to respond and help formulation of the answer and offer more praise and constructive feedback. Facebook does not favour any of its users by only talking to one user. There are no users 'at the back of the classroom'; every user receives information at the same 'distance' from their screen. Arriving posts are displayed at the same time and 'volume' for every user. Facebook does not favour users over each other; it is not possible to interrupt a post; they are already complete before becoming visible to other users. Everybody has a fair share of the social network, however the News Feed algorithm may distribute messages unevenly amongst users, see the following section.

7. Facebook respects diverse talents and ways of learning. Respect is not a term normally applied to an information database, however the huge range of topics posted on Facebook indicates that Facebook has the ability to store and distribute many diverse views, however ways of learning are constrained by the data types that Facebook can disseminate, text, pictures and videos (Wang et al., 2012), but the News Feed algorithm

(Facebook, 2016a; 2014a; 2013) hides items that it deems unattractive to particular users and promotes others depending on their profile information and whether users have interacted with similar items, so this may prove troublesome in practice.

Users who have embedded Facebook in their daily activities may develop ways of using Facebook to support their studies that are unorthodox but Facebook would not frown on this usage or forbid it. It is a platform for free social development and exploration.

2.6.9 Gagne's Nine Events of Instruction

1. Facebook is capable of gaining attention. Facebook has the ability to do this well with 87% of all active users logging in daily (Facebook, 2017). In Jong et al's study (2014), 65% of the participants believed that Facebook was better than their e-learning platform for transmitting information such as announcements as nearly half of 18-34 year olds check Facebook when they wake up (Pring, 2012) and a mean of 5.75 times during the day (Junco, 2012).

2. Facebook is capable of informing learners of the objective. Facebook may be used to store and transmit lecturer-prepared materials and resources but the resource types are limited (Wang et al., 2012) and Facebook's News Feed algorithm may interfere with the visibility of these resources (Meishar-Tal, Kurtz and Pieterse, 2012).

3. Facebook is capable of stimulating recall of prior learning. Facebook could transmit lecturer-prepared questions but there is no way of assessing the responses automatically. A post by a lecturer to elicit comments from a class may operate in a seminar or group discussion context but currently no evidence supports this.

4. Facebook is capable of presenting the stimulus. Facebook has several limitations; a wiki cannot be created, group notifications cannot be created and material cannot easily be deleted (Bosch, 2009). Facebook may be able to store and disseminate video or other learning resources created by a lecturer, provided that the stimulus only involved simplex transmission of text, pictures, sound and video or links to external websites or VLEs but the News Feed algorithm may interfere with users trying to find resources.

5. Facebook is capable of providing learning guidance. Facebook could support discussions of complex concepts but typed dialogue exchange takes around ten times longer to compose than speech, reducing the rate of information transfer. It could supply short messages to students but lecturers in the UK would need to avoid DPA (1998) issues. Reading and responding to posts has been shown to help students learn another language (Ooi and Loh, 2010; Hu, 2014) in the form of a time-delayed conversation in a similar manner to correspondence chess. Human intervention would be required to provide formal feedback to student work and this might involve staff being included in a student's Facebook activities but in student groups, peer feedback is common (Ventura and Quero, 2013; Petrovic et al., 2014).

6. Facebook is capable of eliciting performance. Students may feel more comfortable replying to a post online than speaking in class (Bosch, 2009). This may benefit the student who feels reluctant to participate in physical group settings and gives all members of a learning group the same opportunities and tools to perform.

7. Facebook is capable of providing feedback. The DPA (1998) prevents detailed individual feedback containing personally identifiable information from being posted by faculty staff, but there is no restriction on students providing support to their peers. Staff can communicate with students more quickly using Facebook rather than email (Karl and Peluchette, 2011).

8. Facebook is capable of assessing performance. Students could post work to Facebook, however the VLE that universities maintain is a secure method of storing student work and avoids the danger of plagiarism of work that is made public to a group of students. There are no available mechanisms within Facebook to assess submitted posts.

9. Facebook is capable of enhancing retention and transfer. It is unlikely that Facebook could enhance the retention and transfer of knowledge in itself, but could host resources crafted for that purpose. The News Feed algorithm may be a troublesome issue for users when trying to find these resources.

2.6.10 **Section conclusion**

The Dearing report (1997) laid the foundations for the system of higher education in place in the UK today. Communication of discourse could be facilitated by Facebook as well as facilitating conversations between students, no matter where they are located. Standards of education may be enhanced by improving the key skills of 'effective communications' and 'team working' (Jong et al., 2014; Pai et al., 2017) although consideration must be given to gaining trust of those that they need to connect with (Sánchez, Cortijo and Javed, 2014). Student social spaces have been enhanced using Facebook dialogue to continue discussions after class (Bosch, 2009) and allow discussions between students when they are away from the campus (Roblyer et al., 2010; Wise, Skues and Williams, 2011; Pai et al., 2017). Libraries have used Facebook to increase communication with students (Mack et al., 2007). Facebook may be used by lecturers to share learning resources (Schroeder and Greenbowe, 2009; Wang et al., 2012) and within student groups (Kent and Leaver, 2014; Gardner, 2014). Junco (2012) reported increased Facebook use also increased student engagement that did not detract from their studies. Increased student engagement has increased retention (Yorke and Longden, 2008). Student staff interactions have suffered due to mutual reluctance to Friend each other (Bosch, 2009), however staff who have created two Facebook accounts avoided boundary conflicts in their student interactions (Duffy, 2011; Bateman and Willems, 2012). Facebook has improved reciprocity and cooperation among students (Madge et al., 2009; Coughlan and Perryman, 2015b; Said and Yusup, 2017). Private study groups have worked well in learning a foreign language (Ooi and Loh, 2010; Hu, 2014). Prompt feedback depends on the speed of the lecturer (Albayrak and Yildirim, 2015) but it could be used to disseminate messages to students. Facebook allows students to stay in contact outside of the classroom and during holidays, an important source of social support (Wise, Skues and Williams, 2011; Pai et al., 2017). Facebook offers all students the same virtual environment, does not favour any user over another and the same opportunity to respond and receive feedback. The casual nature of Facebook postings (Madge et al., 2009) may reduce student attention to spelling and grammar according to the Golem effect (Babad, Inbar and Rosenthal, 1982). Facebook hosts a huge range of topics posted by its two billion plus users and may increase diversity in learning but the News Feed algorithm (Facebook, 2016a; 2014a; 2013) may make resources hard to find.

Students and staff have found Facebook useful for transmitting short notices such as announcements (Bosch, 2009; Jong et al., 2014). Time taken to type information limits its usefulness for long exchanges where detailed instructions are necessary but the extra time may allow for better care in composing messages. Students who might feel reluctant to speak in class have used Facebook to contact lecturers after class and do so without inhibition (Bosch, 2009).

Limitations in the data types supported by Facebook and the News Feed algorithm make the platform less useful than a VLE for storing and sharing resources to students. A VLE is also more suited to the submission of student work as it does not share submissions with other students and stores the work securely. Facebook is unlikely to enhance knowledge retention and transfer.

In the United Kingdom, all academic uses for Facebook must comply with the Data Protection Act (1998) which expressly forbids the loss of personal data. Any use of Facebook by staff must not reveal any personally identifiable information about students. Facebook posts are processed outside of the EU and if the owner of the data does not provide consent, this would constitute a breach of the DPA. The General Data Protection Regulation (ICO, 2017a) has a wider definition of personal data than at present and will raise the upper limit for data breaches from £500,000 to £20 million. Closed student groups are not affected by the DPA.

Overall, Facebook has the ability to strengthen student-to-student bonding (Kuh, 2009; Pascarella and Terenzini, 2005) but privacy concerns, legal constraints and social issues preclude many other uses of Facebook in HE.

2.7 RQ1 - Student acceptance of digital learning

The purpose of the first research question was to explore factors that may deter students from participating in learning through their social media accounts. Empirical knowledge of student attitudes towards learning and their use of digital and social media will inform the answer.

This section examines preferences for learning from the perspective of the student and examines contextual factors related to social presence that may prevent students from

engaging in social media activities both inside and outside of class. It proposes questions that may provide answers to shed light on the online activities of students in order to discover factors other than privacy management issues that may hinder student participation. It develops hypotheses and variables that may be obtained by the observation of students. Methods of answering the hypotheses are described with a description of the measurements required to provide data.

2.7.1 **Familiarity with digital systems**

In *A Declaration of the Independence of Cyberspace* (1996), Barlow states, 'You are terrified of your own children, since they are natives in a world where you will always be immigrants'. He used the terms *natives* and *immigrants* to differentiate between those who had grown up alongside technology and those who learned its use as adults. This distinction was later used by Prensky (2001a; 2001b) to describe those at ease in a digital environment and those who manage to exist but in his opinion will never be fully competent. Holton (2010) points out that Prensky did not provide evidence for the divide between users of IT and this was confirmed by Kennedy et al (2008) whose empirical evidence showed that while there were differences between the two user groups, the digital divide was not as large as Prensky had expected. Bennett et al (2008: 780) noted that 'there is as much variation within the digital native generation as between the generations' and warned that that those students who do not possess access and technology skills, particularly those from lower socio-economic backgrounds, may be neglected in assuming, incorrectly, that they have greater technological skills than their elders. Prensky himself (2009) later pointed out that the distinction was becoming 'less relevant'. White and Le Cornu (2011) proposed a paradigm represented by a continuum between *Visitors* and *Residents* and the metaphor of *place* to replace the polarised native versus immigrant distinction. They pointed out that, as for every discipline, there will be those who develop skills with ease whilst others, regardless of their age, will struggle to acquire these skills. For White and Le Cornu, Visitors use the Internet as a tool, just as equally as a book or pen and paper, whereas Residents live some proportion of their lives online and have created online personas on social media platforms where they spend time, form relationships and state their opinions. As a continuum, individual users can place themselves anywhere between these two limits.

From the Visitors and Residents paradigm, it may be said that that those who possess social media accounts are some way along the continuum, closer to being Residents than Visitors.

2.7.2 **Presence and communication**

Sheridan (1992) used the term presence, from the original *telepresence* (Minsky, 1980), to include the effect that individuals experience when interacting with virtual environments. Ditton (1997) proposed that the greater the number of human senses that a medium could convey, the greater sense of presence is felt by the receiver. The concept of copresence was originally a reference to conditions within which human beings interacted with other individuals face-to-face and body-to-body and simultaneously sensed that the others present could perceive them (Mead, 1934; Cooley, 1956; Goffman, 1963). Rettie (2003) observed that there were two strands of presence research, as properties of the medium itself and also the effect upon those involved in mediated communication. Zhao attempted to reconcile these strands by proposing that copresence consisted of the mode of communication and individual 'perceptions and feelings [that] constitute the sense of copresence' (2003: 446). Wirth et al. (2007) proposed a two-stage model for the experience of presence where users of a medium employ spatial cues to define the virtual environment as plausible and then the user must experience their location as within that perceived place. Bulu (2012) grouped presence in the literature as consisting of three categories, presence as telepresence, in the physical sense of being there (Sheridan, 1992; Slater, 1999), social presence as 'the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships' (Short, Williams and Christie, 1976: 65) and copresence which addresses the psychological aspects of being together (Nowak, 2001; Bulu, 2012).

Prior to and during the research period, Facebook did not feature live audio-visual communications nor could it convey any sense of 'being there' other than user texts, images and videos (Wirth et al., 2007). This research examines two facets of Bulu's taxonomy, social presence and copresence, rather than aspects of telepresence, and how copresence depends upon social presence for human emotions to play a part in online behaviours.

2.7.3 **Social presence**

Social presence theory (Short, Williams and Christie, 1976) is an attempt to explain how different communication media impact upon those using it to communicate. The original work was focussed around telephony and what was missing from the communication process as compared to face-to-face communication, but the authors recognised that any available communication medium could transmit more or less information about each participant to the other participant(s), consequently 'these variations are important in determining the way individuals interact' (ibid: 65). The levels of social presence could be compared using a scale with textual communication conveying the least amount of information about the author to the reader to corporeal copresent communication conveying the maximum information, over and above the words themselves (Martinez et al., 2016). This extra information is in the form of facial expressions and nonverbal cues and is closely related to Goffman's given-off signals (1959: 14) which are able to convey the extent to which a communicant perceives the other as 'real' (Gunawardena and Zittle, 1997). As the social presence of a communication medium increases, the potential for interaction using that medium also increases (Tu and McIsaac, 2002).

2.7.4 **Media richness**

Media richness theory (MRT) (Daft and Lengel, 1986) is a framework that can be employed to describe the ability of a medium to convey the information from the origin to those receiving that information and bring about a shared understanding in a given time period (Daft and Lengel, 1984). It originated to help avoid ambiguity in the interpretation of messages (Dennis and Valacich, 1999). MRT has been used in the design of online courses in higher education to address issues relating to remote reception of resources (Bagley and Olsen, 2016; Shepherd and Martz, 2006). MRT was focused upon the efficiency of the communication channel to carry information rather than the social presence that the medium can convey (Oztok and Brett, 2011). For this reason, this work employs social presence theory to classify learning methods.

2.7.5 **Theoretical framework**

There are many factors that a student would need to take into account when making the decision whether or not to include their university in their social networking activities. It may be difficult to persuade students to use an online delivery system if their preference for learning methods were for face-to-face methods rather than digital methods.

An important factor was the type of learning that students preferred should Facebook learning be widely implemented; would such an online method be in tune with student preferences for learning? There are many methods of teaching used in HE, and student preferences for each could be assessed.

The post-1992 university in this study employed the following methods for instruction. Goffman's (1959) description of levels of copresence as they relate to given and given-off signals was used to divide the available teaching methods into two distinct groups, those involving corporeal copresence and those involving remote study. They might also be characterised by being analogue or digital in nature.

Attending lectures	Copresent	Analogue
One-to-one or small group tutorials	Copresent	Analogue
Practical work	Copresent	Analogue
Attending seminars	Copresent	Analogue
Informative videos	Remote	Digital
Group work	Copresent	Analogue
Reading a book	Remote	Analogue
Reading on screen	Remote	Digital
Audio books and informative MP3s	Remote	Digital

This raised two questions. Do students prefer copresent learning or remote learning styles? Is the choice of learning style gender related? Two hypotheses were formulated. The theme behind these hypotheses is, if students express a preference for remote learning methods it may be easier to persuade them to participate in Facebook activities related to their studies.

H1. There is no difference in student preference for copresent learning and their preference for remote learning.
H2. There is no difference in student gender preference for copresent learning and their preference for remote learning.

Factors such as gender and home location may affect the time students spend online therefore some knowledge of impacting factors could help to discover whether certain demographic groups should be treated differently. Is time spent online affected by either term-time location or gender? Two hypotheses were formulated. The theme behind these hypotheses is, if home location or gender decrease time spent online, it may be more difficult to persuade these groups to use Facebook for study purposes.

H3. There is no difference between the time spent online between students living at home and students living away from home.
H4. There is no difference between the time spent online between male students and female students.

2.7.6 **Section conclusion**

Intersubjective accord is naturally established during copresent interactions (Scheff, 1967; Goffman, 1969; Goffman, 1959; Collins, 2014). Digital and solo activities do not involve interpretation of the given-off signals that occur during copresent interaction. It may be expected that students will choose copresent learning methods over remote learning methods as there are greater opportunities to establish intersubjective accord between teacher and learner which may lead to increased learning and these are explored in H1 and H2. Length of time that students spend online may be related to an individual decision whether to use Facebook for study. H3 and H4 establish whether this is impacted by home location and gender.

Answers to the hypotheses may indicate whether the communication affordances of Facebook would be acceptable to learners. The effects of gender and term time location on time spent online may be uncovered. Preferred methods of learning could also be discerned. Should current student online activities and learning preferences coincide, Facebook may be accepted readily by students for learning, unless there are other

factors at play. Two possible factors are explored in the second and third research questions.

2.8 RQ2 - Ease of embarrassment and sharing

The purpose of the second research question is to discover whether the fear of potential embarrassment brought about by the disclosure of digital objects to particular others is one of the factors that may prevent a student from sharing data. This question examines the embarrassment that occurs when self-presentation across differing audiences has, or is perceived to have, allowed access to a *faux pas* or other sensitive personal detail on Facebook. Although Facebook has multiple privacy settings, they may be insufficiently granular to include or exclude every personal network member.

This section begins with a discussion of how emotions drive behaviour. The role of embarrassment in regulating social behaviour and how embarrassment thresholds develop during life are discussed before a discussion of averting embarrassment on and offline. Audience segregation and strategies for avoiding embarrassment are explored. Lastly, the theoretical framework necessary to answer this question is justified and hypotheses are presented.

2.8.1 Emotions as the drivers of behaviour

Plutchick (2003) observed over twenty different taxonomies for emotions in the English language, but scarcely any agreement as to their names or the number of basic emotions. Freud believed that human conduct was based on emotions and that the self was driven by the desire for pleasure, the body dictating its behaviour to the self and this agreed well with the Catholic conceptions of the body and bodily practices at the time (Vitz, 1988). Goffman disagreed with the Western idea of the self as an isolated unit. Goffman's individual was driven by the desire not to become embarrassed during social interaction and therefore whenever faced with a choice that might impact the social equilibrium would choose a behaviour that minimised the risk of embarrassment, discussed in section 2.8.5.

2.8.2 **Balance in social relationships**

Schudson points out that 'embarrassment is a profoundly important feature of human motivation and social structure' (1984: 646). When frequenting a social group or institution, an individual may adopt a persona that is appropriate for the time of interaction and one intended to maintain the equilibrium of the group. When an individual only partially acts out the values of the institution or social group, this puts the individual into an unstable social equilibrium with that group which at any time could collapse with a *faux pas*, leading to embarrassment (Goffman, 1956; 1959). Equilibrium is maintained by establishing intersubjective accord between participants, correctly judging the values of those present in daily and lived social interactions to inform appropriate contextual behaviour. In a given social setting, individuals sense the sort of conduct that ought to be maintained to remain commensurate with that of a particular stable social group, however if the group is enlarged artificially, say by Friending a parent or significant other in a SNS, current or past online conduct of an individual, as evidenced by digital objects, may become incommensurate with the new member(s) of the group.

It is therefore reasonable to assume that lower levels of intersubjective accord between those involved in an interaction, caused by misunderstandings of the expected norms, may result in a higher number of instances of embarrassment.

2.8.3 **Embarrassment threshold development**

If embarrassment is indeed grounded in intersubjectivity, then as the young are taught the values of their social group during childhood, they become aware, over time, of the behaviours, attitudes and appearances that are appropriate to their society (Zlatev, 2013), and an individual's embarrassment threshold begins development around the time of puberty (Youniss and Smollar, 1985) and then rises with experience and initiation in parallel with their developing sense of intersubjectivity in online activities (Wang et al., 2012; Al-Saggaf and Nielsen, 2014).

Piaget (1972a; 1972b) wrote that somewhere between the age of 11 and 20, adolescents enter the formal operational stage where thinking involves hypothetical situations and deductive reasoning. He believed that mental development was driven by a process

called equilibration (Piaget, 1975) which involved both assimilation, where individuals compare incoming information with their existing schemas, and accommodation, where thought and existing schemas are adapted to that incoming information. An inability to assimilate a social context and produce a suitable accommodation has the ability to cause behavioural incongruencies with consequent embarrassing consequences. During the formal operational stage, adolescents develop the ability to anticipate possible consequences of their actions, arrived at through inferential reasoning.

Freud (1900) recognised embarrassment as an everyday mental disorder and classified it under shame. Freud envisaged embarrassment as a social anxiety (Spero, 1984) and described its origin as a conflict between the individual's desired inner image (Akhtar, 2009) and its current perceived image, where the super-ego takes on a critical, self moralising role (Freud, 1959). The super-ego is then a representation of the internalisation of society's rules, instilled mostly by parental guidance (Schacter, 2009), which strives for perfection, which would result in gratification for the individual (Meyers, 2007). In *Mourning and melancholia* (1924a), Freud developed a line of thinking that would later be called 'object relations theory' (Ogden, 2002). Klein (2002) agreed with Freud that parental figures played a significant role in later life, but disagreed on the timing of the Oedipus complex (Freud, 1924b) and that the super-ego exists at birth (Britton, Feldman and O'Shaughnessy, 1989). Her object relations theory (Klein and Strachey, 1997; Klein, 2002) theorised that infants internalise their relationships with their carers, seeing both the carer and the relationship as separate objects. The infant internalises the object relations as projections of the self, the object and the linking emotion. These objects are then taxonomised by the infant into 'good' objects and 'bad' objects. Klein believed that these influences carry on throughout life, sometimes resulting in personality disorders as a result of a malformed inner object world. It is these object relations formed early in life that can shape the way that individuals relate to other individuals and social contexts later in life. It may be the differing conditions of upbringing between individuals that results in different embarrassment thresholds in later life.

Foucault (1978) described the power that causes individuals to conform socially as biopower, originating from the discourses and everyday norms present in social interactions, see section 2.5.1. One of the mechanisms of biopower is to instil in each

individual an illusion of normality, against which the individual may compare themselves, producing an appropriate emotional response.

A social group within which an individual functions will, as the individual matures, inculcate the individual into their society and teach the socially valued attributes that provide the *sui generis* of the group itself, for without social education of its young, the group will age and die, taking its values along with their death (Dewey, 1916) and the children become Wolff's (2001: 178) 'idiots'. As a child matures, its behaviour is moulded by the significant members of its social group in a process known as acculturation. As Gross and Stone (1964: 7) stated 'part of the process of socialization consists of indications of the importance of boundaries'. For instance a young child will need to be made aware that staring at strangers is not an acceptable behaviour in public; instead they should be treated with civil inattention (Goffman, 1963). One by one, as the values of a social group are taught to its children and they learn their boundaries, the occurrences of accidental deviations in behaviour from those which that society values will become less frequent.

In copresent public situations where embarrassment is likely, social proof shown by ice-breakers can invoke less willing others with higher embarrassment thresholds to participate, according to the honeypot effect (Wouters et al., 2016). With Facebook, the process of acculturation is not straightforward. The relatively recent arrival of SNSs means that we have no parental figure to provide social network education so we learn our behaviour on the fly and by copying the actions of others.

2.8.4 **Audience segregation**

Embarrassment may arise when the version of the self presented in a particular social context is incompatible with the required version (Goffman, 1967; Deterding, 2017). It may be possible to tell risqué jokes to close friends, but not to older relatives without causing a social *faux pas*. Individuals play different roles in their lives but the audience toward whom one particular role must be presented is often different to the audience before whom a different role should be presented, Goffman notes that:

> When audience segregation fails and an outsider happens upon a performance that was not meant for him, difficult problems in impression management arise (1959: 138).

Difficulties with audience segregation were also discussed by Donath and boyd (2004). Audience segregation ensures that individuals are saved from role dilemma by separating those audiences physically or logically. Disclosure boundary control can avoid the outcomes of disclosure boundary management failure. When audience segregation fails, individuals may confront each other with roles different to the ones that would be expected and embarrassment may occur. Multiple social realities occurring in the same location can become problematical if two groups of individuals have defined different sets of behaviour in the identical context (Marwick and boyd, 2010). An example (Goffman, 1963: 20) is of maintenance workers in a library who are unlikely to behave quietly, may wear 'profane clothing' and talk loudly in contrast to the usual conduct expected of readers in a library of hushed and private study which is not merely 'different roles in the same occasion, for no single main activity may be accorded precedence'.

2.8.5 **Embarrassment avoidance strategies**

Embarrassment arises only when we are in the company of others. It is not a solo emotion, like shame and guilt (Tangney et al., 1996). In isolation or total privacy, embarrassment does not occur. As privacy is lowered and the number of others in an audience increases, the opportunity for embarrassment will increase. The potential for embarrassment increases as intersubjective accord and privacy decrease.

A common method of preventing embarrassment is avoiding putting oneself in a situation that may cause it (Goffman, 1967: 15) using a set of strategies designed to minimise the probability of embarrassment or to mitigate the embarrassment itself. Studies on consumer reactions to brands found that embarrassment felt towards a particular brand by a customer was likely to result in remedial actions such as concealment or removal of brand logos to avoid potential embarrassment (Grant and Walsh, 2009; Romani, Grappi and Dalli, 2011).

It is the responsibility of Facebook users to manage their own privacy settings (Külcü and Henkoğlu, 2014). Once an embarrassing event has been committed to Facebook, the event cannot easily be deleted,

> When you choose to delete something you shared on Facebook, we remove it from the site. Some of this information is permanently deleted from our servers; however, some things can only be deleted when you permanently delete your account (Facebook, 2017b).

Faced with such vague advice, users often resort to preventative measures to avoid the digital stigma of a spoiled identity (Trottier, 2014) and instead of relying on the security settings they develop their own strategies to avoid the embarrassment of disclosing personal data (Liu et al., 2017).

> [I]f I have a teacher in my friends list, for example, I am thinking twice before I post something, like do I want him/her to see these pictures of me or it would be better to avoid that situation (in Szűcs 2016).

Tactics such as not Friending a parent, teacher or significant other could potentially avoid future embarrassment yet may become the cause of tensions in both the individual and the other by the very action of not Friending when the decision not to Friend is learned by that other.

Many studies discuss embarrassment felt by the individual as a result of file or information disclosure by others (Solove and Citron, 2017). Xigen and Nergadze (2009) found that the fear of externally imposed embarrassment deterred individuals from illegal online file sharing. The fear of being observed, with the potential embarrassment of being discovered sharing illegal files has been used by the music industry to deter piracy (Depoorter and Van Hiel, 2015).

It is possible that student behaviour on Facebook is driven by risk reductive strategies for the reasons described above, however the future anticipation of potential embarrassment may play a part in the actions of individuals for whom embarrassment avoidance is critical to maintain certain aspects of their social lives. Little literature exists addressing the individual and the role that internally imposed embarrassment plays in the decision on whether or not to share a file.

2.8.6 **Theoretical framework**

Goffman stated that to achieve ‘full conditions of *copresence*…persons must sense that they are close enough to be perceived…and close enough to be perceived in this sensing of being perceived’ [italics in original] (1963: 17). Section 2.4 describes some

of the information that is not carried by CMC by virtue of both its inability to capture this information and also the inability of CMC to temporally mimic face-to-face interaction. The lack of information merely weakens these 'conditions of copresence', rather than removing them entirely. 'Information about the individual helps to define the situation' (Goffman, 1959: 13) so it follows that a less-than-complete definition of the situation is achieved when communicating via CMC. The implication here is that individual behaviours which depend upon a full understanding of 'the situation' will suffer to some extent. It is possible that this magnifies embarrassment avoidance in the individual as the produced behaviour has to take account of more unknown variables when judging 'the situation', increasing the possible risk of social infractions, thereby producing more conservative behaviours. In this respect, it seems unlikely that CMC represents a challenge to Goffman's model.

Strategies for avoiding embarrassment in the individual can be varied in many situations, however when presented with a straightforward binary choice between taking an action and not taking an action that might have embarrassing consequences, the strategy that avoids embarrassment can be measured and compared against individual propensity for embarrassment, bringing the microsocial into the macrosocial.

Goffman's (1956; 1959) theoretical framework for embarrassment avoidance is used to gain an answer to this question. If students do not use or trust the Facebook security settings to coordinate and manage their privacy boundaries, they may simply refuse to share Facebook objects, the easiest manner to avoid embarrassment (Miller, 1996), and in that way avoid the embarrassment stressor. Ease of embarrassment felt by students may predict the number of Facebook items and objects shared. Students who describe themselves as becoming embarrassed easily may share fewer items on Facebook as compared to those who do not and observations of student emotions and activities may reveal this pattern of behaviour and this formed the basis for two hypotheses. The theme behind these hypotheses is, if students do not have feelings of embarrassment, they will participate more fully in study by sharing ideas and objects using Facebook and this may be gender dependent.

> H5. There is no relation between student self-reported ease of embarrassment and the number of Facebook items they share.

H6. There is no relationship between genders for student self-reported ease of embarrassment and the number of Facebook items they share.

2.8.7 Section conclusion

The conclusion is that this type of embarrassment is not located in the individual but in the individual's adherence to the social system in which are located multiple selves (Goffman, 1956). Copresent role dilemmas may be avoided by proper physical audience segregation. Online role dilemmas can be avoided by using bespoke Facebook privacy settings to manage disclosure boundaries but this view is not widely shared among Facebook users due to the difficulty in coordinating these settings with appropriate audience segregation for each and every post. The simplest and safest tactic for users concerned about the potential audience for their posts is not to post or share items that they would not want those others to see. It is the avoidance of potential embarrassment that is the focus of this particular research question and a comparison of embarrassment among students against their online sharing actions may provide some answers.

2.9 RQ3 - Student disclosure boundaries

The purpose of the third research question was to discover whether students have different disclosure boundaries when sharing information with their personal networks and on Facebook. This question examines the private information of students and their personal and collective disclosure boundaries using social penetration theory (SPT), communication privacy management (CPM) and the concept of intersubjectivity in order to describe and explore the factors involved in privacy boundary management.

This section presents social penetration theory, communication privacy management and justifies their application to individual privacy boundary management then explores student personal networks. The role of symbolism in individual interactions is discussed with reference to intersubjectivity, SPT and CPM then applied to Facebook in order to explore student disclosure boundaries. Lastly, the theoretical framework necessary to answer this question is proposed and hypotheses are developed. Methods of answering the hypotheses are described with description of the measurements required to provide data.

2.9.1 **Social penetration theory**

Social penetration theory was created Altman and Taylor in 1973 to describe the role that disclosure of information plays in the development of relationships with special focus upon the increase of intimacy that is achieved alongside increasing self-disclosure, and describes the associated costs and rewards of disclosure of personally private information (Carpenter and Greene, 2015). SPT is a positivist and objective theory, suggesting that a single truth exists to explain the development of human relationships and is grounded in empirical research. SPT suggests that when individuals build relationships, the nature of information exchanged becomes more personal as the depth of the relationship increases (Altman and Taylor, 1973) and self disclosure is a result of an inner cost-benefit analysis (Pennington, 2008). Costs may outweigh greater vulnerability and benefits may include the perception of being liked by others or reciprocal disclosures. Behaviour, cognition and emotion are three aspects of self-disclosure (Sprecher, Wenzel and Harvey, 2008). Self-disclosure is the unforced release of information, such as feelings, fears and experiences, and can promote the depth and breadth of relationships.

SPT has been applied to the study of self-disclosure on Facebook (Krasnova et al., 2010; Park, Jin and Jin, 2011) and a significant relationship was found a between the intensity of self-disclosure, the predictability of another's behaviour and the level of trust felt toward that other individual (Sheldon, 2009). Krasnova et al. discovered that information disclosure was motivated by positive relationship development but perceptions of risk could be mitigated by the trust of the social network system and the ability to control privacy. In a study of blogs, Tang and Wang (2012) discovered that users disclosed differently across three personal social networks consisting of parents, best friends and an online audience, disclosing the most in the physical presence of their best friend followed by copresent disclosure to their parents and least to an online audience in both depth and breadth. This agrees with Griffin's (2012) assertion that environment is a factor in social penetration.

Individuals may be thought to maintain a shielding set of psychosocial layers around their true self. The outer layers are information about the individual that are readily available and the stripping away of layers progressively reveals more intimate details. The more intimate a relationship, the more layers are stripped away and the true self is

gradually approached. This suggests that as a relationship develops the level of intersubjective accord between individuals increases.

The SPT model assumes that personal information can be categorised as being positioned somewhere on a spectrum between public and private. The analogy of the onion has the most accessible information residing at the outer layer such as name and other biographical data and the most private information, the concept of self, residing at the core. Comfortable interpersonal dialogue takes place between individuals layer to layer when neither reveals nor probes more private layers. Complete strangers discuss the obvious, the outer public manifestations of themselves.

2.9.2 **Communication privacy management**

Communication privacy management (CPM) theory offers a framework to 'understand the tension between revealing and concealing private information' (Petronio, 2007: 218). CPM examines how individuals make decisions whether to disclose private information to others and suggests that metaphorical privacy boundaries are maintained and coordinated between individuals to define the borders of what they are prepared to share. These boundaries are defined by how an individual perceives costs and benefits of disclosing information (Petronio, 2002). Disclosure has been defined as 'telling of the previously unknown so that it becomes shared knowledge' (Joinson and Paine, 2007: 237).

Individuals have differing concerns for their privacy 'based on that person's own perceptions and values' (ibid: 244). Each individual has information that they will either share or not share. This is private information and when it has not been shared it is known as personally private information. CPM theory uses the metaphor of boundary to demarcate private and public information. If private information is shared with another, the boundary around the information becomes known as a collective boundary and the information becomes co-owned. Boundaries can be rigid or unclear, thick or thin. CPM views information and boundaries as belonging to each individual who has the ability to make a decision whether to disclose or not. When information is shared, the boundaries spread.

The rules used to determine privacy boundaries vary between individuals are defined by three processes. The first is privacy rule characteristics which describes the nature of the privacy rules. The second is boundary coordination and describes how people manage private information that is co-owned and the third is boundary turbulence which describes conflicts concerning boundary expectations and regulation (West and Turner, 2007).

Privacy rule development is based on five characteristics. Cultural criteria are the privacy norms for a particular society. Gendered criteria allows for the differences that may exist between men and women for disclosure. Motivational criteria are the motives that people may have for disclosure. Contextual criteria describe the physical and social environment and its effect on whether to disclose. Risk-benefit ratio criteria describe the risk evaluation that is made between disclosure or retaining information that is personally private.

Boundary coordination occurs after private information has been shared. Co-owners need to coordinate the privacy boundary according to boundary permeability, boundary linkage, and boundary ownership (Petronio and Durham, 2008). Boundary permeability is based on the probability that private information may leak through collective boundaries when information is co-owned and this risk must be considered when deciding whether to share.

CPM theory makes the assumption that student motivation to control access to and sharing of their private information on Facebook is grounded in the belief that they are the owners of that information which provides the justification for regulation of access, sharing and use of that information (Petronio, 2002; 2013). CPM terminology has been employed to frame the boundary coordination decisions made by students when choosing whether or not to share an object with their personal networks.

2.9.3 **Intersubjectivity**

Husserl's work was concerned with the search for an apodictic grounding for knowledge of the world and was inspired by Descartes' quest for first philosophy (Levinas, 2001). Husserl bracketed the Cartesian existence of the natural world and for him, what remained was a world that is perceived, rather than existing *per se* (Husserl,

2012 [1932]). This led to his definition of the transcendental *ego*, where his consciousness was the condition for the possibility of being able to experience the natural world where 'consciousness is no longer viewed as a part of a worldly 'whole'; instead, it is viewed as a 'whole' of which the world is part' (Matheson, 2006: 71). Having arrived at a phenomenological solution to first philosophy, he was faced with explaining how a world that was both shared and objective could exist if his own transcendental *ego* was the source of every sensation and idea. Husserl defined the sphere of ownness by bracketing everything alien, such as ego-like living beings and phenomena referring to other individuals. What remained in his sphere of ownness was 'the '*Nature' included in my ownness*' (Husserl, 2012 [1931]) [italics in original]. The sphere of ownness included his physical body, his thoughts and the objects of his thoughts. Husserl reasoned that when he meets another individual within his sphere of ownness, he has no experience of consciousness in the other, for if he did, 'it would be merely a moment of my own essence, and ultimately he himself and I myself would be the same' (ibid: 109). The consciousness of the other is an *alter ego* and Husserl wished to define how the *ego* experienced the *alter ego*. He introduced the idea of apperceptive transfer, where the *ego* transfers a sense or meaning already owned to an external object, motivated by a similarity between the body of the other and the body of the *ego* with the result that the other body is sensed as being animate. A mechanism that Husserl termed *Paarung* underlies apperceptive transfer and produces a unity of similarity between the *ego* and the *alter ego* (De Preester, 2008). The *alter ego* is accorded the same nature as that of the *ego* so can perceive the world around itself by way of possessing identical Nature to the ego, producing the objective world between the two spheres of ownness (Cerisano, 2011).

The consequence of the according same essence of being to the other is to allow that other to possess an identical Nature and the ability to perceive others in the same way as the *ego*. Husserl belived that when the *ego* both perceives and is perceived by the other that his position in the world is no longer subjective and that he is just a part of that world. He called this transcendental intersubjectivity although this was later criticised because his starting point of the transcendental ego could only ever perceive the other as an alter ego (Satre, 1943; Schutz, 1962). Regardless of the solubility of this impasse, intersubjectivity 'makes possible the awareness of the presence of others even before communication occurs' (Duranti, 2010: 10).

Husserl viewed intersubjectivity as an existential condition from which shared understandings between individuals may be achieved rather than the shared understanding itself, as indicated by his description of Nature.

> Nature is an intersubjective reality and a reality not just for me and my companions of the moment but for us and for everyone who can come to a mutual understanding with us about things and about other people. (Husserl, 1989: 91)

Following Husserl's death in 1938, some scholars adopted the term *intersubjectivity* for a narrower meaning of shared or mutual understanding between individuals. Scheff defined intersubjectivity as a 'sharing of subjective states by two or more individuals' (Scheff, Phillips and Kincaid, 2006). Intersubjectivity can also refer to situations where there are shared but different meanings between individuals, such as in jokes where the humour arises as a result of different meanings of a term being deliberately manipulated (Higgins, 2007) or lies, where the lie exists as a result of more than one subjective definition of reality (Smeltzer, 1996).

Schutz adopted Husserl's view of intersubjectivity but to clarify his meaning defined the 'we-relationship', stating that intersubjectivity is,

> the fundamental ontological category of human existence in the world and therefore of all philosophical anthropology. As long as man is born of woman, intersubjectivity and the we-relationship will be the foundation for all other categories of human existence. The possibility of reflection on the self, discovery of the ego, capacity for performing any epoché, and the possibility of all communication and of establishing a communicative surrounding world as well, are founded on the primal experience of the we-relationship. (Schutz, 1966: 82)

Schutz clarified how individual experiences became meaningful then established that the basis for meaningful social relationships must consist of both the experience of the self and the experience of the other who has a reciprocal experience. Finally he posited that the individual's orientation towards the other must be simultaneously returned by the other (Grinnell, 1983). This is the basis that Garfinkel (1984) used in his work on ethnomethodology, where individuals can operate together given a shared understanding of the rules underlying their interaction.

Husserl's concept of intersubjectivity, the universal condition of humanity by which the world can be experienced and meanings formed (Duranti, 2010), is broader in scope than the definition I present here for the purpose of this work. Here, I mean the reader to understand intersubjectivity as the combination of a situated and performative shared-definition of the situation that leads to semantic accord, formed by individuals during their interactions with others (Garfinkel, 1984; Gillespie and Cornish, 2010; Collins, 2014). Furthermore, there must exist degrees or states of intersubjective accord between individuals, at one end of the scale being low levels where individuals do not yet grasp the semantic and performative definition of their situation up to high levels of intersubjective accord where the individuals involved in an interaction share the semantic and performative meanings and operate together in pursuance of the same goal(s). It is those social occasions where the intersubjective state has not been sufficiently established by one or more individuals that leaves room for those individuals to act in such a manner that is incommensurate with what may be expected by those for whom the intersubjective state, or consensus, has been established. Misunderstandings of the norms and conventions applicable to a social occasion may result in incongruous actions by individuals and can result in social gaffes or *faux pas* (Goffman, 1956).

Intersubjectivity, as tackled by Cooley (1922), Mead (1934), Goffman (1981; 1967; 1963; 1959a, 1959b, 1956) and Blumer (1986), had mutual mindreading or attunement as central to their perspectives. For Cooley, individuals have an organic freedom formed through interactions with their immediate society as some type of teamwork. Cooley argued that our concept of social life is grounded in intersubjectivity to such an extent, and is so central to human nature, that it becomes obscured by its ubiquity. Individuals thus become blind to the effect of intersubjectivity during their daily interactions because the mechanism behind intersubjectivity transparently forms their behaviours, however the blindfold comes off when they perform a social transgression and discover that 'the faces of men [sic] show coldness or contempt instead of the kindliness and deference that he is used to' (Cooley, 1922: 208). Any concept of self isolation is shattered as we realize that all along we have been living in the minds of others. Mead also discussed intersubjectivity but he did not follow its implications as far as Cooley, describing 'taking the role of the other' and he ambiguously used it to refer both to role behavior when physical coordination is required and also to taking

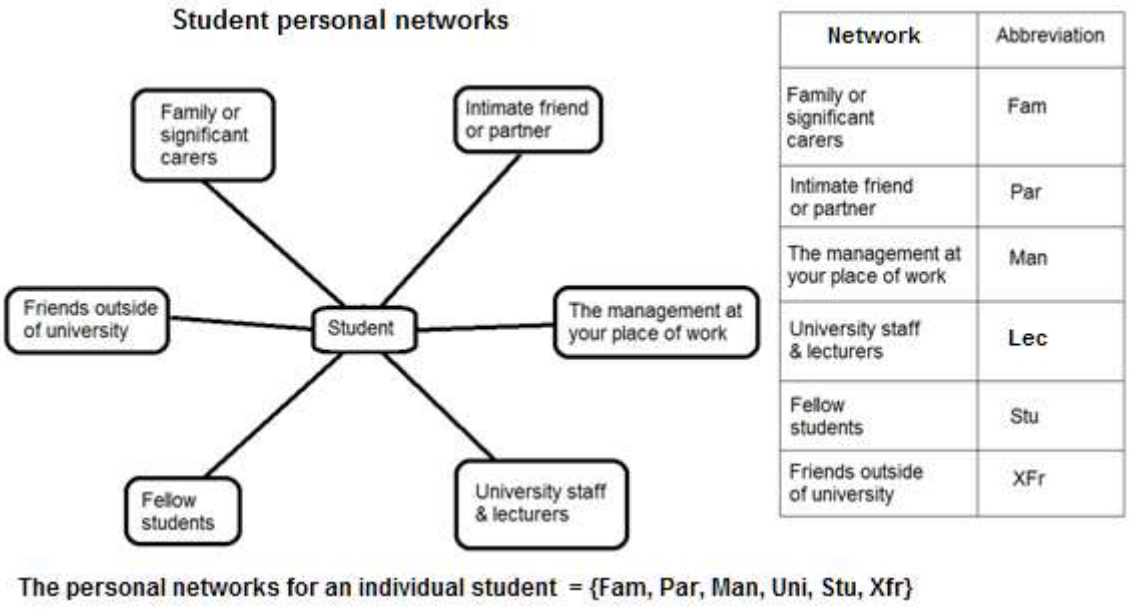
onboard the thoughts and perspectives of others. Intersubjectivity, for most people, becomes difficult to observe without an exterior perspective to view it from.

The idea that human social interaction is grounded in intersubjective accord where each individual is aware of what the other knows was developed as a sociological model for consensus (Scheff, 1967; Goffman, 1969). Scheff defined social institutions as those involving 'each participant knowing not only her own perspective, attitudes, and actions, but also those of the other participants' (2001). Individuals tend to share more personal and private information with those that they share a greater level of intersubjective accord (Lewis et al., 1991; Griffin, 2011).

2.9.4 **Personal social networks**

The sets of individuals with whom an individual interacts with on a regular basis to support particular activities are known as egocentric personal networks (Kadushin, 2004). Each personal network is a set of individuals characterised by their connections, e.g. family or friends. A straw poll of students revealed six personal networks, shown in Figure 2.1, with whom students maintain regular contact:

Family and significant carers (Fam),
Partners (Par),
Students (Stu),
Friends outside of university (XFr),
Management at their place of work (Man),
University staff and lecturers (Lec).



Network	Abbreviation
Family or significant carers	Fam
Intimate friend or partner	Par
The management at your place of work	Man
University staff & lecturers	Lec
Fellow students	Stu
Friends outside of university	XFr

Figure 2.1: Student personal networks

These personal networks are negotiated in the real world by students and differ in terms of the levels of intersubjective accord and trustworthiness that the students ascribe to each (Tang and Wang, 2012) so disclosure boundaries may differ because individuals self-present to conform with their audience's values (Schlenker, 1985; Leary, 1995). Staff have also indicated their reluctance to share Facebook profiles with students, revealing similar fears to those expressed by students (Pearce, 2014). Facebook consists of online personal networks, the members of which are defined by individual Facebook users with their privacy settings to avoid context collapse (Wesch, 2009). Facebook interaction is not a copresent activity so according to SPT, students may trust Facebook interaction less than copresent interactions and disclose less.

2.9.5 **Symbolic design**

Blumer (1986) put forth the idea that individuals actively shape their world based on the meaning that they ascribe to things and that those meanings are derived from or are negotiated through social interaction. The social interactions of individuals are mediated by the correct interpretation of other's actions forming a definition of the situation (Charon, 2004). Symbolic interaction theory addresses the subjective meanings that individuals ascribe to objects, events and behaviours to describe society. Individuals accord primacy to these subjective meanings rather than the objective truth

to form their behaviours (Blumer, 1986). Symbolic interactionism is a micro-level theoretical perspective that sees people living their lives in a world solely composed of physical, social and abstract objects. People interact with physical and social objects based upon meanings previously ascribed to those objects. For people to interact symbolically, each must conceive of the manner in which they are perceived by the other. Once people take the role of the other and share the same reality they can evaluate social stimuli in terms of norms, previous experiences and personal goals (Carter and Fuller, 2015). When interacting with a computer rather than another human, the process of interaction becomes very one-sided. The computer does not react in the way that a human does making a shared reality impossible, rather developing in its user a subjective reality that is based on previous experience with social objects. This may explain any differences in behaviour when individuals interact with or via computers.

When social penetration theory is combined with symbolic interactionism, a perspective on the behaviour of individuals when interacting socially is formed which may explain differences in sharing behaviour. This lens was applied to create a theoretical model to predict the behaviour of students in a scenario where they are asked to share objects with their physical personal networks and a digital personal network, Facebook.

Facebook allows its members to post a small set of digital objects. The digital objects are text, photos and videos. Each of the post-types allowed by Facebook has the affordance of a real-life analogue. A pilot study revealed that a popular type of textual post was amusing comments or jokes and 2,500 messages are sent every second whilst another popular type of post was still images and 4,000 pictures are posted every second (Omnicore, 2017). The other popular category, video, included items posted for the virtue of their visual content and also music videos, posted mainly for the audio content. Each week, 45% of people watch Facebook or YouTube videos for more than an hour (ibid.).

Jokes, pictures, films and music were chosen for the experiment as each has a symbolically similar copresent physical equivalent. Writing a humorous comment on Facebook is analogous and symbolically similar to telling a joke. Posting a photo on Facebook is analogous to showing a photo physically. Posting a video on Facebook is analogous to showing somebody a film. Sharing a piece of music on Facebook is

analogous to playing somebody a piece of music or a music video. Some objects are risky to share due to their nature.

To help illustrate this, I can show a photo of my car to all of my personal networks without fear of offending them but a photo of a pornographic act might offend some of my personal network members. I know jokes that could be told to every member of my personal networks without any worry that I might offend them. *What goes, "Tick, woof, tick woof"? A watch dog*. I know other jokes that are possibly impolite or downright offensive that would be guaranteed to offend some of my personal networks. I would not recommend *A Clockwork Orange*[5] to many of my personal networks but would be happy to recommend *Fantasia*[6] to all of them. I am happy to let all of my personal networks know that I like the album *The Dark Side of the Moon*[7] but might not want some networks know I like the song *Kyle's Mom is a b**ch*[8].

Returning to the onion analogy of SPT, each one of the objects above that I would freely share with every personal network resides in one of the outermost layers, whereas the more controversial objects reside much closer to the core. Each of the four scenarios above may also be replicated on Facebook. I can post any of the photos, jokes, films or songs on Facebook but would need to choose carefully with which personal networks to share some of the more contentious ones. If the more popular Facebook post types are used to represent information residing in one or more SPT layers, I posit that students may reveal the different post types to different audiences, depending on the depth of disclosure perceived appropriate for each particular social network. An experiment based on the observation of student decisions when sharing objects with personal networks was proposed.

[5] Stanley Kubrick, 1971.
[6] Walt Disney, 1940.
[7] Pink Floyd, 1973.
[8] South Park, 1999.

2.9.6 **Theoretical framework**

Goffman suggested that individuals have an internal mechanism based upon the definition of the situation that employs perceived social pressure to locate the separate disclosure thresholds beyond which they will not venture in the presence of differing audiences. Individuals adjust their behaviour to integrate smoothly with differing audiences and contexts, sharing more sensitive information with those they feel a greater level of intersubjective accord, agreeing with social penetration theory (Griffin, 2011). The greater the level of intersubjective accord, the more a student may feel inclined to share particular objects with their personal networks. The nature of the items to be disclosed affects individuals' willingness to share. Jourard and Lasakow (1958) labelled topics as either 'private' or 'public', however it is possible that there is much greater nuance in boundaries, shifting per item per audience.

The degree to which individuals share objects in a contextually and symbolically similar pair of sharing scenarios may provide some comparison between the outcomes of sharing decisions made in the analogue world and the online stage of Facebook. It should be possible to collect data by observing the outcome of inner cost/benefit boundary management decisions made by students. Analysis of the data may reveal the level of trustworthiness and hence the location of separate disclosure boundaries for the personal networks with whom students communicate and share experiences in the analogue world. I argue that the symbolic similarity between sharing in person and sharing on Facebook allows exploration of the student disclosure boundaries relating to what they would and would not share, both in copresence and on Facebook. The inclusion of 'Facebook' and 'university staff' as personal networks may indicate where the disclosure boundaries for these personal networks lie. It may reveal the level of trust that students feel when posting data on Facebook in relation to their analogue personal networks and quantify the level of trust felt towards university staff.

Individuals come to their sharing decisions independently, based on personal criteria, so without commonly shared rules, and relying on each individual to define their own sharing boundaries, data should reveal a random distribution. If there are common rules, bulk observations will show patterns in the data; it will not be randomly distributed. If the model is accurate, the behaviour of a group of individuals will display patterns. If the behaviour is random, there will be no pattern and the results will be

randomly distributed. Observations of the outcome of student individual decisions when given a contentious or taboo item to share with each of their personal networks may reveal the intersubjective differences associated with each disclosure boundary. Any differences in the location of student disclosure boundaries may confirm or deny collective behaviours and attitudes.

Three further hypotheses were created. The theme behind the first hypothesis is to determine whether the locations of personal network disclosure boundaries vary with the nature of the object shared.

H7. The nature of an object does not affect the location of individual disclosure boundaries for students.

The theme behind the second hypothesis is to determine whether the locations of personal network disclosure boundaries vary with the personal network involved.

H8. Personal networks do not affect the location of individual disclosure boundaries for students.

Students have a range of social support networks, with which they regularly interact and Goffman wrote about the need for audience segregation (see section 2.8.4) to allow for different behaviours to be enacted appropriate to and separately from each personal network. There may be common patterns among students based upon the level of intersubjective accord that individuals feel they share with these personal networks based upon what they trust to reveal to these networks and it is possible that embarrassment avoidance is important to maintain the personas presented to these differing audiences.

The third hypothesis concerns whether the privacy settings provided by Facebook matched the requirements of its users. Do students feel secure about others seeing their Facebook objects and are there particular personal networks that they include or exclude from viewing this information? Do the Facebook privacy settings enable students to define their disclosure boundaries in the preferred manner? More importantly, did students trust their Facebook security settings to work? These

questions informed the third hypothesis whose theme was, if students can successfully use the Facebook privacy settings to define their personal network disclosure boundaries, they will more readily share their Facebook account with lecturers or other students.

H9. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

2.9.7 **Section conclusion**

On Facebook, feedback from others, via comments or given-off cues is not instantaneous and the lack of cue-based feedback may contribute to a greater feeling of freedom of expression, leading to greater self disclosure (Schouten, Valkenburg and Peter, 2007) unless this has already been learnt, in which case Facebook may enjoy a lower level of trust. In corporeal copresent interaction, feedback is instant and this may inhibit some individuals from revealing their true feelings. Information concerning how students share four major post types on Facebook with their personal networks and Facebook could provide symbolically similar self disclosure decision data that may show whether users of Facebook transferred their learnt attitudes and feelings towards others on and offline and this is explored with H7 and H8. Analysis may indicate how comfortable students feel about their digital objects being seen by university staff, where in the level of student trustworthiness Facebook resides and whether intersubjective accord affects the view of the projected self of the student. There is not scope in this work to discover whether individuals learnt these attitudes in the analogue world or online, merely whether the attitudes are transferrable.

H9 explores the difference in student actual use of privacy settings and their desired privacy settings which may reveal the efficacy of privacy settings to match on and offline disclosure boundaries.

2.9.8 **Research questions and underpinning theories**

Research questions	Theories
RQ1. Do students prefer analogue methods of teaching to digital methods of teaching?	Presence: Mead, 1934; Cooley, 1956; Goffman, 1963 Copresence: Goffman, 1959; Nowak, 2001; Bulu, 2012 Media richness theory: Daft and Lengel, 1986; Kock, 2005 Social presence theory: Short, Williams and Christie, 1976; Tu and McIsaac, 2002
RQ2. Does ease of embarrassment predict the number of Facebook items that students share?	Embarrassment avoidance behaviour: Goffman, 1956; 1959; 1967 Audience segregation: Goffman, 1959; Donath and boyd, 2004; Marwick and boyd, 2010 Embarrassment thresholds: Freud, 1924a; Piaget, 1972a; 1972b; 1975; Klein, 2002 Embarrassment avoidance strategies: Goffman, 1956; Schudson, 1984; Trottier, 2014; Scheff, 2017
RQ3. Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?	Social penetration theory: Altman and Taylor, 1973 Communication privacy management theory: Petronio, 2002; 2007; Petronio and Durham, 2008 Disclosure thresholds: Griffin, 2011; Petronio, 2002; 2013; Joinson and Paine, 2007; Tang and Wang, 2012; Pennington, 2008 Intersubjectivity: Husserl, 1989; Scheff, 1967; Cooley, 1922; Mead, 1934; Goffman, 1956; 1959; 1963; Goffman, 1967; Goffman, 1981; Schutz, 1966; Garfinkel, 1984; Gillespie and Cornish, 2010; Scheff, Phillips and Kincaid, 2006 Personal networks: Schlenker, 1985; Leary, 1995; Wesch, 2009; Tang and Wang, 2012 Symbolic interaction: Blumer, 1986; Charon, 2004; Carter and Fuller, 2015

2.10 Summary and implications

The literature review has examined some of the factors that contribute to student reluctance to use their Facebook account for academic purposes as opposed to reporting on uses of Facebook within higher education. The literature indicated a larger preponderance of successful applications of Facebook to academic study based outside of Europe than within Europe and the successes reported from the UK were fewer. Cultural differences in student attitudes towards their privacy may account for these differences. Having observed the informality of Facebook usage in Greek higher education where staff and students Friended each other without hesitation, my observations in UK classes led me to believe that students had the opposite attitude towards Friending staff but were highly connected to each other. Another theme emerging from the literature is that Facebook enables and enhances peer-to-peer feedback however students appear to talk about coursework rather than doing coursework.

The first research question required the construction of four hypotheses to discover whether students preferred copresent or remote methods of learning. The first two hypotheses (H1 & H2) test whether students who express a preference for remote learning methods may be easier to persuade to adopt Facebook and this included checks for gender differences. The third and fourth hypotheses (H3 & H4) test whether students who live and study at home have different patterns of Internet usage than those studying away from home and any difference may impact upon persuading these groups to adopt Facebook academically. This was also tested for gender differences. This research question may not be particularly unique, however answers were necessary to support the thesis question from a student perspective.

The second research question required a framework to be constructed using Goffman's theoretical framework for embarrassment avoidance. Students who have lower feelings of embarrassment may participate more actively in Facebook activities which involve the sharing of digital objects. Goffman's framework (1956; 1959) for embarrassment avoidance suggested that individuals behave in a manner to avoid embarrassing themselves from moment-to-moment. I argue that individual behaviour when sharing digital objects is modified by their propensity to become embarrassed and that those

individuals more susceptible to embarrassment will simply share fewer items as a guaranteed strategy to ensure that disclosure boundaries remain intact. Those students who become embarrassed easily may not share as willingly as others and hence individual, collective social and institutional benefits may suffer if some learners are reluctant to share their objects and experiences. Two hypotheses (H5 & H6) were developed to discover whether embarrassment affected the sharing of digital objects on Facebook and whether this was gender dependent. This research question examined quantitatively the consequences of embarrassment upon file sharing on Facebook and to the best of my knowledge there is no literature available concerning online sharing from the perspective of embarrassed students.

The third research question required construction of a framework developed from Goffman's theory of self-presentation, social penetration theory and symbolic interactionism. The framework predicts that students display different behaviours in the presence of different personal networks. Cultivation theory suggests that heavy exposure to television violence distorts individual perceptions of reality and affects behaviour away from the television. Gerbner observed that the effects of cultivation positively correlated with time of exposure to the stimulus. I argue that cultivation theory may be applied to individuals using the Internet for lengthy periods. The inability of digital communication systems to transmit the given-off cues necessary for the establishment of full interpersonal intersubjective accord as contrasted against the richness of face-to-face interpersonal interactions may have distorted the digital environment sufficiently to establish the contextual environment for a false digital intersubjectivity. If digitally mediated intersubjectivity is flawed by the lack of cues, it may cause individuals to share more personal information than in a copresent interaction in order to maintain the persona presented to particular social network audiences. Social penetration theory (Altman and Taylor, 1973) and communication privacy management (Petronio, 2002) model disclosure boundary management in terms of factors impacting individual privacy boundary decisions and are applied to social media users to model user disclosure behaviour. The factors involved in the decision whether or not to share information involve an internal comparison to evaluate costs and benefits to determine whether the potential benefit of sharing private information exceeds the cost of its disclosure. The impact of the object that is shared and the personal network with whom it is shared was explored using students to discover how

different types of object and different personal networks affect the location of their disclosure boundaries. For each decision whether or not to share a digital resource or object, an internal decision must be made that weighs up the costs and benefits of sharing that resource (Petronio, 2002). Copresent sharing was chosen to measure disclosure boundaries when the sharing takes place face-to-face and each digital object was chosen to match symbolically an action that could also be carried out on Facebook when sharing the same object. Three hypotheses were developed, the first (H7) was to discover whether the locations of personal network disclosure boundaries varied with the nature of the object shared. The second (H8) was to discover whether the locations of personal network disclosure boundaries varied with the personal network involved. A measure of the relative importance of each variable to the final decision was also sought to discover whether object or personal network had the greatest effect upon disclosure boundaries.

The third and final hypothesis (H9) explored Facebook privacy tool usage among student users and whether individuals were able to maintain their individual and shared disclosure boundaries to explore whether the tool performance was contributory to negative attitudes towards becoming involved in faculty-designed social networking. A test was formulated to discover whether students were able to use the Facebook privacy settings to match their preferences for privacy as successful negotiation of the settings may promote greater ease when asked to share their Facebook account with lecturers or other students. This research question examined the location of individual disclosure boundaries and attempted to establish whether components involved in the decision whether to share were more dependent on the nature of the object or the personal network that an object is shared with and whether the privacy tools available could match existing individual disclosure boundaries.

Some of the factors that may negatively impact student acceptance of Facebook as a learning platform explored in this thesis are potential embarrassment due to inappropriate information disclosure and internal individual factors affecting maintenance of desired disclosure boundaries This study adds to the literature surrounding the reluctance of learners in higher education to share their social media accounts with faculty for learning purposes and fills the gap in the literature

surrounding the online sharing behaviour of students who routinely experience feelings of embarrassment.

A major factor in being able to carry out the research was obtaining permission from a large enough sample of students willing to have their social space invaded and emotions probed in order to collect the data. The sample needed to be large enough to allow statistical analysis to be performed on the data to answer each hypothesis and their parent research questions. The theoretical frameworks that developed the hypotheses informed the measures required from the sample which are fully explored in the next chapter. If the theoretical models are confirmed by student observation, the existence and impact of these factors will allow informed decisions to be made by education managers about the usage of social media to further the aims and objectives of higher education.

2.10.1 **Research question reminder and rationale**

These questions were designed to provide a range of responses to the thesis question of the pedagogic value of Facebook to HE. The first examines whether there is a particular preference for analogue or digital instruction because it may be difficult to persuade students to use their Facebook account for learning if their preference for learning were for face-to-face methods rather than digital methods. Secondly, it would be instructive to discover whether students who become embarrassed easily share more or less News Feed items than students who are embarrassed less easily as sharing fewer items in a Facebook study group would lessen the effectiveness of group participation in a shared virtual environment where the sharing of Facebook content is key to the construction of resources and ideas within the group. The last research question examines the disclosure boundaries of individual students to discover whether the sharing of artefacts is affected by the perceived audience and whether the tools provided by Facebook could be negotiated in a manner that supported existing disclosure boundaries. The answers here would clarify how far students will extend their trust for sharing and whether there is a pattern to their trust based upon an audience that includes university staff.

These three questions will provide answers that will answer different facets of the thesis question of the pedagogic value of Facebook to HE.

In this thesis, the following research questions were posed and each is followed by the hypotheses that were developed in this chapter.

RQ1. Do students prefer analogue methods of learning to digital methods of learning?

H1. There is no difference in student preference for copresent learning and their preference for remote learning.

H2. There is no gender difference in student preference for copresent learning and their preference for remote learning.

H3. There is no difference between the time spent online between students living at home and students living away from home.

H4. There is no difference between the time spent online between male students and female students.

RQ2. Does ease of embarrassment predict the number of Facebook items that students share?

H5. There is no relation between student self-reported ease of embarrassment and the number of Facebook items they share.

H6. There is no relationship between genders for student self-reported ease of embarrassment and the number of Facebook items they share.

RQ3. Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?

H7. The nature of an object does not affect the location of individual disclosure boundaries for students.

H8. Personal networks do not affect the location of individual disclosure boundaries for students.

H9. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

3. METHODOLOGY

> Ethics aren't a checklist. Nor are they a universal. Navigating ethics involves a process of working through the benefits and costs of a research act and making a conscientious decision about how to move forward (boyd, 2016).

3.1 Introduction and chapter outline

This chapter takes the hypotheses that were developed in the last chapter and discusses ethical methods by which meaningful answers might be obtained. The chapter is divided into nine sections. Section 3.2 describes my context, ontology, epistemology and paradigm and how these ultimately informed the methodology. Section 3.3 discusses the practical, ethical and personal constraints placed on the research design, including a discussion of the original direction for the thesis and how setbacks were overcome. Section 3.4 operationalises the constructs used and describes the measures used to measure the constructs and justifies their use. Empirical and control variables are described and their coding is explained. Section 3.5 discusses the participants, sampling size and procedures, Facebook research account, demographic statistics and bias in selection of participants. Section 3.6.1 describes the two instruments in turn and explains how the instruments were prepared with respect to the material presented in and requirements from the literature review and data required to answer the research questions are defined. Bias, survey errors, analysis for validity, questionnaire design, the procedure and timeline are discussed. Sections 3.7 to 3.9 describe the methods of analysis used to obtain answers to the research questions. Section 3.10 describes the ethical issues faced and complied with before, during and after data collection.

3.2 Ontology

This work seeks to provide a single truth that can be applied to a group of individuals which would seem to indicate that a positivist approach is appropriate, however the individual experiences and truths of those individuals under study are different from each other suggesting a constructivist or interpretivist approach.

Descartes (1996) proposed the idea that mental processes and the reporting mechanisms of the body's senses may be a reason for supposing that the mind and the body are two different entities. I have some sympathy for this idea, however mind-body (or substance) dualism denies monism. Substance dualism presents the implausible problem of reconciling the world into two parts, nature and mind 'because the unconditional freedom of a mind that could overdetermine events in the natural world (from the outside, as it were) would be indistinguishable from chance' (Habermas, 2007: 14). Substance monism on the other hand proposes that everything is matter and can be studied empirically. The ideas that the mind is purely the brain, which by extension implies a single ontological entity is mechanistic (Hart, 1996) and that a scientific approach will eventually resolve the mind-body problem (Stoljar, 2005), seem equally implausible.

Wittgenstein (1954) proposed that there may be a conceptual problem in the use of language employed in attempts to resolve the mind-body problem, in that the philosophical problem arose due to conceptual confusion and therefore prolonged empirical enquiry cannot solve the issue (Hacker, 2003). Furthermore, embarrassment is a phenomenon that requires cognitive knowledge of necessary social conventions and some knowledge of the location of the self within those conventions to observe the minor infractions that result in embarrassment, linking the mind and the body.

My perception of reality offers some sort of response to the impasse of the mind-body problem. I see the social world operating at different magnifications on multiple levels with the principal actors being human beings. At maximum zoom, each individual has a set of unique experiences, signal-meanings and fundamental beliefs (Goffman, 1959). Zooming out to a higher social plane, that individual can enjoy interactions with other individuals using socially shared communication signals, which are learnt and adapted throughout life. I believe that from moment to moment each individual exists as a prisoner within a cage built from received and homespun memetic reality which constrains their attempts to direct their physical and mental processes as the species is genetically and socially predisposed. This produces highly unique individuals who, through interaction, agree on the social rules of engagement for varying contexts.

3.2.1 **Paradigm**

I have chosen pragmatism as my paradigm for this work. as it neatly ‘sidesteps the contentious issues of truth and reality’ (Feilzer, 2010: 8). As an engineer, pragmatism is appealing as it ‘focuses instead on ‘what works’ as the truth regarding the research questions under investigation’ (Tashakkori and Teddlie, 2003: 713) and rejects the awkward choice that the paradigm wars (Tashakkori and Teddlie, 1998) have produced, allowing ‘the use of whatever philosophical and/or methodological approach [that] works for the particular research problem under study’ (Teddlie and Tashakkori, 2009: 9).

The paradigm choice arose because of a problem of reconciling the polarised and fundamentally opposed philosophical positions occupied by positivism/postpositivism and constructivism/interpretivism (Creswell and Plano Clark, 2007). Positivism assumes that the natural world behaves sufficiently similarly to the social world and that the social world can be studied in a value-free manner (Mertens, 2005: 8). I find positivism to fail because it does not take into account the inherent ambiguity and multiplicity of truths and values for different groups of people (O'Leary, 2004: 6). An interpretivist or constructivist paradigm might help to promote the understanding of ‘the world of human experience’ (Cohen and Manion, 1994: 36) and my belief that reality is socially constructed, especially as it might apply to online reality, as proposed by Mertens (2005: 12), is attractive, however this approach would deny using a framework such as that proposed by Goffman (1956) which suggests that there are overarching rules that can be applied to individual human behaviour at the microsociological level that may provide a single truth at the macrosociological level.

3.2.2 **Epistemology**

I believe that knowledge is socially constructed and can only discuss the known and that which has been given a name; everything else is speculation. I am also a believer in evolutionary biology, an extension of Darwin’s (1859) theory and that human behaviour evolves and adapts to new contexts. Symbolic interaction plays a large part in the construction of knowledge, whether that is shared or individual, subjective or objective and implies that what may be true for an individual in one context may not apply to others in different contexts.

Mathematics is not my basis for knowledge but I believe that mathematics as a tool can extend knowledge if the axioms and variables themselves are correct and appropriate for such analysis. I use quantitative methods as a tool to manipulate concepts and uncover patterns that might otherwise go unseen. By applying mathematical techniques to collective social behaviour (Bourdieu, 1984), insights and patterns of behaviours may be sought. In that respect, I am an empirical pragmatist. Thus my ontology, epistemology and paradigm framed my approach to this research.

3.2.3 Section conclusion

Knowledge is grounded in intersubjective accord. The beliefs of individuals are influenced by symbolic interaction producing multiple subjective truths. I have employed a pragmatist paradigm as the basis of a methodology that employs multiple mathematical methods to make sense of the multiple truths of individuals.

3.3 Research design

In this section I expand upon my original methodology and describe the difficulties encountered and failures in data collection and the steps taken to remedy this.

3.3.1 The original objective of the thesis and methodology

In the introduction, section 1.3, I described the original direction of my research in order to answer the original thesis question: 'To what degree are social networking systems, such as Facebook, suitable systems for augmenting teaching in HE?'

Several pilot studies were carried out on my personal Facebook account to establish whether data could be collected from the web page regarding the actions of the other Facebook users who had contributed to my Facebook experience. At the time of these studies, up to 1000 separate user actions could be captured per web page by scrolling to the bottom of the Facebook page repeatedly then saving the page source. Modern browsers allow users to save their web pages for later analysis. At the time the experiment was designed, Facebook delivered its pages using HTML, a list of plaintext instructions for the web browser on how to display a particular web page, and the data itself. Details of the data collection are presented in the Appendix, section 7.9. My Facebook account had 52 Friends, all of whom were known personally prior to being

Friended. I conducted several trials to ensure that I could collect sufficient data to be of use in the thesis. One of these trials revealed 269 posts made by my Friends in a seven day period, disregarding the replies to individual posts, equalling 0.74 posts per user per day. Other trials revealed a similar level of activity. From these trials I was able to discover the top activities that my Friends engaged in whilst online and the objects that they interacted with. Most importantly, it was possible to discover whether the posts made by Friends were originated by a particular Friend, relayed (or shared) or were responses to an existing post. This allowed me to classify my Friends as composers, responders or sharers of Facebook content and when these actions took place. Armed with such rich information, I had intended to use these three distinct uses of Facebook to classify the individual users along the Visitor/Resident scale (White and Le Cornu, 2011).

Further data analysis of my personal Facebook data allowed visibility of responses to a particular post that could perhaps be employed to discover the traits of a post that would elicit a large number of responses, of value to those running Facebook pages for financial or exposure reasons. This might be of value to HE if posts could be tailored in such a way that the chances of multiple responses were raised, perhaps to the point of going viral (Prigg, 2014; Cheng et al., 2016) see section 5.3.3.

Correspondence analysis (CA) requires a scalar or quantitative measure for each participant and a set of categorical variables. The Facebook data was sufficiently rich to provide a scalar measure but I would need to collect some demographic information from the same participants. An online survey was chosen to collect the necessary categorical data, see section 3.3.7, and this was divided into sections regarding online activities and offline activities such as self presentation and methods of communication. For full details of questions, see Appendix section 7.2. Employing CA to make sense of this data may have highlighted similarities and differences in the behaviours of participants whose Facebook usage differed. A benefit of using Facebook recorded data is increased result validity over and above other studies that had relied upon participant recall of their Facebook activities.

Having collected Facebook live data, it was necessary to anonymise both the data and participants using the application Notepad++ which contains tools that can find and replace text strings with user-defined text. Using suitable editing techniques, I was able

to strip away personally identifying information, page formatting and images to leave behind a list of the Facebook posts, time of post, identity of poster, comments, likes, and whether this was a new item, a response or a relayed post, i.e. a sharing of an existing post. I was able to manipulate the data using a spreadsheet to obtain pilot test data on common actions performed on Facebook data types. Work had commenced on using *sed*, a UNIX tool for editing text to automate the manual processes carried out using Notepad++ and these were under development until the HTML data collection method became unavailable, at which time this work was abandoned in favour of alternative data collection methods. Exact details of the anonymization process are presented in Appendix section 7.8.

3.3.2 **Experimental design**

In order to employ the Facebook data collection method for this thesis, I would need to replicate the Facebook environment and I would open a new experimental Facebook account then invite participants to friend this account. During the research design phase, I had positive interest to participate from many students in the classes I was teaching. Over 50% of the students in my classes would have been willing to allow some of their on and offline activity to be recorded and analysed. These students had known each other for some time and made extensive use of Facebook for communication. An estimate of the number of willing participants was between 50 and 70. With 70 participants, a 14 day data collection period would result in around 725 user posts, based on my pilot study. This would be an adequate number of participants and an adequate time frame to draw meaningful statistics from.

3.3.3 **Practical failure of the experimental design**

The failures I encountered arose from matters outside of my control. Until August 2014, it had been possible to gather up to one thousand news feed posts of different types from a Facebook page. This allowed the hypertext markup language, HTML, which formats the data for display in the browser, to be captured for further analysis in one single file. During August 2014, the nature of the client-side changed to support DHTML (Dynamic HTML), where the data to be presented to the user was fetched using JavaScript and parsed by the browser a little at a time for viewing by the end-user. The consequence of this was that it became impossible to gather the News Feed in

the browser. I tried to use Wireshark, a network data collection tool, however the changes to Facebook now included encryption of traffic to and from the Facebook page, making this tool redundant. Employing the manual method of data gathering from the browser resulted in only five or six posts recorded at a time in the saved web page, effectively destroying my data gathering strategy and so another method of gathering Facebook data had to be sought.

3.3.4 **Solving the Facebook data collection**

Ethical approval to proceed was given in September 2014, just one month after the changes made by Facebook and the data gathering period was to be a two week period early in November 2014. This left little time to research an alternative method of harvesting Facebook data. Had time been available, I would have restarted the investigation, taking a qualitative approach to data collection, employing structured interviews focussed upon trust and sharing of objects both on Facebook and offline with the personal networks discussed in section 2.9.4. I was due to submit the thesis in September 2015 so such a massive change was not a possibility.

Recording the Facebook data could be achieved manually, perhaps using a video camera, recording every time a new post was made. A pilot video, six minute 40 seconds in length was made to assess the difficulty of this undertaking, resulting in 74 Facebook actions from 17 participants, however timing data that was contained in the HTML could not be extracted by this method. This was not useful for answering the research questions but was used when checking the results of the Graph Search for completeness. Video collection was discounted immediately as it would require human monitoring and manual transcription for the two week period of the experiment.

On April 21, 2010, Facebook had introduced an interface into its database known as Graph Application Program Interface (GAPI), (Facebook, n.d.). This interface offered a Public Feed API, providing user status updates and page status updates with a public status as they are posted to Facebook, which might suit data gathering for this research, but this is not available to researchers.

> ‘Access to the Public Feed API is restricted to a limited set of media publishers and usage requires prior approval by Facebook. You cannot apply to use the API at this time.’ (Facebook, n.d.)

The unavailability of the GAPI led me to research alternative APIs which included the Keyword Insights API which provided an analysis layer above all Facebook posts enabling queries about people mentioning a certain term and the Chat API which integrated Facebook Chat into other messaging products. Neither of these were suitable for gathering the data for this research.

The Facebook Graph Search API was a semantic search engine that was introduced by Facebook in March 2013. It allowed users to query the Facebook database for data collected on each of its users including downloading of posts, shares and links for any specified user identity. A decision was made to try using the Graph API and pilot tests revealed that it could filter results based on date, using UNIX time which employs the number of seconds elapsed since 1st January 1970. The data output of the Graph API was a *posts* file for each user that detailed the online activity for the specified period.

The Graph API (v1.8, 1.9, 2.0, 2.0+) appeared unpredictable, sometimes returning empty files for users that had made posts in the specified period, verified by the pilot video data collected, and Facebook repeatedly changed the capabilities and reduced the query interface options to comply with privacy issues. No other method of data collection aside from manual observation of the Facebook News Feed for 14 days was discovered. The Graph API was removed in December 2014.

3.3.5 **Ethical constraints on participant recruitment**

The Research Ethics Committee stipulated that the research must not include students that I was teaching. I had 50 to 70 students in my classes who were interested in taking part in the research that now could not be used. This constraint meant that I would need to gather participants by alternative means. Participant recruitment is discussed in section 3.5.4. Collecting participants that I was not in regular contact with raised another issue that changed the character of the experiment. My personal Facebook account was the basis for the research and the majority of my Facebook Friends already knew each other, resulting in a high level of conversational traffic that would appear in my News Feed. Now I was faced with finding a set of participants who did not know each other already. This meant that participant conversations were more likely to involve Facebook users outside of the experimental account rather than traffic between users collected for the purposes of data collection. This effectively destroyed the

similarity between my personal Facebook account and the experimental account and was borne out by the low level of Facebook activity observed during the two-week data collection period. A longer period of data collection may have remedied this, but the ethical approval was set already and time was running out to collect my data.

3.3.6 Ethically acceptable Facebook data collection

BERA offered guidance to the collection and storage of data and extra ethical precautions beyond BERA were respected when gathering data from Facebook, discussed in section 3.10. Discussions with students prior to the research revealed concerns about online surveillance and some were reluctant to take part in a trial that recorded the entire content of their Facebook activities but would participate if the data collected was completely anonymous or derived from a survey. The ethical debate following a Harvard research project involving large numbers of students' profile and other information informed an a-semantic approach to Facebook data requirements (Parry, 2011). This informed the Facebook information that should be removed to maintain student anonymity and defined the data that could be collected about Facebook users' online activities. Live participant Facebook action data were collected using a new experimental Facebook account to prevent ethical and bias issues arising as a result of my Facebook friends interacting with the participants in my research and eliminate extra boundary turbulence from the participants.

Knowledge of the available data types in conjunction with real world constraints and research ethics defined the methods used for collecting that data. The real world constraints fell into two classes, personal and regulatory.

3.3.7 Personal context and other constraints on the methodology

The study employed an online survey to collect subjective demographic, experiential and behavioural data from participants who were fluent in online activities by virtue of already being Facebook account holders so an online survey was a cost-effective and time-saving tool (Symonds, 2011). I chose to study Facebook because every student owned a mobile phone and they also used Facebook on PCs in the computing labs. Tweeting was not common among students when I began this research, I was already familiar with Facebook and I knew that it was possible to gather user data. Pilot studies

had established that it was possible to collect both categorical and numerical data about my Facebook Friends' posts using Facebook's Graph Search.

I had neither a research budget nor a large amount of free time to collect data so it was convenient to collect stored data from a social network and compare it to experiential data. Covert observation of the experimental account's Facebook News Feed activity allowed collection of data concerning the sample's communication habits over a period of time.

There are ethical issues regarding the collection of data from Facebook, mostly relating to harm caused to participants, for example the emotional contagion study (Kramer, Guillory and Hancock, 2014) and also the re-identification of participants following the publication of results (see Zimmer, 2010). The experiment was designed in such a way that participants would not be using their Facebook accounts any differently from their current practices and there was no attempt to manipulate the participants before or during the experiment to communicate or act in any manner differently from their normal patterns. Secondly, the problem of re-identification was tackled by the decision not to collect any user profile information that could later be used to identify the participants nor the contents of any posts, textual or visual and to rely purely upon the quantity and type of communications as variables. Data collection would not involve access to the survey via Facebook but using an external web service, Google Forms, details of which were sent to participants by individual emails. The emails contained a unique code to avoid participants having to provide their name in the survey, therefore should the Google Forms system be compromised, the identities of the participants remained anonymous. The codes given to the participants were not used at any place in the thesis. Further ethical considerations are discussed in section 3.10.

The existence of relationships between the offline actions, behaviours and attitudes versus corresponding Facebook actions of a sample from the population would answer the research questions. A snapshot quantitative methods study of the behaviours of the sample over a period of time, employing survey and observational data was chosen. The initial time period chosen was two weeks, determined by the volume of user data generated daily in a pilot study on my personal Facebook account, however on reflection this ought to have been considerably longer.

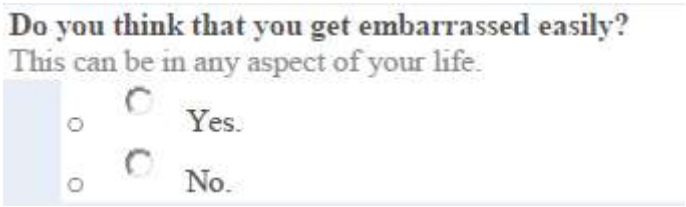
3.4 Measures

The instruments for taking the measures were an online survey to measure constructs and variables and non-intrusive observation of Facebook activity to measure variables. Constructs measured by the survey were ease of embarrassability and boundary coordination. Variables measured by the survey were gender, age, time spent online, term-time location, Facebook boundary linkage control, Facebook boundary preferences and learning style preferences. The variable measured by observation of Facebook activity was the number of Facebook posts shared by participants.

3.4.1 Operationalisation of constructs

Measures have construct validity if the outcome produced by the measure accurately represents the construct (Schwab, 2005). The construct of *ease of embarrassability* was derived from the literature, however the construct for *boundary coordination* was developed from existing literature as a suitable scale was not available.

A single item measure for ease of personal embarrassability on a two-point scale with (1) 'yes' and (2) 'no', was developed from Kelly and Jones' (1997) Susceptibility to Embarrassment Scale (SES) to measure the embarrassability construct.



It was not possible to discover a suitable scale for boundary coordination in the literature so four scenario-based scales (Tangney and Dearing, 2002) were developed using the rational method to determine 'the tendency to feel emotionally exposed, vulnerable, and concerned about making mistakes in front of other people' (Kelly and Jones, 1997: 321). Individual disposition to reveal each of four objects to seven personal networks was used to locate individual disclosure boundaries using two-point scales, (1) 'yes' and (2) 'no'. The objects chosen to be shared between these networks were (1) jokes, (2) films or videos, (3) pictures and (4) music. Participants were asked to imagine examples of each category that they would not share with each personal

network. The boundaries measured were for seven student personal networks, (1) family, (2) partners, (3) friends outside university, (4) other students or peers, (5) management at work, (6) university staff and lecturers and (7) Facebook, discussed in section 2.9.4.

Sample item: 'Do you know any jokes or stories that you could NOT tell to the following groups of people?'

Response format: Statement-based scale with a 3-point scale. (1) 'no, this group does not like jokes or stories', (2) 'no, I have to be careful about the content of jokes and stories I tell to this group', (3) 'yes. I can speak freely with this group'.

Do you know any jokes or stories that you could NOT tell to the following groups of people?

	No, this group does not like jokes or stories.	No. I have to be careful about the content of jokes and stories I tell to this group.	Yes. I can speak freely with this group.
Fellow university students or classmates.	○	○	○
Adult members of your family.	○	○	○
Management at your place of work.	○	○	○
Your friends outside of university	○	○	○
On Facebook.	○	○	○
University staff and lecturers.	○	○	○
An intimate friend or partner.	○	○	○

Use of validated instruments increases the validity of results and may allow for results to be contrasted against previous studies (Kimberlin and Winetrstein, 2008). The ease of embarrassability measure was chosen as it was consistent with the literature.

The construct of boundary coordination was based upon social penetration theory (Altman and Taylor, 1973) and communication privacy management (Petronio, 2002). According to social penetration theory, the nature of information an individual exchanges becomes more personal as the depth of the relationship increases. The four objects are from different domains and may reveal differing depths of privacy for each object.

Content validity (Cresswell, 2003), the accurate representation of the domain of the construct by the measure was addressed for ease of embarrassment by allowing

individual perceptions of *ease* to be collected. The definition of *ease* was subjective in each individual but it is individual differences that were being sought.

Content validity for boundary coordination in the face of potential embarrassment was reviewed by an information security researcher who suggested minor changes to the wording. Face validity, the way that the test appears to those answering it (Nevo, 1985), was addressed for both constructs by presenting the survey questions to students who were not part of the study and discussing their impressions. Slight changes were made to clarify the wording.

Participants were asked in the survey to choose the frequency of interactions with various objects, individuals and activities. Five-point Likert scales were used to assess participant agreement with a given statement ranging from ‘never’ (1) to ‘always’ (5) with the midpoint being ‘sometimes’ (3). A three-point Likert scale was used to assess preferences for learning methods.

The number of Facebook posts shared was measured using non-intrusive observation of Facebook activity. The Graph Search API was used to download files containing details for each participant.

3.4.2 **Empirical variables**

Facebook boundary linkage control relates to the application of Facebook settings to restrict access to Facebook content and Facebook boundary preferences relates to how Facebook users would prefer the Facebook security settings to operate. Participants were asked to choose which of the six face-to-face personal networks they actively and theoretically wished to exclude from seeing all of their Facebook activities. The questions were (1) ‘Who would you prefer not see all of your posts, Timeline and information on Facebook?’ and (2) ‘Who do you exclude, using the built-in privacy settings, from viewing all or parts of your Facebook information and communications?’ Any differences between the actual personal network exclusions and the preferred personal network exclusions may reveal that the privacy settings are not congruent with user preferential practices.

Learning style preferences were measured using a 3-point Likert scale, to simplify the choices for the participant, ranging from (1) 'least preferred', (2) 'no preference', (3) 'most preferred'. The choices available, based on my place of work, were, (1) attending lectures', (2) 'one-to-one or small group tutorials', (3) 'practical work', (4) 'attending seminars', (5) 'informative videos', (6) ' group work', (7) 'reading a book', (8) 'reading on screen', (9) 'audio books and informative mp3s'. During analysis, the learning methods were categorised by being either copresent or remote and the resulting information was used to help answer the thesis question.

3.4.3 **Control variables**

There are particular factors that were not explicitly included in the research models that may impact upon the behaviours of participants and these were added as control variables. The variables included gender, age, time spent online, term-time location. Gender and age have been associated with previous research investigating the link between individual beliefs and sharing of private information (Malhotra, Kim and Agarwal, 2004; Posey et al., 2010).

Research concerning gender differences in the internal connections within the brain (Ingalhalikar et al., 2014) suggested that female brains may be better suited to communication than male brains, indicating that women may sustain different types of relationships than men and this may affect their perceptions of privacy. Older Internet users disclose less information (Malhotra, Kim and Agarwal, 2004; Nosko, 2011) so they may have improved boundary coordination over younger users.

Research has found that time spent online develops increased awareness of risks (Malhotra, Kim and Agarwal, 2004; Opinion Leader, 2013). It is possible that those who spend more time online will have developed a better sense of online privacy. Term-time location may increase time spent online (Kenny, 2014). It may be that those who are living away from home spend more time online communicating with their family and friends than those living at home and in physical proximity to their friends.

3.4.4 Coding

Data returned from the instruments were categorical and numerical in nature. Data from the survey consisted of quantitative responses to time ranges, qualitative responses to Likert scales, gender and yes/no responses. For each question requesting a time range, the mean of each range was calculated and this was substituted for the range chosen prior to analysis. Five-point Likert scales were used in frequency question responses to allow for rescaling (Dawes, 2008) and provide for a middle neutral option. The 5-point Likert scales were coded with 0 = 'no response' and 1 to 5 to represent the five points of the scale, assuming even spacing between the responses. Yes/no responses were coded using 0 = no response'=, 1 for 'no' and 2 for 'yes'. Use of 0 for non responses allowed configuration of SPSS to recognise missing data and remove this from analysis (IBM, 2012).

3.5 Samples and participants

The target population was university students with a current Facebook account. Figure 3.1 and Figure 3.2 show variations between the mean user Facebook time and variations between the time per Facebook visit in different countries indicating that usage differs globally and these international differences constrained the scope of data collection to the UK alone. A large post-1992 UK university was chosen.

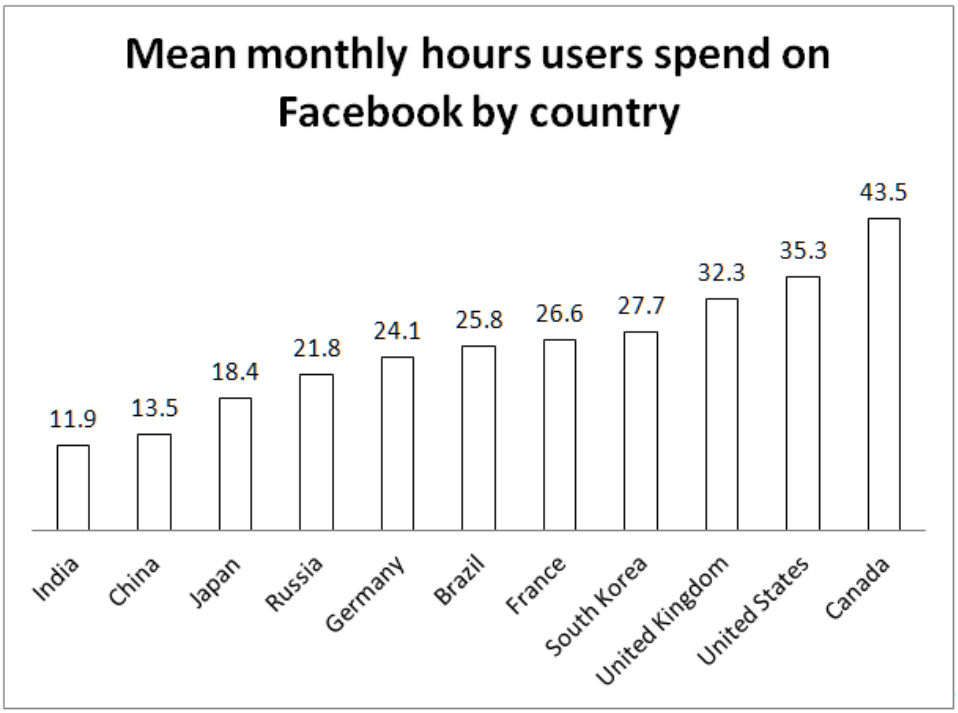


Figure 3.1: Mean monthly hours users spend on Facebook by country (ComScore, 2010)

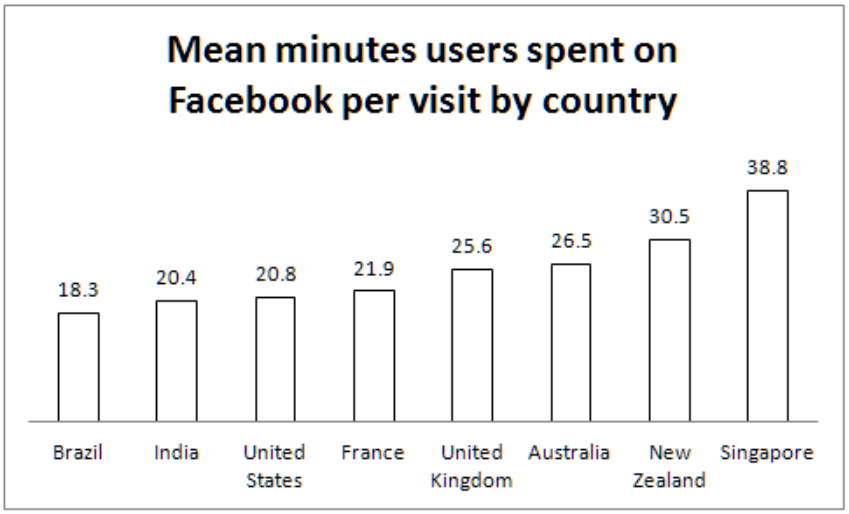


Figure 3.2: Mean minutes users spend on Facebook per visit by country (Experian Hitwise, 2011)

3.5.1 Sampling procedures

The general population of all students in the university consisted of approximately 21000 students, 46% male and 54% female (The Complete University Guide, 2015). The total number of UK students in 2014-5 was 2.3 million (Universities UK, 2016), three quarters of undergraduates were under 24 years of age and a third of postgraduates were aged 21 to 24 (Tableau, 2016). Purposeful self-selecting convenience probability sampling was employed to allow for generalisation of the sample to the population (Cresswell, 2003: 164). This limited the probability that the findings from the chosen sample could be extended to the larger population of UK HE students. Following formal ethical approval the research was announced to all university students by email and participants were invited to a briefing meeting. In-person recruitment also took place in all university canteens. A representative sample was chosen to reflect the university demographics. The sample was examined to ensure that students defined by the Research Ethics Committee as ineligible had not participated.

3.5.2 **Sample size**

Sample size had to be large enough to allow for generalisation of results and reflect any trait distributions in the population. For phenomenological studies, the minimum suggested sample size is six (Morse, 1994) but according to (Cresswell, 2003: 64) Cresswell, five to 25. Two way ANOVA with 15 degrees of freedom requires around 300 participants for f=.25, α=.95 (Heinrich-Heine-Universität Düsseldorf, 2017). A maximum sample size of 300 to a minimum sample size of 25 was chosen to approach saturation and participants were recruited from other faculties of the university to increase diversity.

3.5.3 **Facebook research account**

A research Facebook account was created and in order to avoid causing tensions with participants' social groups, a unisex name, Ashley was chosen and given the unremarkable surname Johns. No profile data concerning Ashley was provided to Facebook other than the necessary email account to associate with the user. The research account allowed the actions of participants to be gathered.

3.5.4 **Participant recruitment**

Participants were recruited from the student body using physical and electronic methods. Three emails were sent over a two week period to all university students with the subject lines, *Participants required for Facebook study, Facebook - is it changing us forever? Participants required for research*, and, *Facebook - what is it doing to us? Research participants needed*. When emailing participants, the BCC function was used to ensure that participants were unable to see the contact details of other participants (University of Wisconsin, 2016). The emails included details of the research, ethics procedures and an invitation to the presentation of the research. A4 posters and flyers were displayed in social areas and eating spaces and 23 (0.08%) responded. I physically approached 204 students in three different social areas and four classrooms across the faculties inviting research participation. Recruitment in person resulted in 19 (9.3%) agreeing to take part, giving a total of 42 participants. By the start of the experiment, nine (47%) of the 19 participants physically recruited and six (26%) of the 23 recruited by email had left the experiment. An hour before the data gathering period began, the

experimental Facebook account had 27 confirmed Friends. From the 27 who had friended the research Facebook account, 22 (81%) also responded to the online survey. More female students under 30 years of age participated in the survey than their male counterparts. Initial recruitment had a success rate of 0.08% for three emails inviting participants and 9.3% for in-person requests, however by the end of the experiment, 0.06% approached by email and 4.9% approached in person remained. All participant communications and materials are available in Appendix 7.4.

One unidentifiable participant completed the survey but did not Friend Ashley, the name given to the experimental Facebook account.

3.5.5 Demographic measures

The demographic measures were chosen in order that the pedagogic suitability of Facebook as a learning platform could be discussed in the light of the collected results. Each of these measures were designed to indicate how Facebook and the Internet were used by the participating students and supply background information to inform the discussion in the next chapter.

To answer the student perspective towards educational use of Facebook, information regarding gender and term-time location, and preferred learning methods was sought. Demographic data that was collected but was not central to the thesis is available in the Appendix, section 7.1.

3.5.6 Bias in selection of participants

This study was limited to UK HE Facebook users only, thereby avoiding bias from global patterns of Facebook usage and social attitudes. These participants would be computer-literate and familiar with online communication. They were likely to have had practice in answering online questionnaires.

Many students approached in person claimed that they either did not have a Facebook account or had given up checking it. A group of female students expressed worries about the security of their Facebook accounts during the observational period of the experiment, a difficulty experienced by Flaxman (2014), and did not participate. Participants who agreed to take part in the study might have had fewer privacy

concerns than members of the population who chose not to participate. This bias was taken into account when discussing the validity of the results.

3.6 Instruments

3.6.1 Facebook observation instrument

The instruments used to gather data were a survey to collect data from the participants and the Facebook Graph Search API which allowed collection of data about the participants' actions on Facebook.

3.6.2 Measurements and calculations

The data gathered by each instrument were stored in such a way that when it became necessary to compare the behaviours of individuals, on and offline, results could be easily calculated. The data from the survey results were downloaded from Google Forms in comma delimited format, suitable for importing into a spreadsheet. Participant data were collected using two methods, a survey and non-obtrusive observation of participant activity on Facebook.

Each participant was asked to Friend Ashley on Facebook, the fictitious user whose account had been created purely for the purposes of the experiment, described in section 3.5.3. For a two-week period, determined by pilot studies, the posts and actions on those posts of the participants were recorded. It was made clear to the participants that only their actions made while using Facebook would be recorded, not the actual content. I was interested in the medium usage, not the message itself (McLuhan, 1964).

Participants gave permission for their communication patterns and methods of communication, excluding the content of all posts, personal data and preferences, to be collected. The data gathered consisted only of posts that which each participant had chosen to author or share publicly or with the research account. The pattern of actions and the particular communication tools provided inside Facebook's user interface were compared to individual participants' responses from the questionnaire. The questionnaire gathered information about each participant's online habits in order to provide some independent variables that might be analysed later to show whether these had any significant effect upon the results.

3.6.3 **Facebook data**

The Facebook Graph Search API v2.0+ feature (Facebook, n.d.), a semantic search engine designed to give responses to natural language questions, was the first instrument employed to gather data from the participants. The tool was released in March 2013 and deprecated in December 2014 however it has been revived, an overview can be seen at https://developers.facebook.com/docs/graph-api/overview. A time-limited access token was provided by Facebook to enable the user-defined search to proceed for each participant. The access codes were destroyed after use. The user language was changed from English UK to English US to enable the Graph Search. The Graph Search query,

> 'Posts by john doe after October 2014 and before December 2014',

generated a file of *posts* made by john doe during November 2014 and was the most granular search term possible. The *posts* files for the participants who had completed the survey were chosen for downloading data. In each *posts* file were described the Facebook domain objects *type*, user actions on those objects *action_on_type*, time of action and the number of likes and comments received, but not the time of likes or comments received. The *posts* files were limited in the returned participant data to 25 past actions and there was also an upper limit of 25 placed on all likes and comments reported for each user action. Information from Facebook concerning the Graph Search did not mention the 25-result limitation and it was not possible to increase the number of results returned.

The UNIX timestamp for the beginning of the research gathering was 1415577600, corresponding to 10th November 2014 at 00:00 and that for the end of the research gathering period was 1416787199 corresponding to 23rd November 2014 at 23:59. On the 26th November I downloaded the posts, shares and links for all 22 participants in the period specified by REC. Some data was returned with no user-generated content. Some dates of the posts returned were outside of the range of data collection specified in the UNIX timestamp. Insufficient data were generated in the two week research period so all participants were contacted by email to request their permission to increase the data collection period to provide a greater volume of data. The BCC

function was used to ensure that participants were unable to see the contact details of other participants (University of Wisconsin, 2016).

Following the request to increase the data collection period, one response giving full permission to use the data was received. The mail servers at the university responded negatively to nine of the other email addresses, indicating that these participants may no longer be students at the university. 12 participants did receive the email but did not respond. On this basis, it was decided to continue and use all information gathered by the Graph Search.

Notepad++ was used to strip out the Facebook assigned code identifying the participant and all lines beginning with the following identifiers, id, name, message, caption, link, picture, description, location, place, country, city, street, type, offset, length, source and description were deleted then the file was saved as a text file using an assigned code of the format FBP12xx to match responses to survey data and keep participants anonymous. The original files were encrypted and stored in the faculty office.

3.6.4 Data collected from Facebook using posts

The differing data types available from *posts* files for analysis are presented below.

Facebook domain (type): data categorical.

"status_type": "added_photos": data numerical.
"status_type": "shared_story": data numerical.
"status_type": "added_video": data numerical.

Nature of action (action_on_type): data categorical.

added_photos data numerical: indicates that the user added one or more photographs.
shared_story data numerical: indicates that the user shared one or more stories.
added_video data numerical: indicates that the user added one or more videos.

3.6.5 **Post files statistics**

Facebook returned 21 *posts* files and data completeness checks showed that one participant post file did not contain any data whatsoever although the participant was actively posting on Facebook during the experiment. Several *posts* files contained duplicate data which was ignored and not all cases contained the upper limit of 25 interactions with Facebook.

3.6.6 **Avoiding bias**

Data concerning Facebook activity for each user was collected using covert observation rather than using a questionnaire as observational data would be more accurate. Covert observation was used to ensure that participants' communication patterns were not biased by the presence of the researcher.

The name of the Facebook account, Ashley Johns, was chosen to appear unisex which was less likely to provoke questions by partners of the participants regarding choice of Facebook Friends and allow their normal usage to proceed. After the initial message announcing the start of the Facebook experiment, no further communications were made by Ashley until the announcement of the end of the data gathering period.

3.6.7 **Survey data instrument**

The preface to the survey included the survey purpose, withdrawal instructions and mandatory ethical information and may be seen in Appendix 7.4. Survey questions were based upon the measures developed in the literature review. Of great importance when designing the survey was the necessity to gather data as accurately as possible in order to provide the greatest amount of validity to the analysis of the results. With a potential sample size at least 25, limited resources for the thesis and familiarity with digital technologies being inherent in the participants, these factors indicated that that an online survey was appropriate as a data gathering instrument. To facilitate data analysis and reduce or completely remove the need for coding, binary, numerical and ordinate type responses to the questions were designed. A copy of the survey questions is available in Appendix 7.2.

3.6.8 **Survey errors and avoiding them**

Various survey errors were identified and discussed by Groves (1989). Coverage error was reduced by employing an online survey as all participants were Facebook users with access to a computing device. Sampling error was reduced by gaining as large a sample as possible for the research from the population. Measurement errors were reduced by careful and clear wording of all questions to increase comprehension by the participants using the simplest language possible to phrase each question and designing the questions with reference to the objectives of the research (Foddy, 1993). Non-response errors were reduced by assurance of potential participants of the type of data that would be collected and by offering a prize draw for completion of the survey.

Apart from the first question, all responses were closed to avoid ambiguity of responses and outliers to the greatest possible extent. Participants were not required to supply descriptive responses to promote greater honesty and easier recall when answering.

3.6.9 **Questionnaire design**

The total number of survey questions was kept to the bare minimum to avoid questionnaire fatigue as recall error increases with the duration of recall time (Ainsworth et al., 2012). All survey questions were optional to answer other than the first which requested the unique six-digit code supplied to each participant to validate survey responses as originating from a genuine participant. Survey data with the anonymous code could be matched with the participant observational data files.

The remaining questions were divided into four themed sections, the first of which gathered demographic data for participants; the second measured the interactions that each respondent had with the Internet and digital systems, the total time of exposure during their lifetime and use of Internet time. The third section consisted of a set of privacy threshold questions to measure how each participant behaved in various analogue and computer-mediated human interaction contexts. A set of scenario-based questions to measure the outcome of privacy decisions regarding the sharing of jokes, pictures, films and music with their personal networks was created to measure the differences in information disclosure.

The final section asked whether the participants have faced embarrassment both online and in analogue settings to measure participant experiences on and offline. Participants were asked if they knew of examples of jokes, pictures, films and music that they would not share with each of their personal networks to measure social pressure not to share physical and social objects in various social situations.

3.6.10 **Avoiding bias in the survey**

Two versions of the questionnaire were distributed where the order of the responses differed and scale listings were reversed across all questions where this was possible to avoid recency effects (Foddy, 1993). Clear language was used throughout all questions and grammatical complexity was kept to a minimum and employed the active voice to avoid comprehension problems and free mental capacity to consider the response (Dillman, 2000). Colours were kept to a minimum and there were no images (Fanning, 2005). The number of options available for responses was kept to a minimum. The survey was pretested for clarity and lack of ambiguity. The length of questions was kept below 20 words wherever possible (Oppenheim, 1992).

The questionnaire was designed in such a way that details of embarrassing incidents could not be captured by asking only closed questions to promote honesty. Although negatively worded questions may be misinterpreted (Dudycha and Carpenter, 1973), some questions involving disclosure boundaries could not be easily worded otherwise, so care was taken to avoid the use of other negative words in those questions. Frequency questions included specific quantifiers such as, ‘once or twice a week’ and ‘every day’ to avoid different interpretations (Foddy, 1993). The full questionnaire is available in the Appendix.

3.6.11 **Questionnaire type and hosting system**

The questionnaire type was multiple choice, and a free questionnaire design and hosting system was available using Google Forms. An online survey was used rather than a paper-based one to decrease the complexity of administration, avoid transcription errors and simplify survey distribution and collection of results (Nulty, 2008). All participants were given the URL of the questionnaire by email.

3.6.12 **Data design**

Data were required from the participants regarding their posting and sharing behaviour on Facebook. To increase anonymity and gain the trust of participants, neither personal data nor images nor screenshots were collected, in the light of Flaxman's (2014) experiences. Quantitative participant data were gathered from Facebook using the data returned by the Facebook Graph API. This data was used in conjunction with participant survey data to answer RQ2. The data was both categorical and numerical in nature.

3.6.13 **Data collected from the survey**

The nature of the data required to analyse individual communication behaviour for this study required the honest recall of each participant in answering scenario-based questions for individual communication patterns and preferences online and offline to be quantified and compared. Participant responses were used to answer RQ1 from a student perspective, provide the dependent variable for RQ2 and all variables for RQ3. The data was categorical and numerical in nature.

3.6.14 **Survey data statistics**

The second instrument used to gather data was the online survey distributed to participants, hosted by Google. Two versions with reverse-ordering were held in separate comma-delimited files that were imported into two Excel worksheets. The data from the two files were combined into one single worksheet where the respondents' names were cross-referenced against the pseudo-random code list supplied to the participants prior to the start of the experiment, identified using a code with the format FBP12xx for subsequent identification and comparison against the results gathered from Facebook. There were 23 usable responses to the survey, however one (4%) came from a participant who did not friend Ashley. Data from this response was excluded from results and analysis. Questions that returned numerical responses were added to the spreadsheet in their native format but those that returned text-based responses to Likert scale questions were recoded manually using a lower integer for the response indicating the lowest frequency. The anonymised responses were saved for later analysis and each response was colour coded within the spreadsheet to allow visual

checks for completeness. Missing data were coded as zero within the spreadsheet and were further coded in SPSS using the Missing Data tools (IBM, 2016). The survey data were examined to ensure distribution of data.

Out of a total of 3432 possible survey responses from the 22 participants, 18 (0.52%) questions were not answered. Eight of these (44%) were for questions concerning the participants' analogue self, seven (39%) were communication questions, two (11%) were Facebook questions and one (5.5%) was for a question about the digital self.

3.6.15 Data validation

Before the data analysis began, survey and observational data were checked for completeness and distribution. There was no pattern to the missing responses so all surveys were retained and no values were imputed (Little and Rubin, 1987).

3.6.16 Procedure and timeline

Permission to proceed with the research was given in September 2014. After 20th October, the research was publicised to students. A new email account was opened to allow the Facebook research account to be created. The data gathering period for the experiment began on 9th November 2014 at midnight and ended on 23rd November at midnight. An email was sent to participants in September 2016 requesting permission to use data contained in *posts* files prior to the two-week experiment period to increase the volume of data.

3.7 RQ1 analytical method

3.7.1 Hypothesis H1

Is there any difference between student preference for copresent learning and their preference for remote learning?

The null hypothesis was:

H1. There is no difference in student preference for copresent learning and their preference for remote learning.

Copresent study	Remote study
Attending lectures	Reading a book
Group work	Audio books and informative MP3s
Attending seminars	Reading on screen
One-to-one or small group tutorials	Informative videos
Practical work	

Table 3.1: Classification of teaching methods

3.7.1.1 Analytical method

A maximum possible score of 66 could be achieved for all participants who answered 'most preferred' to allow an aggregate score, percentage and ranking for the sample to be calculated for each category of learning methods. The variables chosen were: DV *learning method*, IV1 *copresent learning methods*, IV2 *remote learning methods*.

A paired-samples t-test was conducted to assess the relative preferences for learning in copresent and remote conditions across all participants. The significance level α was set at 0.05.

3.7.2 Hypothesis H2

Does gender affect student preference for copresent learning and their preference for remote learning?

The null hypothesis was:

H2. There is no difference in student gender preference for copresent learning and their preference for remote learning.

The sample was separated into male and female participants and a paired-samples t-test was conducted to assess the relative preferences for learning for male and female participants. The variables chosen were: DV *gender*, IV1 *copresent learning methods*, IV2 *remote learning methods*. The significance level α was set at 0.05

3.7.3 Hypothesis H3

Do students living away from home spend more time online than students living at home?

The null hypothesis was:

H3. There is no difference between the time spent online between students living at home and students living away from home.

An independent-samples t-test was conducted to assess the relationship between time spent online for living away and living at home conditions, using *term-time location* as the IV and *weekly time spent online* as the DV. The significance level α was set at 0.05.

3.7.4 Hypothesis H4

Does gender affect the time participants spend online?

The null hypothesis was:

H4. There is no difference between the time spent online between male students and female students.

An independent samples t-test was conducted to assess the relationship between weekly time spent online for male and female students using *weekly time online* for the DV, *male students* for IV1 and *female students* for IV2. The significance level α was set at 0.05.

3.8 RQ2 analytical method

3.8.1 Hypothesis H5

Does ease of embarrassment predict student data sharing?

The null hypothesis was:

H5. There is no relation between students' self-reported ease of embarrassment and the number of Facebook items they share.

Participant Facebook usage data obtained from the *posts* files was entered into a spreadsheet. The DV, total number of shared items for each participant, was calculated by summing the individual numbers of different data types that had been shared for each participant. The IV employed data from the participants' responses to ease of embarrassment.

To assess the relationship, an independent samples t-test and a Mann-Whitney U test were conducted using *total number of items shared* for the DV and *ease of embarrassment* for the IV. The significance level α was set at 0.05.

3.8.2 Hypothesis H6

Does the gender of students who become embarrassed easily predict student data sharing?

The null hypothesis was:

H6. There is no relationship between genders for participants' self-reported ease of embarrassment and the number of Facebook items they share.

Participant data were split by gender. To assess the relationship, an independent samples t-test was conducted using *gender* as the DV and the *total number of items shared* for the IV. The significance level α was set at 0.05.

3.9 RQ3 analytical method

3.9.1 Hypothesis H7

Do individuals have different disclosure boundaries when sharing physical and social objects with their personal networks and on Facebook?

The null hypothesis was:

H7. The nature of an object does not affect the location of individual disclosure boundaries for students.

This question was answered using data collected concerning the disclosure boundaries that participants reported for face-to-face sharing of four common objects with each of

their personal networks and Facebook. The personal networks used were (1) family and significant carers (Fam), (2) partners (Par), (3) fellow university students or classmates (4) friends outside of university (XFr), (5) management at their place of work (Man), (6) university staff and lecturers (Lec), (7) Facebook. Survey questions were crafted to uncover the participant disclosure boundaries when sharing music, jokes, films and pictures with each of their personal networks and Facebook.

3.9.1.1 **Analytical method**

Data from Q23 to Q26 were summed across the personal networks to provide an aggregated level of trust, expressed as a percentage representing reluctance to share that object with each of the seven personal networks. The results were tabulated and the data were checked to ensure they passed six assumptions before choosing an analysis method.

1. The DV must be continuous.
2. The two IVs should consist of two or more categorical independent groups.
3. There should be independence of observation.
4. There should be no significant outliers.
5. The DV should be normally distributed for each of the groups of the two IVs.
6. There must be homogeneity of variances for each combination of the groups of the two independent variables.

A two-way ANOVA was conducted to examine the effect of object and personal network on level of trust felt toward each personal network.

The responses to Q20 asked participants to choose which of the six personal networks they would prefer not to have access to posts, Timeline and personal information stored on Facebook, were also tabulated to provide a separate independent and overall trustworthiness rating for the personal networks.

3.9.2 Hypothesis H8

The null hypothesis was:

H8. Personal networks do not affect the location of individual disclosure boundaries for students.
The method for testing this hypothesis is as described above for H7.

3.9.3 Hypothesis H9

Do the Facebook privacy settings enable students to define their disclosure boundaries in the manner that students would prefer?

The null hypothesis was:

H9. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.
The congruency of participant preferences for definition of disclosure boundaries and the actual disclosure boundaries was assessed by conducting a Pearson product-moment correlation for each personal network to assess the relationship between the variables (1) *preference for disclosure boundaries* and (2) *actual disclosure boundaries* for the sample of students (n = 22).

3.10 Ethics, concerns and limitations

The highest concern in carrying out social research is protection of the 'physical, social and psychological well-being of participants' (British Sociological Association, 2002, p. 2). Each piece of research involving human participants requires careful design and the use of particular procedures to ensure that harm does not take place and the following advice was borne in mind each step of the way.

> Ethics aren't a checklist. Nor are they a universal. Navigating ethics involves a process of working through the benefits and costs of a research act and making a conscientious decision about how to move forward (boyd, 2016).

Participants were self-selected Facebook account holders. They were not encouraged to use Facebook any differently from their normal pattern of usage to avoid health issues

relating to usage of IT and displays occurring due to increased usage of Facebook during the experiment. Especially important was avoiding harm to participants by manipulation of their feelings. The emotional contagion study (Kramer, Guillory and Hancock, 2014) breached the ethical procedures that a university ethics committee would have imposed. Participants were not informed of the study, were not given an opportunity to opt out of the study and the study itself was doubtful ethically. The News Feeds of over 689,000 Facebook users were manipulated so that they contained either reduced positive emotional content or reduced negative emotional content. The study concluded that individual human emotions could be manipulated, although the effect size was small ($\eta^2 = 0.001$).

This evidence meant that emotions could be manipulated using social networking and in order to avoid a similar issue, my participants were not contacted during the experiment, nor were any posts composed from the Ashley Facebook account, other than to announce the start and end of the experiment.

The Helsinki Declaration (2013) from the World Medical Association provides guidelines for the planning, conduct and later publication of research involving human participants. All participants met in person were treated equally and honestly and their data were gathered ethically and stored securely in the manner proscribed in BERA 2012. BSA (2002) research guidelines do not enforce consent, anonymity and confidentiality for data collected in a public place, but these need to evolve to include the public nature of social networking (Social Data Science Lab, 2016) because issues surrounding the ethics of gathering data from social media are still in flux (Kahn, Vayena and Mastroianni, 2014). Alongside the standard protection of participants and their data as described in BERA 2012, there were additional precautions to observe (Coughlan and Perryman, 2015a; Social Data Science Lab, 2016) when collecting and disseminating participant data from social networks. In addition to this I took care not to contravene Facebook's Platform Policy, section three (Facebook, 2016c) which is expanded upon below.

3.10.1 **Facebook Platform Policy**

Below are shown the relevant sections of Facebook's Platform Policy (2016c) that broadly correspond to similar specifications in BERA 2011.

1. Protect the information you receive from us against unauthorized access, use, or disclosure.
2. Only show data obtained from a user access token on the devices associated with that token.
3. Only use friend data (including friends list) in the person's experience in your app.
4. If you cache data you receive from us, use it to improve your app's user experience and keep it up to date.
5. Don't proxy, request or collect Facebook usernames or passwords.
6. Keep private your secret key and access tokens. You can share them with an agent acting to operate your app if they sign a confidentiality agreement.
8. Keep Facebook user IDs within your control. Contract with any providers who help you build or run your app to ensure that they keep the user IDs secure and confidential and comply with our policies. If you need an anonymous unique identifier to share with third parties, use our mechanism (Facebook, 2016).

The access tokens provided by Facebook to download the *posts* files were deleted following collection of posts files.

Zimmer (2010) discusses the problems of anonymity in gathering Facebook data and refers to a study in 2008 where the study data were made public without taking sufficient steps to anonymise the participants. Zimmer discusses ethical concerns for researchers in social networking who will be recording live Facebook data and data anonymisation strategies. This particular study took place in North America where 'personally identifiable information' (PII) is typically limited to an individual's name or other personally identifiable elements whereas the European Union defines PII as:

> [A]ny information relating to an identified or identifiable natural person…; an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his [sic] physical, physiological, mental, economic, cultural or social identity.[9]

Zimmer's recommendations and EU regulations were followed and the scope of the data set necessary for completion of the study was reduced to the bare minimum to avoid participants being identified after the data had been made public. Another

[9] European Union Data Protection Directive 95/46/EC, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:EN:HTML

example of re-associating users with their online activities (Narayanan and Shmatikov, 2009) showed that despite attempts to anonymise data, more work is required in this area.

The gathering of reduced-information data for this study was informed by BERA 2011, and took into account the anonymity of participants and all data collected was treated anonymously and confidentially and was not used for any purpose other than for this thesis.

The data contained within Facebook *post* files identified the type of object used by individual participants however all textual meta-data was disregarded and deleted. Participants' identities were anonymised, as discussed below, in order to allow cross-referencing between the two data types gathered. Permission to carry out the research was sought via the university's Research Ethics Committee which gave permission for the research to proceed. A copy is available in Appendix 7.5.

3.10.2 **Anonymization of participants**

Two methods of anonymization were employed to ensure total anonymity of the participants when the work was finally published. Two data sources, observational and survey, required mapping to the correct participant. Participants were provided with a unique random six character code to identify their survey entries. This was to ensure that participants could not be identified should the Google Forms system become compromised.

When the Facebook data were collected, the participant Facebook identities were substituted for a code of the format FBP12xx ($x \in \mathbb{N}$). The mapping of the survey code, the FBP12 code and the participants' names and Facebook identities were kept securely in an encrypted spreadsheet. Following anonymization, it was impossible to identify individual participants from the FBP12 code itself. The questionnaire did not request details of participants' courses of study nor exact ages. Participant gender and term time location were the only elements that might be used to retrospectively identify a participant.

3.10.3 **Withdrawing from the research**

Respondents could explicitly withdraw from the research process by ‘unfriending’ the research Facebook account or by emailing the researcher. The FBP12 participant codes allowed data from any single respondent to be removed from the research data at any stage of the research project. The Facebook research account Friend list was checked regularly to ensure that only Friends of the Facebook account were used in the research. The documentation supplied to the participants concerning the research procedure, ethics and withdrawal is available in Appendix 7.4.

3.10.4 **Collection and storage of data**

Data were held in password-protected files on a password-protected university domain PC in the researcher’s office which was kept locked at all times when he was not present in a confidential and secure manner under the terms of university ethics guidelines and the UK Data Protection Act (1998). The PC was kept up-to-date with operating system, application patches and antivirus product definitions. A lockable filing cabinet held DVD backup copies of all data gathered and a second set of backup disks was held securely in the faculty office. At the end of the research, all participant data, the Ashley email account and the Facebook account were deleted.

3.10.5 Research questions, underpinning theories and analytical methods

Research questions	Theories	Concept, data source & analytical method
RQ1. Do students prefer analogue methods of teaching to digital methods of teaching?	Presence (Mead, 1934; Cooley, 1956; Goffman, 1963) Copresence (Goffman, 1959; Nowak, 2001; Bulu, 2012) Media richness theory (Daft and Lengel, 1986; Kock, 2005) Social presence theory (Short, Williams and Christie, 1976; Tu and McIsaac, 2002)	**Learning style preferences** DV: Survey data H_1, H_2: Paired samples t-test H_3, H_4: Independent samples t-test
RQ2. Does ease of embarrassment predict the number of Facebook items that students share?	Embarrassment avoidance behaviour (Goffman, 1956; 1959; 1967) Audience segregation (Goffman, 1959; Donath and boyd, 2004; Marwick and boyd, 2010) Embarrassment thresholds (Freud, 1924a; Piaget, 1972a; 1972b; 1975; Klein, 2002) Embarrassment avoidance strategies (Goffman, 1956; Schudson, 1984; Trottier, 2014; Scheff, 2017)	**Facebook items shared** DV: total number of Facebook items shared Source: Recorded Facebook data IV: Ease of personal embarrasability: Source: Survey data H_5, H_6: Independent samples t-test & Mann-Whitney U test
RQ3. Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?	Social penetration theory (Altman and Taylor, 1973) Communication privacy management theory (Petronio, 2002; 2007; Petronio and Durham, 2008) Disclosure thresholds (Griffin, 2011; Petronio, 2002; 2013; Joinson and Paine, 2007; Tang and Wang, 2012; Pennington, 2008) Intersubjectivity (Husserl, 1989; Scheff, 1967)(Cooley, 1922; Mead, 1934; Goffman, 1956; 1959; 1963; Goffman, 1967; Goffman, 1981) (Schutz, 1966; Garfinkel, 1984; Gillespie and Cornish, 2010; Scheff, Phillips and Kincaid, 2006) Personal networks (Schlenker, 1985; Leary, 1995; Wesch, 2009; Tang and Wang, 2012) Symbolic interaction (Blumer, 1986; Charon, 2004; Carter and Fuller, 2015)	**Boundary coordination** DV: Level of disclosure IV1: nature of shared object IV2: personal network Source: Survey data H_7, H_8: Two-way ANOVA H_9: Pearson product-moment correlation

3.11 Reminder of the research questions

RQ1. Do students prefer analogue methods of learning to digital methods of learning?

H1. There is no difference in student preference for copresent learning and their preference for remote learning.

H2. There is no gender difference in student preference for copresent learning and their preference for remote learning.

H3. There is no difference between the time spent online between students living at home and students living away from home.

H4. There is no difference between the time spent online between male students and female students.

RQ2. Does ease of embarrassment predict the number of Facebook items that students share?

H5. There is no relationship between participants' self-reported ease of embarrassment and the number of Facebook items they share.

H6. There is no relationship between genders for participants' self-reported ease of embarrassment and the number of Facebook items they share.

RQ3. Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?

H7. The nature of an object does not affect the location of individual disclosure boundaries for students.

H8. Personal networks do not affect the location of individual disclosure boundaries for students.

H9. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

3.12 Chapter summary

This chapter has described the context, ontology, epistemology and paradigm and how this led to the formulation of the methodology and research design. The original direction for the research, failures encountered and how they were overcome were described. Measures were operationalised and justified. The choice of participants was described and justified and the information gathering instruments were described in

detail and statistical results concerning the participants and instruments were presented. The procedures for collecting the necessary data and the timeline for its capture were described and this was followed by details of measurements and analytical methods prior to analysis in the following chapter. The chapter concluded with a thorough discussion of the ethical challenges faced when dealing with participants and data gathered from Facebook.

4. RESULTS, ANALYSIS AND DISCUSSION

> Whenever a technology is introduced, there are surely benefits, but there are also costs that often go largely unexamined. Technology addresses needs, it solves problems, and it creates opportunities. But it also creates needs that might not have existed otherwise, it introduces problems that no one envisioned, and it can involve drawbacks that weren't fully understood (Oliver in Baym, 2012).

4.1 Introduction and chapter outline

The purpose of this chapter is to present and discuss the results with respect to both the research questions and literature then critically discuss the outcomes.

The chapter is divided into five sections. Section 4.2 presents the demographic results, section 4.3 analyses the results to RQ1, student acceptance of digital learning, section 4.4 analyses the results to RQ2, ease of embarrassment and sharing, section 4.5 analyses the results to RQ3, student disclosure boundaries. Section 4.6 summarises the significant results. Section 4.7 consists of a critical discussion of the outcomes of data analysis in relation to both the research questions and the literature review and comments on their applicability to the population. It discusses the nature of both the data and participants and discusses the limitations, reliability, validity and general applicability of the outcomes.

4.1.1 Data analysis tools

The tools used for data analysis were Microsoft Office Excel 2007, Notepad++ (v6.9.2) and the Statistical Package for the Social Sciences (SPSS v20).

4.2 Demographic results

This section presents a set of results gathered from the participants in order to provide some background information regarding their analogue and digital lives, particularly their social media usage. Age, gender and location information was necessary to establish whether the group was a representative sample of the student body and also to

establish a baseline for discussion of how HEIs may need to approach the production of learning resources on a third party digital platform.

Results that were not germane to the outcomes of the thesis are presented in the Appendix, section 7.1.

The age ranges and gender of the participants are presented in Table 4.1. Nineteen participants (86%) were aged under 30 and of these participants, seven (37%) were male and 12 (63%) were female, (n=22).

		Gender			
		Male		Female	
		Count	Row N %	Count	Row
Age group	18 to 23	5	35.7%	9	64.3
	24 to 29	2	40.0%	3	60.0
	30 to 34	1	100.0%	0	0.0%
	35 to 39	0	0.0%	0	0.0%
	40 to 65	1	50.0%	1	50.0

Table 4.1: Participant age and gender demographics

45.5 percent of participants (n = 22) were living away from home whilst 50% were home students and 4.5% did not respond.

4.2.1.1 Weekly time spent online

The time spent online per week was normally distributed, with skewness of 0.217 (SE = 0.491) and kurtosis of -0.776 (SE = 0.953) with a mean value of 52.0 hours and a median of 50.0 hours, ranging from ‘5 to 19 hours’ to ‘80 to 99 hours’.

Weekly hours spent online	
0 to 4	0%
5 to 19	9%
20 to 39	23%
40 to 59	36%
60 to 79	14%
80 to 99	18%
100 to 119	0%
More than 120	0%

Table 4.2: Weekly time spent online

4.2.1.2 Digital maturity of participants

The length of time that participants have had access to digital technologies is shown in Table 4.3.

Time of access to digital technologies (N=22)					
	PC or laptop	The Internet	Games consoles	Mobile phone	Facebook
Less than 1 year	0%	0%	5%	5%	0%
Between 1 and 2 years	0%	0%	5%	0%	0%
Between 3 and 5 years	5%	0%	5%	9%	27%
Between 6 and 9 years	41%	50%	19%	41%	68%
Between 10 and 19 years	45%	41%	43%	41%	5%
20 years or more	9%	9%	24%	5%	0%

Table 4.3: Time of access to digital technologies

The digital exposure of participants was revealed by conducting Pearson product-moment correlation to determine whether a relationship existed between the variables (1) *age of participants* and (2) *length of exposure to digital technologies*. The results are summarised in the correlation Table 4.4 for the sample of students (n = 22).

Variable	**1.**	**2.**	**3.**	**4.**
1. Time of access to the Internet	---	.738**	.652**	.492*
2. Time of access to a PC or laptop		---	.501*	.428*
3. Time of access to a mobile phone			---	.473*
4. Time of access to Facebook				---
* p < .05; ** p< .01				

Table 4.4: Correlation table for the sample

The Pearson product-moment correlation showed the relationship between the variables above. There was a strong, statistically significant positive correlation between time of access to a PC or laptop and time of access to the Internet, which was (r = .738, n = 22, p < .000). There was a strong, statistically significant positive correlation between time of access to a mobile phone and time of access to the Internet, which was (r = .652, n = 22, p = .001). There was a medium, statistically significant positive correlation between time of access to Facebook and time of access to the Internet, which was (r = .492, n = 22, p = .020). There was a medium, statistically significant positive correlation between

time of access to Facebook and time of access to a mobile phone, which was (r = .473, n = 22, p = .026). There was a medium, statistically significant positive correlation between time of access to Facebook and time of access to a PC or laptop, which was (r = .428, n = 22, p = .047). There was a medium, statistically significant positive correlation between the age of participants and time of access to the Internet, which was (r = .425, n = 22, p = .049). There was a medium, statistically significant positive correlation between the age of participants and time of access to a mobile phone, which was (r = .491, n = 22, p = .020).

4.2.1.3 Participant usage of Facebook's security settings to restrict the audience for their content

All participants (100%) used the privacy settings provided by Facebook to select who is able to see their information (n=22).

4.2.1.4 Participant trust of Facebook security settings

Just over a quarter (27%) reported that they trusted Facebook's security settings to prevent their information from becoming public or otherwise available to those they do not trust.

4.2.1.5 Personal networks excluded from full access to participant Facebook information

Fellow students were not excluded by 95.5% of participants from seeing all or parts of their Facebook information and communications and 100% reported that they would not exclude their intimate friend or partner from the same information (n=22). The results are summarised in Table 4.5.

Personal networks	Percentage of respondents excluding this group from viewing all or parts of their Facebook information and communications (n = 22).
Intimate friend or partner.	0%
Fellow students.	5%
Family or significant carers.	27%
Friends outside of university.	36%
University staff and lecturers.	45%
Management at their place of work.	50%

Table 4.5: Personal networks actively excluded from Facebook

4.2.1.6 Personal networks preferentially excluded from full access to participant Facebook information

The participant personal networks preferentially excluded from seeing all of their posts, Timeline and information on Facebook are summarised in Table 4.6. 73% of the sample (n = 22) would prefer university staff and lecturers did not see all of their Facebook information. The calculated trust rating for sharing analogue objects with social groups showed that 85% of the participants do not trust university staff and lecturers.

Personal network	Percentage of sample that would prefer this group not to see all of their Facebook information.
Intimate friend or partner.	5%
Fellow students.	9%
Friends outside of university.	14%
Family or significant carers.	32%
University staff and lecturers.	73%
Management at their place of work.	77%

Table 4.6: Preferred social network exclusion

4.2.1.7 Participant unwitting self-embarrassment on Facebook

The distribution and percentage of positive responses was calculated.

Eight participants (36%) had unwittingly posted content on Facebook that at the time of posting seemed fine but the later comments of others on Facebook made them realise the posting was embarrassing to themselves.

4.2.1.8 Factors that may increase participant time online

Participant responses to improving three factors that negatively impact time spent online are shown in Table 4.7. The proportion shown is those participants who would increase the time that they spend online. The lack of wireless network coverage is shown as 77% of respondents would spend more time connected to the Internet if there were greater wireless connectivity available.

Factors inreasing time online	Proportion that would spend more time online
Longer battery life in mobile devices	45%
Ubiquitous wireless Internet connection	77%
Cheaper Internet usage rates	41%

Table 4.7: Factors that would increase participant time online

Daily Facebook use was 95.5% with 4.5% using Facebook once or twice a week. LinkedIn was used once or twice a month or less by 95% of respondents.

4.2.1.9 Participant Facebook activities

The total for each response was calculated as a percentage of the total possible for each category. The ranking of participant Facebook pastimes is shown in Table 4.8.

Facebook activities	
Reading status updates.	78%
Messaging any Facebook 'friends' also connected.	74%
Looking at pictures friends have posted.	73%
Watching videos that friends have posted.	66%
Posting your own videos or pictures.	61%
Writing status updates.	55%
Sharing friends' videos.	49%
Sharing friends' pictures.	47%
Listening to music friends have posted.	45%
Doing work of any description.	40%
Sharing gossip.	39%
Playing Facebook mini-games.	38%

Table 4.8: Ranking of participant Facebook pastimes

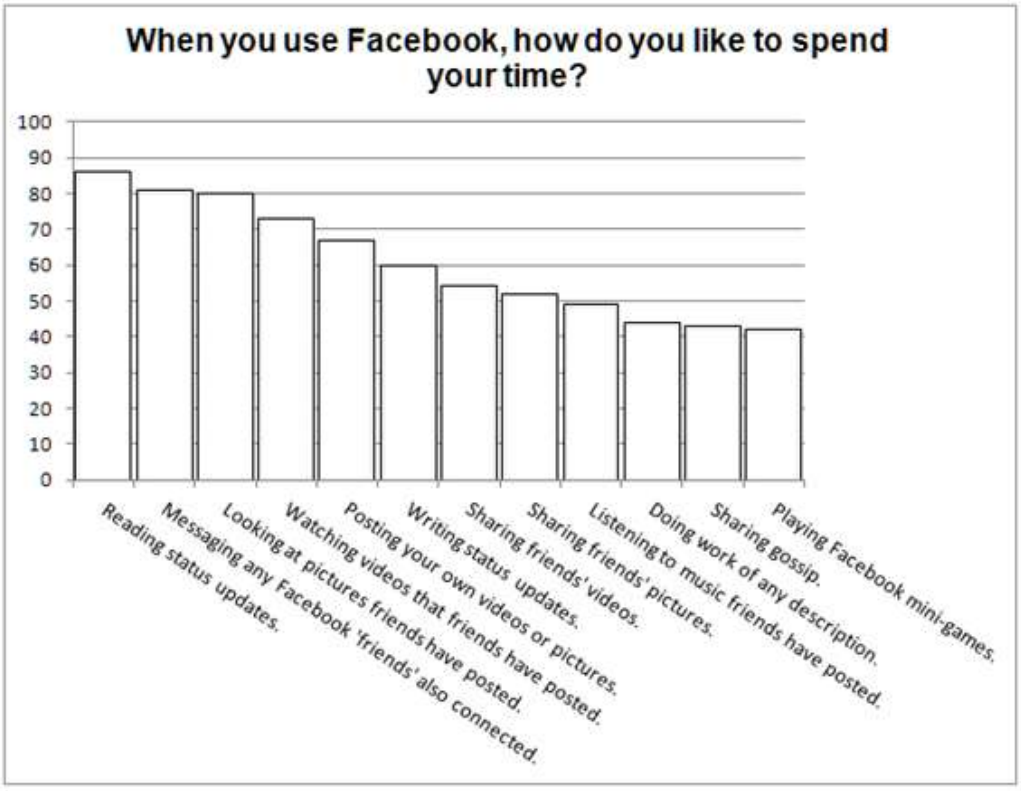


Figure 4.1: Ranked Facebook pastimes

4.2.1.10 Facebook post interaction by participants

The total for each response was calculated as a percentage of the total possible for each category. The ranking of likelihood of interaction with Facebook posts is shown in Table 4.9 and Figure 4.2.

Facebook posts interacted with	
Amusing comments or jokes	78%
Photographs of known people	74%
Funny pictures	70%
Serious content	67%
Amusing videos	67%
Informative videos	65%
Text without images	60%
Music	43%

Table 4.9: Facebook posts interacted with

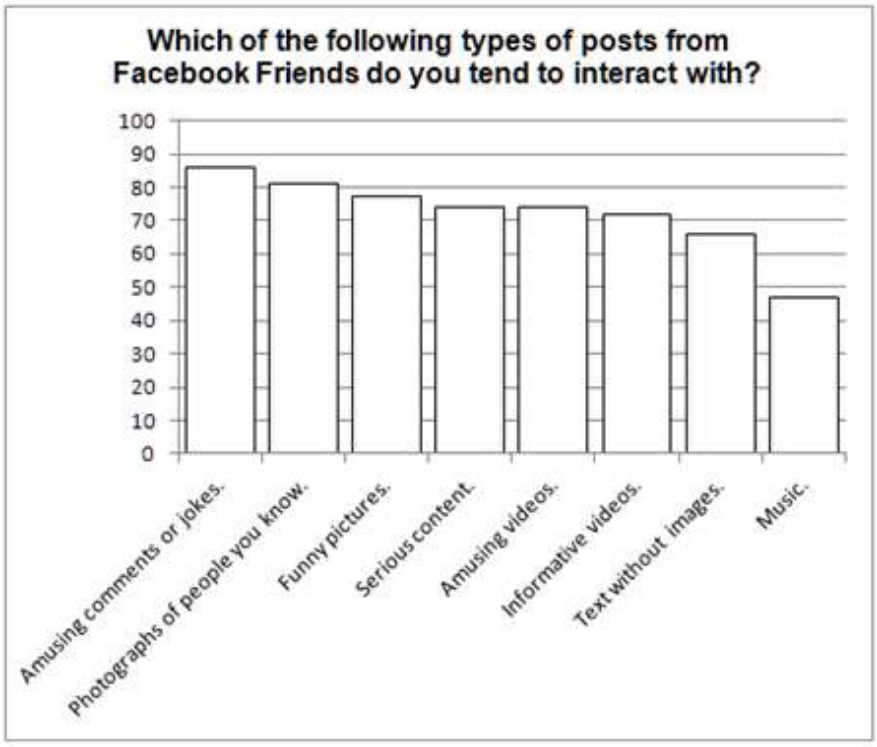


Figure 4.2: Ranking of percentage of Facebook posts from Friends interacted with by participants

4.2.1.11 Facebook activities from posts data

Frequency analysis of the data retrieved from the participants' actions on Facebook revealed the top eleven activities of all participants across the 25 actions contained per user in the *posts* files. This is shown graphically in Figure 4.3.

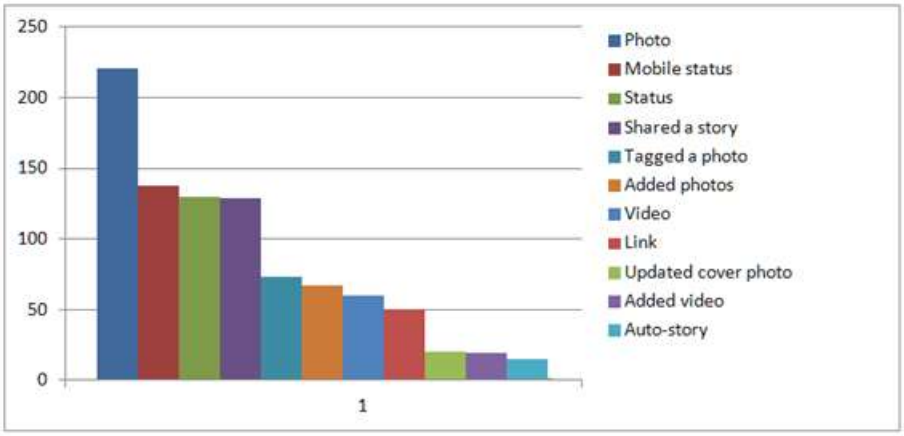


Figure 4.3: The top eleven activities carried out by the participants

4.2.1.12 Frequency of participant social media usage

The total for each response was calculated as a fraction of the total possible for each category. The ranking of social network usage frequency is shown in Table 4.10.

Frequency of SNS usage	
Facebook.	99%
SnapChat.	52%
Other SNS	48%
Twitter.	47%
Instagram.	36%
LinkedIn.	18%

Table 4.10: Frequency of SNS usage

4.2.1.13 Internet access technologies

Frequency of use	
Mobile device e.g. smartphone, iPad, tablet	89%
Fixed device e.g. personal computer	47%
Portable device e.g laptop	72%

Table 4.11: Frequency of Internet device usage

4.2.2 Participant demographic results

The usable sample of 22 consisted of nine males (41%) and 13 females (59%). The university statistics for the year during which the participant data were gathered were 46% male, 54% female (The Complete University Guide, 2015), providing a close match to the university's gender demographic. The global statistics for Facebook usage by gender are 48% male to 52% female (Women in social media, 2015), another close match.

4.3 Research question one

4.3.1 Hypothesis H1

Is there a difference between the methods preferred for learning at university? The significance level α was set at 0.05.

$H1_0$. There is no difference in student preference for copresent learning and their preference for remote learning.

Participants indicated their preferred learning methods at their university. The top two responses were equally popular, 'Attending lectures' and 'One-to-one or small group tutorials' (91%) and in third place was, 'Practical work'. The three least popular learning methods were, 'Reading a book' (70%), 'Reading on screen' (62%) and least popular was, 'Audio books and informative MP3s' (48%). The results are summarised in Figure 4.4 and the significance of this will be discussed in section 4.7.

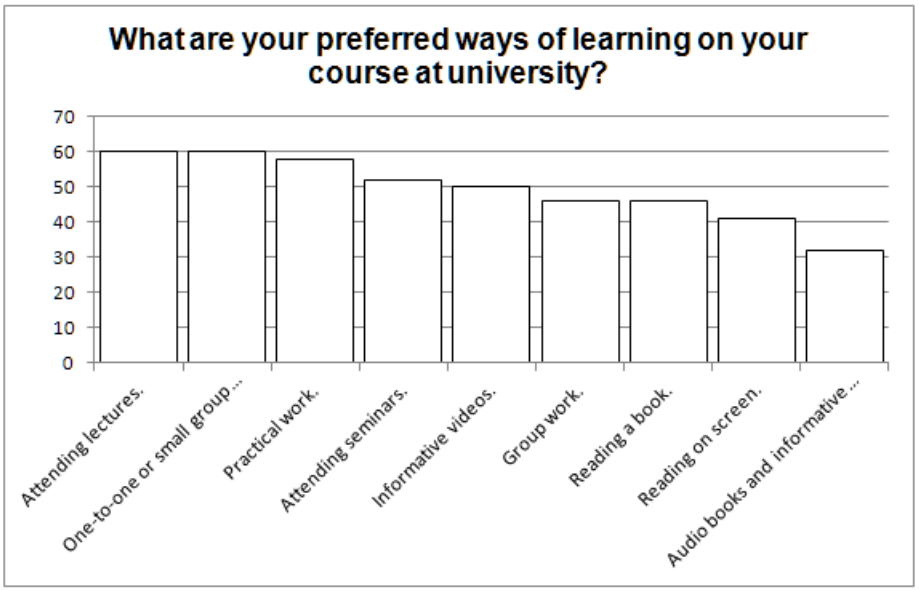


Figure 4.4: Preferred learning methods of participants

Participants were asked to rate their relative learning preferences for nine common HE learning methods shown in Table 4.12.

Copresent learning	Remote learning	Available responses
Attending lectures	Reading a book	1 = least preferred
Group work	Reading on screen	2 = no preference
Attending seminars	Informative videos	3 = most preferred
One-to-one or small group tutorials	Audio books and informative MP3s	
Practical work		

Table 4.12: Learning methods in HE

The results were separated into two groups differentiated by copresence and remote methods of learning. The individual results for preference of learning method were summed across the responses by copresence and remote learning. Missing responses were indicated by zero so this did not affect the results of the group sums. Higher scores in the two new groups represented the level of preference for copresent or remote learning. The results were entered into SPSS using a scalar data type. A paired-samples t-test was conducted to compare the relative preference for learning in copresent and remote conditions.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Preference for copresent learning	12.5455	22	2.40490	.51273
	Preference for remote learning	7.6818	22	2.43753	.51968

Table 4.13: Paired samples statistics

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Preference for copresent learning & Preference for remote learning	22	.234	.294

Table 4.14: Paired samples correlations

Paired Samples t-Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Preference for copresent learning - Preference for remote learning	4.86364	2.99675	.63891	3.53495	6.19232	7.612	21	.000

Table 4.15: The paired samples t-test

The results displayed in Table 4.15 indicate that there was a significant difference in the participants' preference for copresent learning (M=12.55, SD=2.40) and their preference for remote learning (M=7.68, SD=2.43) conditions; t (21) =7.61, p = 0.000. These results suggest that different learning methods have an effect on participants' preference for copresent learning. Specifically, these results suggest that when

participants are given a choice of learning methods, their preference for copresent means of learning is greater than for remote means of learning (95% CI [3.535, 6.192]).

The null hypothesis was rejected in favour of the alternative hypothesis.

$H1_a$. There is a difference in the participants' preference for copresent learning and their preference for remote learning.

4.3.2 **Hypothesis H2**

Is there a difference between the methods that male and female students prefer for learning at university? The significance level α was set at 0.05.

$H2_0$. There is no gender difference in student preference for copresent learning and their preference for remote learning.

A paired samples t-test was conducted after separating the sample into male and female participants and the results are shown in Table 4.16 and Table 4.17.

Paired Samples Statistics[a]

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Male preference for copresent learning	11.7778	9	2.63523	.87841
	Male preference for remote learning	8.0000	9	1.73205	.57735
Pair 2	Female preference for copresent learning	13.1111	9	2.08833	.69611
	Female preference for remote learning	7.0000	9	3.08221	1.02740

a. Gender = Male

Table 4.16: Paired samples t-test statistics sorted by gender

Paired Samples t-Test[a]

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Male preference for copresent learning - Male preference for remote learning	3.77778	2.99073	.99691	1.47890	6.07665	3.789	8	.005
Pair 2	Female preference for copresent learning - Female preference for remote learning	6.11111	3.01846	1.00615	3.79092	8.43131	6.074	8	.000

a. Gender = Male

Table 4.17: Paired samples t-test separated by gender

The results displayed in Table 4.17 indicate that there was a significant difference in male participants' preference for copresent learning (M=11.78, SD=2.64) and their preference for remote learning (M=8.00, SD=1.73) conditions; t(8)=3.789, p = 0.005. There was also a significant difference in female participants' preference for copresent learning (M=13.11, SD=2.09) and their preference for remote learning (M=7.00, SD=3.08) conditions; t(8)=3.789, p = 0.000.

The null hypothesis was retained.

$H2_0$. There is no gender difference in student preference for copresent learning and their preference for remote learning.

This result suggests that there is no significant difference in the preference for copresent learning than for remote learning when split by gender. A complete discussion of these results is available in section 4.7.

4.3.3 **Hypothesis H3**

Is there any difference between the weekly time participants spend online for those living at home compared to those living away from home. The significance level α was set at 0.05.

$H3_0$. There is no difference between the time spent online between students living at home and students living away from home.

An independent-samples t-test was conducted to compare time spent online for living away and living at home conditions. Inspection of Q-Q Plots revealed that weekly Internet time was normally distributed for both groups and Levene's Test for Equality of Variances showed homogeneity of variance. There was no significant difference in time spent online for participants living at home compared to participants living away from home (t (19) = -0.326, p = 0.748) (95% CI [1.479, 6.077: 3.791, 8.431]).

The null hypothesis was retained.

$H3_0$. There is no difference between the time spent online between students living at home and students living away from home.

4.3.4 **Hypothesis H4**

Is there any difference between genders for the weekly time participants spend online for those living at home compared to those living away from home? The significance level α was set at 0.05.

$H4_0$. There is no difference between the time spent online between male students and female students.

An independent samples t-test with a 95% confidence interval (CI) for the mean difference was conducted to compare time spent online for male and female students. Inspection of Q-Q Plots revealed that weekly Internet time was normally distributed for both groups and that there was homogeneity of variance as assessed by Levene's Test for Equality of Variances.

For the two groups, there was no significant difference in weekly Internet time for male participants compared to female participants (t(20) = -0.634, p=0.533).

The null hypothesis was retained.

$H4_0$. There is no difference between the time spent online between male students and female students.

4.4 Research question two

4.4.1 Hypothesis H5

Does ease of embarrassment predict the number of Facebook items that students share? The significance level α was set at 0.05.

$H5_0$. There is no relation between participants' self-reported ease of embarrassment and the number of Facebook items they share.

Results from RQ3 indicated that participants' willingness to share varied depending on the object shared, so an aggregate of all posts shared became the dependent variable. Participants' embarrassment responses from the questionnaire were used as a dependent variable. The group statistics for embarrassment were examined for correctness. From Table 4.18, all 22 participants provided a response to the question whether they get embarrassed easily in any aspect of their life so there was no reason not to employ the responses from this question. Figure 4.5 shows the distribution of ease of embarrassment across gender and shows that one (11%) of the nine males reported getting embarrassed easily whereas seven (54%) of the thirteen females reported getting embarrassed easily.

Group statistics for ease of embarrassment					
	Participants who believe they get embarrassed easily	N	Mean	Std. Deviation	Std. Error Mean
Total of shares	No	14	2.29	2.49	0.667
	Yes	8	0.375	0.744	0.263

Table 4.18: Group statistics for ease of embarrassment

Figure 4.5: Distribution of ease of embarrassment across genders

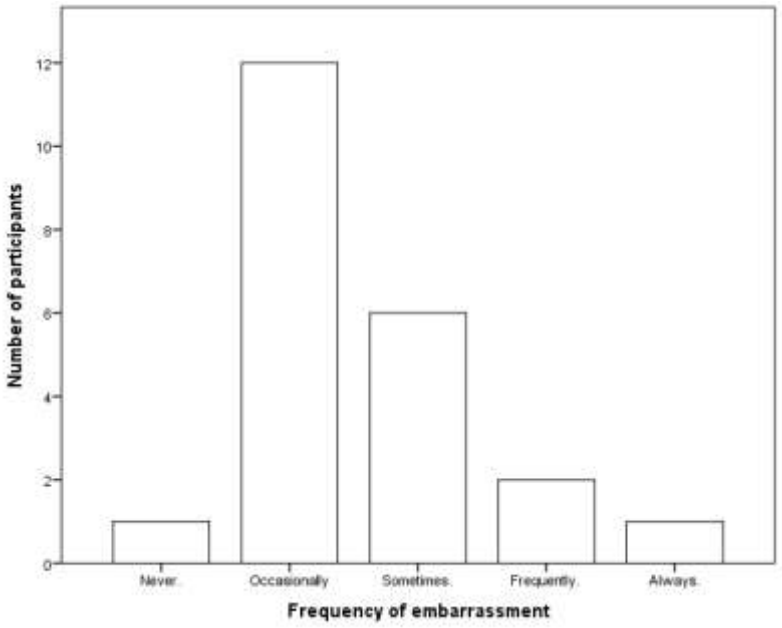


Figure 4.6: Distribution of frequency of embarrassment

Descriptive statistics for frequency of embarrassment										
	N	Min.	Max.	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Frequency of embarrassment	22	0	4	1.55	.912	.831	1.097	.491	1.316	.953
Valid N (listwise)	22									

Table 4.19: Statistics for frequency of embarrassment

In Figure 4.6 and Table 4.19 the distribution of self-reported frequency of embarrassment is normally distributed, with skewness of 1.097 (SE = 0.491) and kurtosis of 1.316 (SE = 0.953), so can be used to draw inferential statistics.

The sample size gave a cause for concern as $n_1 \neq n_2$ ($n_1 = 14$, $n_2 = 8$) so the sample sizes could not be considered equal because the larger group exceeded the smaller group by more than 1.5 times (Morgan et al., 2004) but exceeded this, $n_1/n_2 = 1.75$, however the ratio of variances between the larger group (v = 6.22) and the smaller group (v = 0.554) was 11.22 which suggested that the homogeneity of variance assumption failed (Tabachnick and Fidell, 2007).

The data deviated slightly from the necessary conditions, so the independent-samples t-test was conducted on the two groups to compare their relative performance on the number of Facebook items shared and Levene's test for equality of variances was employed. The results of the independent-samples t-test as generated by SPSS are displayed in Table 4.20.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total of shares	Equal variances assumed	5.716	.027	2.095	20	.049	1.91071	.91224	.00780	3.81362
	Equal variances not assumed			2.666	16.616	.017	1.91071	.71657	.39623	3.42520

Table 4.20: Independent samples t-test

Following a violation of Levene's test for homogeneity of variances, F(0,912) = 5.72, p = .027, a t-test not assuming homogeneous variances was conducted. The second line of Table 4.20 was therefore used. The value in the Sig (2 tailed) column was 0.017. This value is lower than 0.05 and therefore a significant difference existed between participants' self-reported ease of embarrassment and the number of Facebook items they shared.

The effect size (η^2) was calculated to show the magnitude of the differences in the means of the scores.

$$\eta^2 = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Using the data from Table 4.20,

$$\eta^2 = \frac{(2.666)^2}{(2.666)^2 + (14 + 8 - 2)}$$

$$\eta^2 = 0.262$$

The calculated value of eta squared was 0.262 and less between 0.2 and 0.5 which according to Cohen (1988) is small to medium.

An independent-samples t-test was conducted to compare participants' self-reported ease of embarrassment and the number of Facebook items they shared. There was a significant difference in scores for those participants who reported becoming embarrassed easily (n=8, mean=0.375, standard deviation=0.744) compared to those participants who reported becoming embarrassed less easily (n=14, mean=2.29, standard deviation= 2.49). The magnitude of the differences in the means was small to medium (eta squared=0.262).

The null hypothesis was rejected in favour of the alternative hypothesis.

$H5_a$ There is a relation between participants' self-reported ease of embarrassment and the number of Facebook items they share.

4.4.1.1 Triangulation with Mann-Whitney

A Mann-Whitney U test was conducted to compare differences between the two independent groups because the dependent variable, the number of Facebook items shared was not normally distributed.

The data met the conditions for a Mann-Whitney U test. The dependent variable, total number of shares, was a continuous variable. The independent variable, ease of embarrassment, consisted of two independent categorical groups. There was no relationship between the observations in each group nor between the groups which meant independence of observation existed.

The distributions of scores for both groups of the independent variable had the same shape, seen in the histograms shown in Figure 4.7. Both distributions were right skewed showing some positive skewness but shared similar kurtosis.

Sharing among those embarrassed easily was non-normally distributed, with skewness of 1.951 (SE = 0.752) and kurtosis of 3.205 (SE = 1.481). Sharing among those not embarrassed easily was non-normally distributed, with skewness of 1.529 (SE = 0.597) and kurtosis of 3.043 (SE = 1.154). Data can be considered normal when skewness lies

between +2 and -2 and kurtosis lies between -7 and +7 (George and Mallery, 2010) while Byrne (2010) suggests a kurtosis value of 3 is normal. Plots of the distribution of Facebook items shared, grouped by ease of embarrassment are shown in Figure 4.7.

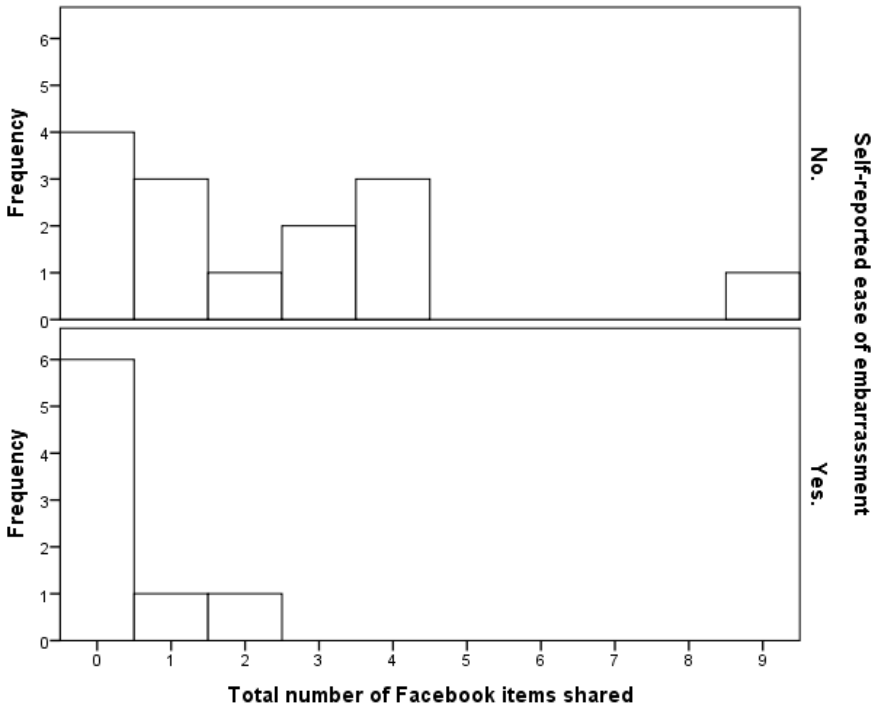


Figure 4.7: Distribution of items shared grouped by ease of embarrassment

For both groups, there was a suggestion of non-normality of data distribution, shown in Figure 4.7, so a non-parametric test was appropriate to triangulate the result of the possibly flawed independent samples t-test in Table 4.20.

Ranks				
	Ease of embarrassment	N	Mean Rank	Sum of Ranks
Total of shares	No.	14	13.71	192.00
	Yes.	8	7.63	61.00
	Total	22		

Table 4.21: Ranks for ease of embarrassment vs. shares

Test Statistics[a]	
	Total of shares
Mann-Whitney U	25.000
Wilcoxon W	61.000
Z	-2.233
Asymp. Sig. (2-tailed)	.026
Exact Sig. [2*(1-tailed Sig.)]	.035[b]
a. Grouping Variable: Ease of embarrassment	
b. Not corrected for ties.	

Table 4.22: Test statistics for the Mann-Whitney U test.

The Mann-Whitney U test results in Table 4.22 indicated that the number of posts shared on Facebook was larger for the least easily embarrassable group (*Mdn* = 1.5) than for the most easily embarrassable group (*Mdn* = .000), *U* = 25.0, *p* = .026. The null hypothesis was rejected in favour of the alternative hypothesis.

$H5_a$ There is a relation between participants' self-reported ease of embarrassment and the number of Facebook items they share.

This relationship indicates that the greater a participants self-reported ease of embarrassment, the lower the number of items they share on Facebook.

4.4.2 Hypothesis H6

$H6_0$. There is no relationship between genders for student self-reported ease of embarrassment and the number of Facebook items they share.

The data for reported embarrassment were analysed for differences in sharing due to gender. When the participants were asked to report how frequently they became embarrassed in any aspect of their lives, the results showed a gender split as indicated in Figure 4.8.

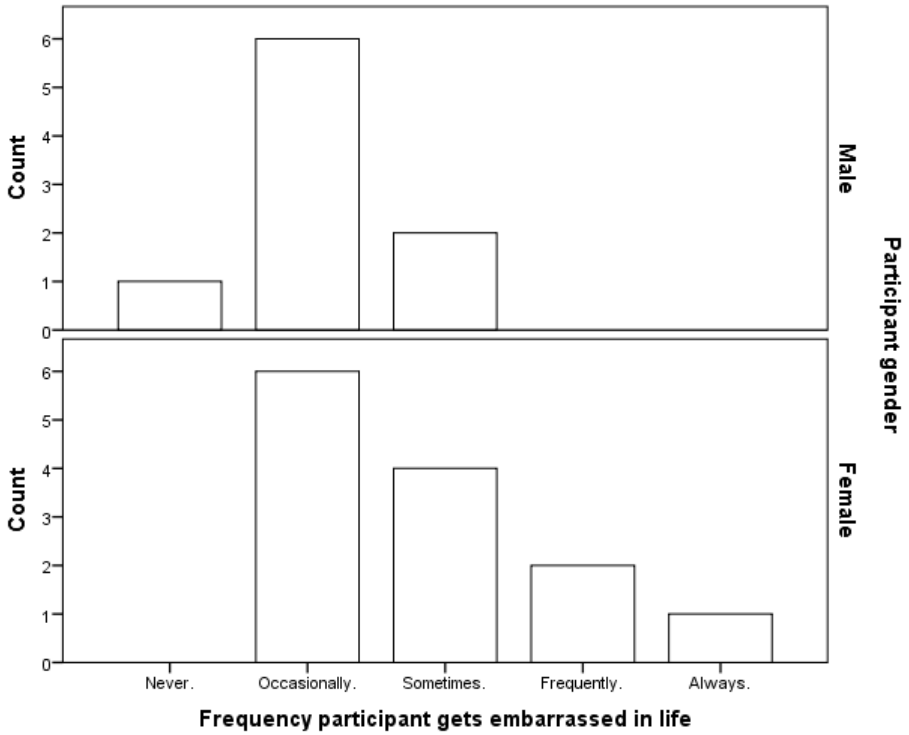


Figure 4.8: Reported frequency of embarrassment of participants

This indicates that males (n=9) report a lower frequency of embarrassment with 'occasionally' being the mode but females (n=13) reported a higher frequency of embarrassment, none reporting 'never'. This split in embarrassment indicated that females reported a greater frequency of embarrassment than males in the sample. This result was also borne out when the responses to Q 32, which asked participants if they thought that they got embarrassed easily, were plotted against gender and are shown in Figure 4.9.

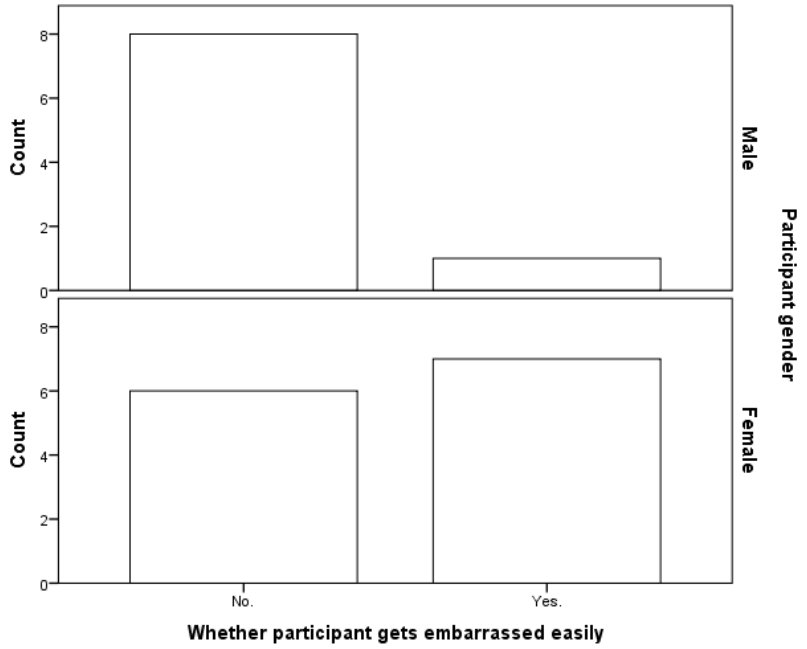


Figure 4.9: Ease of embarrassment vs. gender

These results agreed with those shown in Figure 4.9 that embarrassment in the sample was gender dependent with 11% of males stating that they get embarrassed easily (n=9) and 54% of females stating that they get embarrassed easily (n=13). Of the 35 items shared, 15 (43%) were shared by the 13 female participants and 20 (57%) were shared by the nine male participants. On average, the females shared 1.2 items each and the males shared 2.2 items each. It can be seen from the graph in Figure 4.10 that females reported lower frequencies of embarrassment than males.

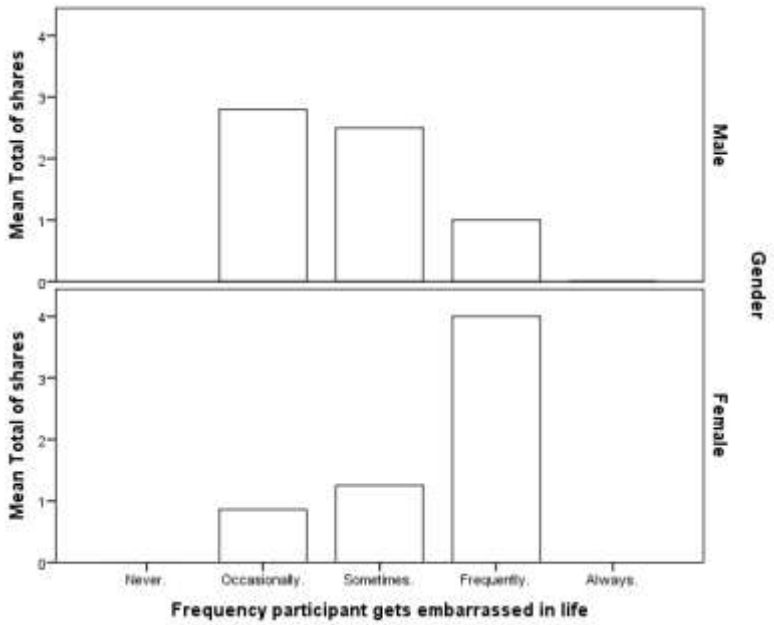


Figure 4.10: Frequency of embarrassment vs. gender

This trend was also carried over into Facebook when the number of items shared was displayed across gender in Figure 4.11. Note that zero items shared, displayed on the graph, is an indicator of reluctance to share. During the experiment, 35 items were shared, 29 (83%) by those who were not easily embarrassed and six (17%) by those who claimed that they were easily embarrassed.

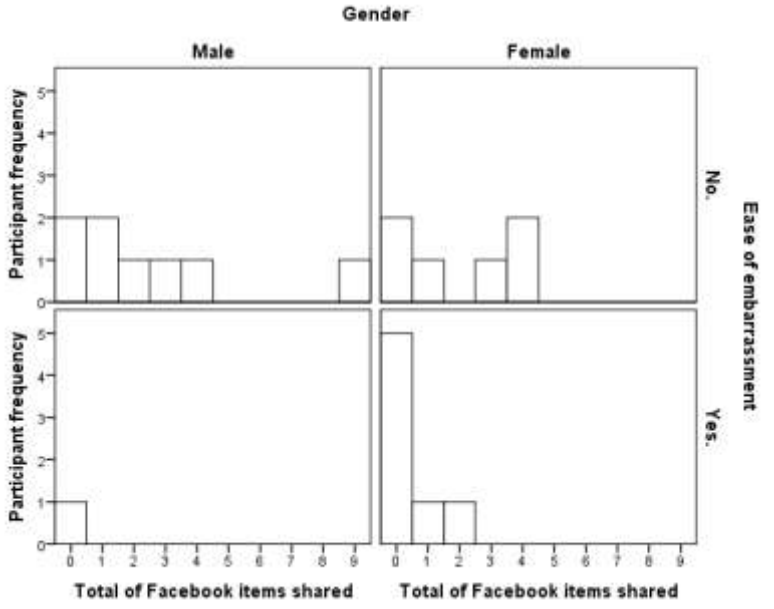


Figure 4.11: Total number of Facebook items shared vs. ease of embarrassment and gender

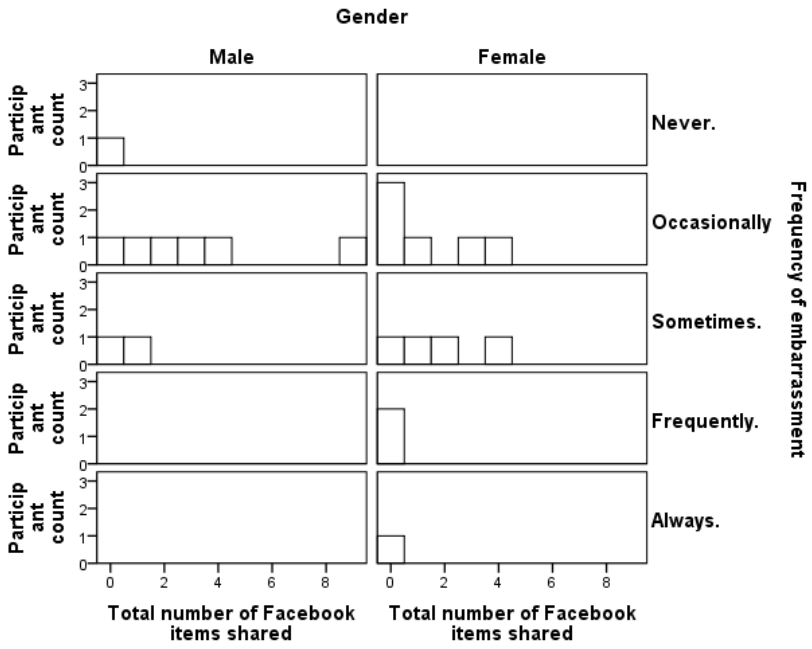


Figure 4.12: Total number of Facebook items shared vs. frequency of embarrassment, grouped by gender

It can be seen in Figure 4.12 that three of the female participants who reported getting embarrassed more often than 'Sometimes' did not share any items.

The null hypothesis was rejected in favour of the alternative hypothesis.

$H6_a$. There is a relationship between genders for participants' self-reported ease of embarrassment and the number of Facebook items they share.

For the sample, the number of Facebook items shared decreased with increasing levels of self-reported embarrassment and within the embarrassment results, females reported a greater level of embarrassment than males and shared fewer Facebook posts than the males.

4.5 Research question three

4.5.1 Hypothesis H7

Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?

$H7_0$. The nature of an object does not affect the location of individual disclosure boundaries for students.

Data were checked to ensure that they met the assumptions for conducting a 2-way ANOVA.

The DV must be continuous. The data collected for the DV is in the form of percentages, so satisfies this condition. The two IVs should consist of two or more categorical independent groups. The groups of object and personal network are categorical variables and are independent groups. There should be independence of observation: the data was sourced from different survey questions. There should be no significant outliers: there were no significant outliers in the DV. The DV should be normally distributed for each of the groups of the two IVs. A Shapiro-Wilk test is suitable for small group sizes so was chosen to conduct a check for normality, shown in Table 4.23 and Table 4.24.

Tests of Normality

		Shapiro-Wilk		
	Personal network	Statistic	df	Sig.
Embarrassment	Family	.881	4	.342
	Peers	.928	4	.581
	Partners	.831	4	.170
	Home friends	.926	4	.573
	Faculty	.930	4	.595
	Management	.955	4	.747
	Facebook	.923	4	.556

Table 4.23: Shapiro-Wilk output for personal network

Tests of Normality

		Shapiro-Wilk		
	Type of object	Statistic	df	Sig.
Embarrassment	Pictures	.922	7	.486
	Films	.888	7	.265
	Jokes	.910	7	.398
	Music	.864	7	.163

Table 4.24: Shapiro-Wilk test for type of object

If the sig value of any group in the Shapiro-Wilk test is greater than 0.05, the data can be considered normal. All groups had a sig value considerably greater than 0.05.

There must be homogeneity of variances for each combination of the groups of the two independent variables. Levene's test for homogeneity of variances was conducted to establish this, displayed in Table 4.25.

Test of Homogeneity of Variances

Embarrassment

Levene Statistic	df1	df2	Sig.
7.795	3	24	.001

Table 4.25: Levene's test for homogeneity of variances

The sig value was greater than 0.05 so homogeneity of variances was assumed.

Data met the six assumptions for the test so a two-way ANOVA was conducted to examine the effect of object (H7) and personal network (H8) on level of disclosure.

The data were checked for interaction effects to show whether the combined effect of the factors, (1) object and (2) personal network affected the dependent measure, disclosure. If an interaction effect is present, the ANOVA results will be misleading (Pedhazur and Schmelkin, 1991).

In Figure 4.13 the lines do not cross which indicates ordinal interactions between the IVs. The lines are also parallel, indicating no interaction effect. This means that the 2-way ANOVA results may be safely interpreted without the need for further tests. An interaction between object and personal network was not demonstrated.

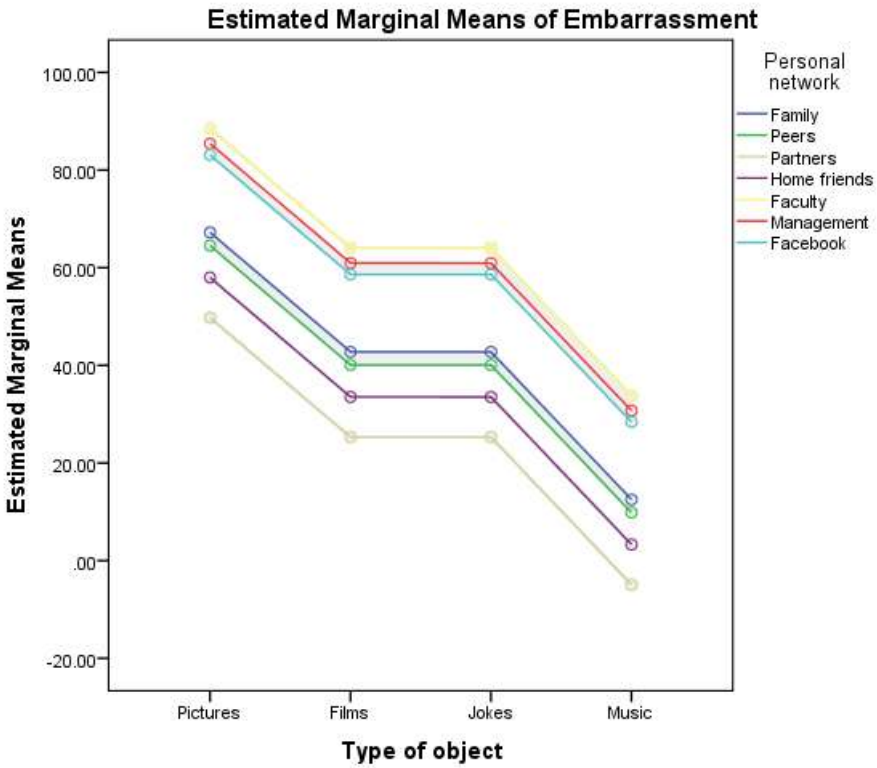


Figure 4.13: Marginal means of embarrassment

Tests of Between-Subjects Effects

Dependent Variable: Embarrassment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	15872.564[a]	9	1763.618	7.434	.000	.788
Intercept	56748.356	1	56748.356	239.208	.000	.930
object	10527.987	3	3509.329	14.793	.000	.711
p_net	5344.577	6	890.763	3.755	.013	.556
Error	4270.217	18	237.234			
Total	76891.138	28				
Corrected Total	20142.782	27				

a. R Squared = .788 (Adjusted R Squared = .682)

Table 4.26: Tests of between-subjects effects

In Table 4.26, partial eta squared was 0.711 for object and 0.556 for personal network indicating that the relative impact on disclosure of object was 1.28 times greater than personal network. The adjusted R squared indicated that 68.2% of the variance in disclosure was attributable to object and personal network.

Next it was necessary to examine the effect of the IVs because disclosure was not equal for all objects and personal networks. The Tukey HSD post hoc test was used to evaluate the relative contributions to disclosure by object and personal network.

Object comparisons

Pairwise Comparisons

Dependent Variable: Embarrassment

(I) Type of object	(J) Type of object	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Pictures	Films	24.466*	8.233	.008	7.169	41.763
	Jokes	24.475*	8.233	.008	7.178	41.772
	Music	54.694*	8.233	.000	37.397	71.991
Films	Pictures	-24.466*	8.233	.008	-41.763	-7.169
	Jokes	.009	8.233	.999	-17.288	17.306
	Music	30.228*	8.233	.002	12.932	47.525
Jokes	Pictures	-24.475*	8.233	.008	-41.772	-7.178
	Films	-.009	8.233	.999	-17.306	17.288
	Music	30.219*	8.233	.002	12.922	47.516
Music	Pictures	-54.694*	8.233	.000	-71.991	-37.397
	Films	-30.228*	8.233	.002	-47.525	-12.932
	Jokes	-30.219*	8.233	.002	-47.516	-12.922

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Table 4.27: Pairwise comparisons for objects

Table 4.27 allowed pairwise comparisons between the categories of object that contributed to disclosure. For four means, there were 6 comparisons displayed.

The mean difference between films and jokes was 0.009 and there was a 99.9% probability of discovering this in the sample, indicating that these two categories displayed a similar level of disclosure.

The mean difference between pictures and music was 54.7, p=<0.00 indicating a statistically significant difference between the IVs.

The mean difference between pictures and films was 24.5, p=0.008, indicating a statistically significant difference between the IVs.

The mean difference between pictures and jokes was 24.5, p=0.008, indicating a statistically significant difference between the IVs.

The mean difference between films and music was 30.2, p=0.002, indicating a statistically significant difference between the IVs.
The mean difference between jokes and music was 30.2, p=0.002, indicating a statistically significant difference between the IVs.

The greatest mean difference (I-J=54.7) existed between pictures and music with pictures having a greater effect on disclosure. The mean difference between films and jokes was negligible. The mean difference (I-J=30.2) between music and the similar categories of films and jokes indicated that both pictures and films made a greater contribution to the decision to disclose than music. The mean difference (I-J=24.5) between pictures and the similar categories of films and jokes indicated that pictures made a greater contribution to disclosure than films and jokes.

The IVs were ranked in the order of least likely to be disclosed to most likely to be disclosed.

1st pictures, 2nd equal, films and jokes and 4th music. There is a greater distance (I-J=30.2) between both films and jokes and music. There is a lesser difference (I-J =24.5) between both films and jokes and pictures. The returned data were plotted in Figure **4.14**: Mean differences between categories of object to provide a visual representation of the results.

The null hypothesis was rejected.

$H7_a$. The nature of an object does affect the location of individual disclosure boundaries for students.

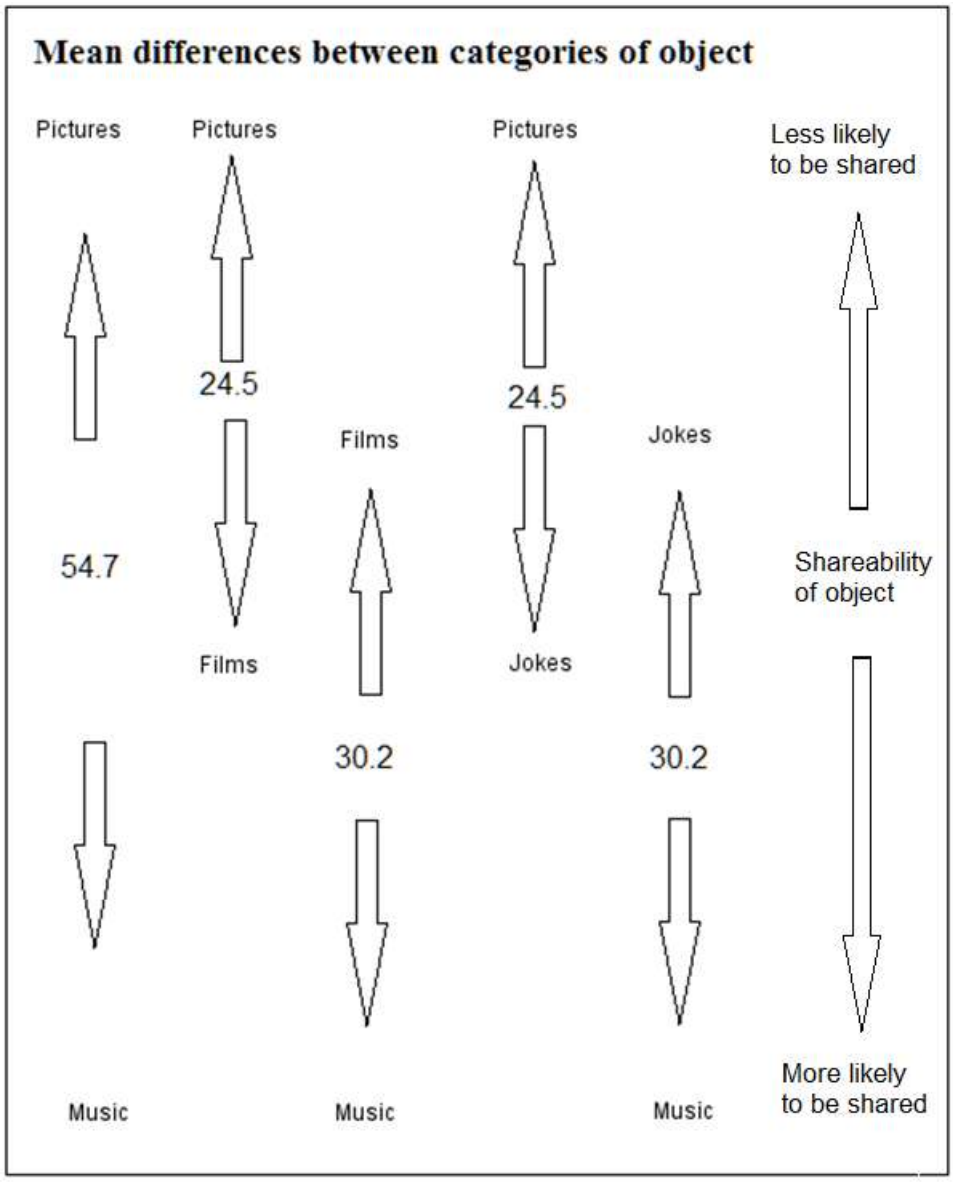


Figure 4.14**: Mean differences between categories of object**

4.5.2 **Hypothesis H8**

$H8_0$. Personal networks do not affect the location of individual disclosure boundaries for students.

Personal network comparisons

Table 4.27 allowed pairwise comparisons between the categories of object that may have different disclosure boundaries. For seven means, there were 21 comparisons displayed.

The mean difference between management and Facebook was 2.30 and there was a 83.5% probability of discovering this in the sample, indicating that these two categories occupied a similar level of trustworthiness for the participants.
The mean difference between faculty and management was 3.07 and there was a 78.1% probability of discovering this in the sample, indicating that these two categories occupied a similar level of trustworthiness for the participants.
The mean difference between faculty and Facebook was 5.37 and there was a 62.9% probability of discovering this in the sample, indicating that these two categories occupied a similar level of trustworthiness for the participants.
The mean difference between faculty and partners was 38.7, p=0.002 indicating a statistically significant difference between the IVs.
The mean difference between faculty and home friends was 30.5, p=0.012 indicating a statistically significant difference between the IVs.
The mean difference between faculty and peers was 23.9, p=0.041 indicating a statistically significant difference between the IVs.
The mean difference between management and partners was 35.7, p=0.004 indicating a statistically significant difference between the IVs.
The mean difference between management and home friends was 27.4, p=0.022 indicating a statistically significant difference between the IVs.
The mean difference between Facebook and partners was 33.4, p=0.007 indicating a statistically significant difference between the IVs.
The mean difference between Facebook and home friends was 25.1, p=0.033 indicating a statistically significant difference between the IVs.

The greatest mean difference (I-J=38.7) existed between faculty and partners with faculty having a higher disclosure boundary than partners. The mean difference between management, faculty and Facebook was negligible. The mean difference (I-J=35.7) between management and partners indicated that management possessed a higher disclosure boundary than partners. The mean difference (I-J=33.4) between Facebook and partners indicated that Facebook was reported to have a higher disclosure boundary than partners. The mean difference (I-J=30.5) between faculty and home friends indicated that faculty was reported to have a higher disclosure boundary than home friends. The mean difference (I-J=27.4) between management and home friends indicated that faculty was reported to have a higher disclosure boundary than home

friends. The mean difference (I-J=25.1) between Facebook and home friends indicated that Facebook was reported to have a higher disclosure boundary than home friends. The mean difference (I-J=23.9) between faculty and peers indicated that faculty was reported to have a higher disclosure boundary than peers.

The IVs were ranked in the order of least likely to be disclosed to most likely to be disclosed.

Pairwise Comparisons

Dependent Variable: Embarrassment

(I) Personal network	(J) Personal network	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Family	Peers	2.664	10.891	.810	-20.217	25.546
	Partners	17.455	10.891	.126	-5.427	40.336
	Home friends	9.215	10.891	.409	-13.667	32.096
	Faculty	-21.267	10.891	.067	-44.149	1.614
	Management	-18.201	10.891	.112	-41.082	4.681
	Facebook	-15.896	10.891	.162	-38.778	6.985
Peers	Family	-2.664	10.891	.810	-25.546	20.217
	Partners	14.791	10.891	.191	-8.091	37.672
	Home friends	6.551	10.891	.555	-16.331	29.432
	Faculty	-23.931*	10.891	.041	-46.813	-1.050
	Management	-20.865	10.891	.071	-43.746	2.017
	Facebook	-18.561	10.891	.106	-41.442	4.321
Partners	Family	-17.455	10.891	.126	-40.336	5.427
	Peers	-14.791	10.891	.191	-37.672	8.091
	Home friends	-8.240	10.891	.459	-31.122	14.641
	Faculty	-38.722*	10.891	.002	-61.604	-15.841
	Management	-35.656*	10.891	.004	-58.537	-12.774
	Facebook	-33.351*	10.891	.007	-56.233	-10.470
Home friends	Family	-9.215	10.891	.409	-32.096	13.667
	Peers	-6.551	10.891	.555	-29.432	16.331
	Partners	8.240	10.891	.459	-14.641	31.122
	Faculty	-30.482*	10.891	.012	-53.363	-7.601
	Management	-27.415*	10.891	.022	-50.297	-4.534
	Facebook	-25.111*	10.891	.033	-47.993	-2.230
Faculty	Family	21.267	10.891	.067	-1.614	44.149
	Peers	23.931*	10.891	.041	1.050	46.813
	Partners	38.722*	10.891	.002	15.841	61.604
	Home friends	30.482*	10.891	.012	7.601	53.363
	Management	3.067	10.891	.781	-19.815	25.948
	Facebook	5.371	10.891	.628	-17.511	28.252
Management	Family	18.201	10.891	.112	-4.681	41.082
	Peers	20.865	10.891	.071	-2.017	43.746
	Partners	35.656*	10.891	.004	12.774	58.537
	Home friends	27.415*	10.891	.022	4.534	50.297
	Faculty	-3.067	10.891	.781	-25.948	19.815
	Facebook	2.304	10.891	.835	-20.577	25.186
Facebook	Family	15.896	10.891	.162	-6.985	38.778
	Peers	18.561	10.891	.106	-4.321	41.442
	Partners	33.351*	10.891	.007	10.470	56.233
	Home friends	25.111*	10.891	.033	2.230	47.993
	Faculty	-5.371	10.891	.628	-28.252	17.511
	Management	-2.304	10.891	.835	-25.186	20.577

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Table 4.28: Pairwise comparisons for personal networks

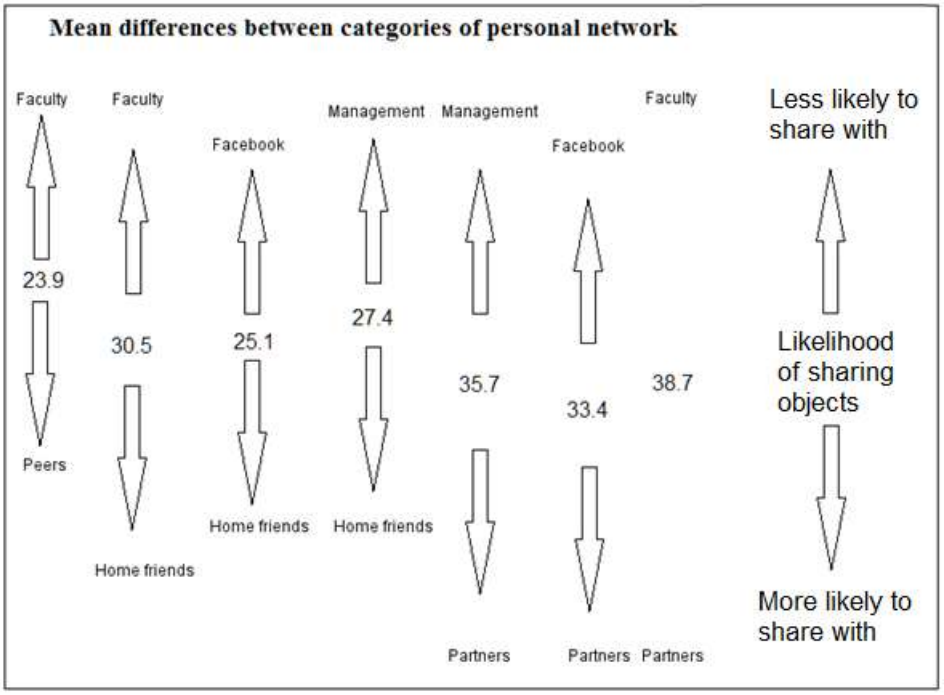


Figure 4.15**: Mean differences between categories of personal networks**

Interactions with faculty, management and Facebook were the least likely to involve disclosure of personally private information. Partner interactions were most likely to involve disclosure of personally private information, followed by home friends then fellow students.

The null hypothesis was rejected.

$H8_a$. Personal networks do affect the location of individual disclosure boundaries for students.

	Trust rating for music	Trust rating for jokes	Trust rating for films	Trust rating for pictures
Partner	95%	91%	68%	50%
Friends	86%	95%	64%	27%
Peers	82%	64%	50%	27%
Family	91%	50%	45%	32%
Facebook	77%	27%	32%	14%
Work	77%	18%	27%	5%
University staff	77%	14%	27%	5%

Table 4.29: Aggregated trust of objects shared with personal networks

The results presented in Table 4.29 were then plotted using a radar graph to show the four calculated levels of trustworthiness against each of the seven social groups in Figure 4.16.

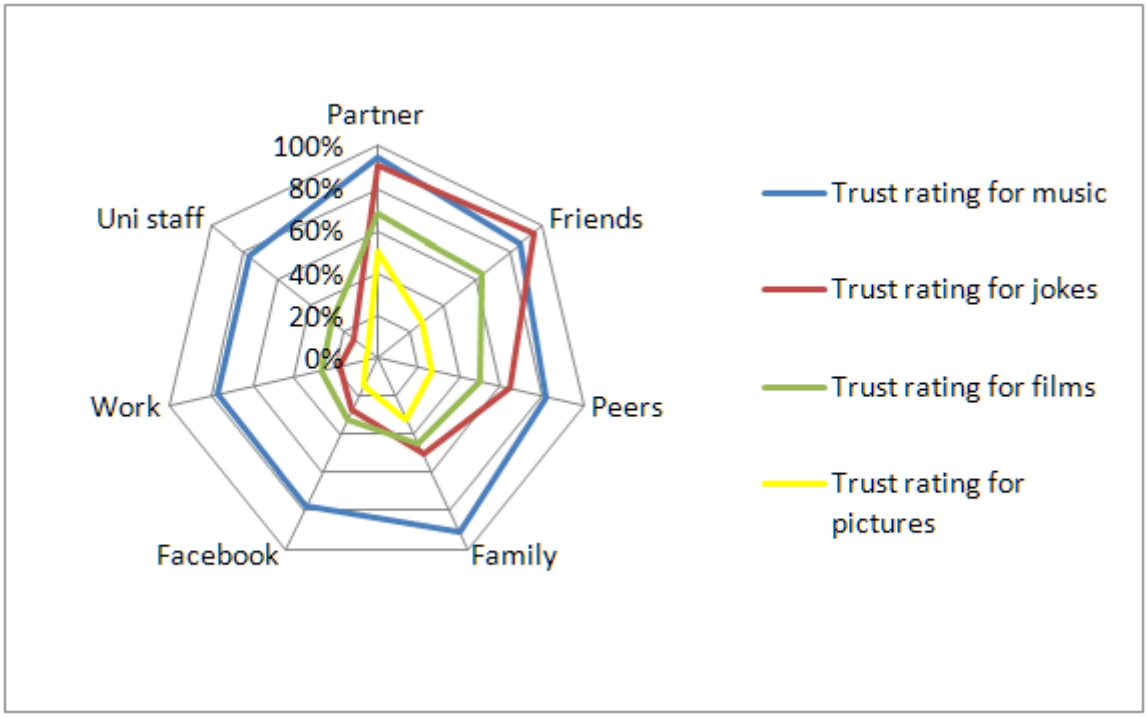


Figure 4.16: Disclosure boundary diagram among the personal networks

The results were also plotted in Figure 4.17 illustrating the onion analogy of SPT with those more private items being closer to the core of the onion.

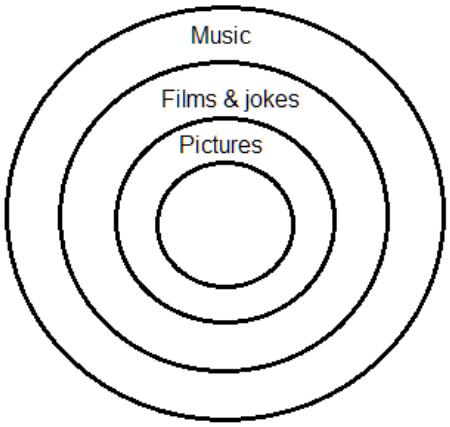


Figure 4.17: SPT onion analogy for music, films, jokes & pictures

4.5.3 **Hypothesis H9**

$H9_0$. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

Participants were asked which of their six personal networks they actively excluded, using the built-in privacy settings, and which personal networks they would prefer not to see all or parts of their Facebook information and communications.

Personal network	Actively excluded from Facebook (%)	Preferred to be excluded from Facebook (%)
Intimate friend or partner	0%	5%
Fellow students	5%	9%
Family or significant carers	27%	32%
Friends from outside university	36%	14%
University staff and lecturers	45%	73%
Management at work	50%	77%

Table 4.30: Active and preferred Facebook exclusion

For each personal network a Pearson product-moment correlation was conducted to assess the relationship between the variables (1) preference to exclude personal networks and (2) actual exclusion of personal networks using privacy settings.

It was not possible to carry out a Pearson product-moment for intimate friend or partner as the variable *actual exclusion for intimate friend or partner* was constant. Of those that would prefer to exclude an intimate friend or partner, 4.5% agreed and 95.5% (n=22) would not prefer to exclude an intimate friend or partner. These figures suggest a strong correlation between preference to exclude and actual exclusion of an intimate friend or partner.

There was no correlation between preference to exclude and actual exclusion of fellow students from Facebook.

A Pearson product-moment correlation coefficient was computed to assess the relationship between preference to exclude and actual exclusion of family or significant carers from seeing all of their Facebook information. There was a positive correlation between the two variables, $r = 0.458$, $n = 22$, $p = 0.032$. Overall, there was a medium, positive correlation between preference to exclude and actual exclusion of family or significant carers. Preferences to exclude family or significant carers correlated with actual exclusion using privacy settings.

A Pearson product-moment correlation coefficient was computed to assess the relationship between preference to exclude and actual exclusion of friends from outside university from seeing all of their Facebook information. There was a positive correlation between the two variables, $r = 0.526$, $n = 22$, $p = 0.012$. Overall, there was a medium, positive correlation between preference to exclude and actual exclusion of friends from outside university. Preferences to exclude friends from outside university correlated with actual exclusion using privacy settings.

There was no correlation between preference to exclude and actual exclusion of university staff and lecturers from Facebook.

A Pearson product-moment correlation coefficient was computed to assess the relationship between preference to exclude and actual exclusion of management at work from seeing all of their Facebook information. There was a positive correlation between the two variables, $r = 0.542$, $n = 22$, $p = 0.009$. Overall, there was a strong, positive correlation between preference to exclude and actual exclusion of management at work. Preferences to exclude management at work correlated with actual exclusion using privacy settings.

The null hypothesis was retained for the two networks (2) fellow students and (5) university staff and lecturers.

$H9_0$. There is no relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

The null hypothesis was rejected for the four networks (1) intimate friend or partner and (3) family or significant carers, (4) friends from outside university, (6) management at work.

$H9_a$. There is a relationship between the personal networks student actively exclude from Facebook using privacy settings and the personal networks they would prefer to exclude from Facebook.

4.6 Summary of answers to research questions

The summary findings as a result of data analysis are presented below.

There was a significant difference in the participants' preference for copresent learning and their preference for remote learning. This suggests that when participants are given a choice of learning methods, their preference for copresent means of learning is greater than for remote means of learning, and this difference was found to be similar across genders. There was no difference between the time spent online between students living at home and students living away from home and this did not vary by gender.

There was a significant negative relationship between participants' self-reported ease of embarrassment and the number of Facebook items they share. Females in the sample reported greater ease of embarrassment in their lives than males and were less likely to share Facebook items.

Student disclosure boundaries were different for each of their personal networks. The nature of an object affected the location of disclosure boundaries between students and their personal networks. There were major differences between participants' trust for sharing music, jokes, films and pictures. Music demonstrated the least variability in the category of objects to be shared, second came jokes, third was films and last, the category that showed the greatest variability when shared between the personal networks was pictures. There was no relationship between the personal networks, (2) fellow students and (5) university staff and lecturers, that students actively excluded from Facebook using privacy settings and the personal networks they preferred to exclude from Facebook. There was a relationship between the personal networks, (1) intimate friend or partner and (3) family or significant carers, (4) friends from outside

university, (6) management at work, that students actively excluded from Facebook using privacy settings and the personal networks they preferred to exclude from Facebook.

4.7 Discussion

What follows is a critical discussion of the results of the data analysis. Limitations and bias are examined before presenting an overall analysis of the research questions. Finally, the validity and reliability of the results are discussed before the chapter conclusion.

4.7.1 Limitations

There were several methodological limitations in this study. The results were from a relatively small sample size, n=22, and may not apply to the population of students. The validity of the results is discussed in section 4.7.7. The data returned by the Facebook Graph Search, was limited to 25 posts for each participant and the method of data collection excluded semantic content to prevent participant identification and reduced the depth of analysis of the data gained from the Facebook posts in RQ2. There was a missing data set for one participant and participant activity analysis showed low Facebook interaction levels by two further participants. A longer period of data collection may have been able to correct this. Limitations were also introduced by the use of self-reported survey data and may have introduced bias, as discussed in section 4.7.1.

Researcher limitations were introduced due to lack of full access to Facebook's database and the necessity to design an experiment that assured full anonymity and privacy for all participants with regard to their Facebook personal information and online activities. Cultural limitations were reduced as I chose to study students in the area that I have lived for my entire life.

4.7.2 Bias

My personal bias has been the assumption that the participants used desktop computers with the same frequency that I do so the little use I was making of mobile phone communication during the research design phase may have affected the wording of

some survey questions. The pilot study, informed by content analysis of my personal Facebook account, depended upon the actions of my Facebook friends who, mostly being older non-students, may have different communication patterns and attitudes compared to my sample. Personal bias may well have affected the results as I have been a keen user of CMC and social media for over 20 years but no longer make social use of Facebook. Stepping away from Facebook may have lowered personal bias introduced for I now see it as an outsider looking in.

There may have been bias in the gender of the participants as there were proportionally more female students under 30 and more male students over 30 who took part in the research, however the overall gender demographic of the sample was close to the university's gender demographic for 2014-5. The method of selecting students for the survey may have produced participants with less concern for their online privacy to members of the population that did not take part in the survey. This bias may imply that such participants may have posted more content and shared more than those with a greater regard for their privacy who did not participate. Survey bias may have occurred due to selective recall of participants on most questions, telescoping and exaggeration may have introduced bias on those questions that asked for time spent using digital devices, however attribution is unlikely to have occurred due to the nature of the survey questions.

4.7.3 **RQ1 analysis**

There was a significant difference in the participants' preference for copresent learning over their preference for remote learning suggesting that when participants are given a choice of learning methods, they choose copresent instruction, agreeing with Baran (2010). The results were neither dependent on gender nor term-time location. This agrees with Daft and Lengel's (1986) media richness theory and social presence theory (Short, Williams and Christie, 1976) putting face-to-face communication in first place for information transfer (Kock, 2005). This also agrees with Goffman's (1959) work on given and given-off signals as Facebook does not provide any services that are close to the richness of interpersonal communication achieved by copresence. Given the context, it is not surprising to have received this result. The participants had chosen to attend a university where in-person teaching is one of the major instruction methods making students familiar with staff and their personalities. Had the same study been

conducted using students from the Open University, a remote learning HEI where students rarely meet staff, the outcome may have been quite the opposite, supported by Coughlan and Perryman (2015b).

Time spent online per week did not differ between students living at home and those living away from home and did not differ by gender suggests that Internet usage is neither dominated by distance from family and friends nor by gender. During my undergraduate days in the 1980s there was often a queue for the telephones consisting of students wishing to make expensive phone calls home. The ubiquity of free Internet access and social media may have captured this call-home market, resulting in equal time spent online for all participants.

4.7.4 **RQ2 analysis**

An inverse relationship was discovered between participants' self-reported ease of embarrassment and the number of Facebook items they shared. The greater the sense of embarrassment felt by participants, the fewer posts they shared. The results were gender dependent with female participants reporting a greater level of embarrassment than their male counterparts and those reporting greater levels of embarrassment sharing fewer items. There are no studies available to compare this result against, however Goffman (1959) wrote that the locus of human behaviour was the desire to avoid embarrassment from moment to moment during daily social interactions and although he was discussing the analogue world of interactions, the results agreed with his reasoning indicating applicability of his framework to social networking. This result indicates that sufficient information can be conveyed between users of CMC to establish semantic accord, despite the inability of digital communications to convey most given-off signals. The internal validity of this outcome is discussed in section 4.7.7.

Internet piracy, involving illegal sharing of copyrighted content, has been reduced by publicising fears of externally imposed embarrassment which consequently deterred individuals from sharing these files (Xigen and Nergadze, 2009: 327; Depoorter and Van Hiel, 2015).

4.7.5 **RQ3 analysis**

There was a complex relationship between the disclosure boundaries reported by participants when sharing objects either in person or on Facebook. Analysis indicated that the sample shared differing disclosure boundaries for the four objects of music, jokes, films and pictures when sharing these across personal networks, agreeing with Vitak's results (2012). Music was the object type that participants were most willing to share either with their personal networks or on Facebook. There was little variation in trust for sharing music between the most and least trusted network. This may indicate that musical taste is neither particularly controversial nor likely to provoke an adverse or embarrassing reaction amongst those with whom it is shared. The next two objects of jokes and films did not share the same properties as music. There was a very noticeable change in disclosure boundaries for these two objects when shared with Facebook, work and university staff but with closer personal networks of partners, friends, peers and family, jokes become potentially less embarrassing to share than films. Finally, pictures were the object that the sample exercised the most caution when sharing. Even with the most trusted network, partners, 50% of the sample were happy to share pictures with this network.

For all objects, the sample reported greatest trustworthiness sharing these with partners and friends and the least trustworthiness when sharing them with Facebook, work and university staff. This is in strong agreement with the reported preferences for groups that the sample would prefer not to see all of their Facebook objects. The complexity of managing self-disclosure indicates the care participants must take when making a decision to share their data and perhaps the data of others, see Figure 4.14 and Figure 4.15. Given that the sample did not trust the Facebook security settings to work as they desired, it was interesting to see that the sample as a whole trusted or mistrusted certain personal networks with objects of the types that can be shared on Facebook.

H9 suggested that for the two networks (2) fellow students and (5) university staff and lecturers, participants do not trust the Facebook settings to work or that the settings need to be more granular or simpler to apply, in line with boyd (2008). The results for (1) intimate friend or partner, (3) family or significant carers, (4) friends from outside of university, (6) management at work suggest that for these four personal networks,

participants do trust the Facebook settings to work and that the settings are sufficiently granular.

4.7.6 Overall analysis of results

The objective of this thesis was to discover the suitability of Facebook, and its communication systems for augmenting teaching in HE in order to discover the social, educational and institutional benefits and drawbacks. It examined HE requirements and uses for Facebook, the capabilities of Facebook and whether the learners involved would accept Facebook in HE teaching and learning. To meet these objectives, three research questions were formulated and are discussed in turn below.

4.7.6.1 RQ1: Do students prefer analogue methods of learning to digital methods of learning?

The sample preferred copresent methods of learning to those that did not involve copresence and indicates that learning is a social process (Vygotsky, 1978) and individual preferences indicate this. Time spent online did not differ for students living at home or away from home, nor did it vary with gender, contrary to the suggestion by the Human Connectome Project (Ingalhalikar et al., 2014), which suggested that female brains may be better wired for communication tasks than male brains, but may indicate reasons for the larger percentages of female members of the large SNS available today (Ipsos Mori, 2007; ONS, 2014).

Most (95%) of the sample stated that they used Facebook on a daily basis and the remaining 5% logged in once or twice a week agreeing broadly with ONS (2017) data. This was a biased sample as to participate in the experiment, students had to have a Facebook account, however at least 88% of 18 to 29 year olds have a Facebook account (York, 2017) and 75% of 16–24 year olds own a mobile device capable of accessing the Internet (OFCOM, 2013, p. 261). In 2011-12, 61.7% of HE students were aged 24 or less (Universities UK, 2013) and this number has grown since then to 67.7% in 2015-6 (HESA, 2017). The sample spent a mean of 52 hours (median 50.0) per week online, which is a daily mean of over seven hours, higher than the 6+ hours per day reported by the Education Policy Institute (2017). According to cultivation theory (Gerbner and

Gross, 1974), seven hours would class them as heavy users and this length of exposure may distort their perceptions of social behaviour norms.

Other results indicated a strong correlation within the sample between use of a digital device, PC, laptop or smartphone with respect to length of time that participants have had access to the Internet and a medium correlation existed between that Internet access and having a Facebook account. This would suggest that the sample were not only digitally literate but had joined Facebook around the same time as they gained access to a PC, laptop or smartphone which classes the sample as one of White and Le Cornu's digital residents (2011), the sample originally specified in the methodology.

The top nine in the list of Facebook activities reported by the sample were leisurely social activities; 10th was doing work of any description, agreeing with results from Qureshi, Raza and Whitty's study (2015). The top three types of Facebook posts that the sample interacted with were amusing comments or jokes, photographs of people known to the sample, in agreement with Frie et al. (2016) and Pearce (2014), and funny pictures whilst in fourth, sixth and seventh place respectively were serious content, informative videos and text without images. The results showed greater likelihood of interaction with photographs of known people than serious content suggesting that students seem more likely to engage with socially-based articles. If HE is to make educational use of Facebook, it will need to change either student leisure and interaction habits or radically revise its own idea of appropriate Facebook feed content, the latter being probably the easiest to achieve.

Resources held on Facebook may increase study time outside of the classroom with 77% of the sample (n=22) indicating they would spend more time online given greater wireless access, but 59% reported either rarely or never doing work, broadly agreeing with earlier studies (Madge et al., 2009; Bicen and Cavus, 2011; Duggan, 2015). If HE were to make a decision to make widespread use Facebook for learning, it would not require a major Internet-time change for students.

The comparative analysis of the needs of HE versus the capabilities of Facebook indicated that that of the 16 metrics (Gagne, 1977; Chickering and Gamson, 1987), increases in student-to-student communication are supported by Facebook but the

majority of the metrics would only employ Facebook to disseminate information or resources that might be hosted more usefully on the institution's VLE.

Private Facebook study groups have worked well where the subject area involves human communication (Ooi and Loh, 2010; Hu, 2014) allowing dialogue to continue after class (Bosch, 2009) allowing students to stay in contact during holidays, providing social support (Roblyer et al., 2010; Wise, Skues and Williams, 2011; Pai et al., 2017) and development of key skills such as effective communications and team working (Jong et al., 2014; Pai et al., 2017). Computer mediated social capital has two components, the attaining of social capital and its retention (Ellison, Steinfield and Lampe, 2007). Increased levels of social capital produce greater self-esteem and increased satisfaction with life (Bargh and McKenna, 2004). Greater Facebook use increased student engagement but did not detract from studies (Junco, 2012), resulting in increased retention (Yorke and Longden, 2008). Students who are reluctant to speak in class have used Facebook to contact lecturers without inhibition (Bosch, 2009). Unfortunately, the casual nature of Facebook postings (Madge et al., 2009) may reduce student composition skills according to the Golem effect (Babad, Inbar and Rosenthal, 1982).

Students and staff have found Facebook useful for transmitting short notices such as announcements (Bosch, 2009; Jong et al., 2014) and tagging of other users can draw their attention to a discussion (Pai et al., 2017).

All academic uses for Facebook in the UK must comply with the Data Protection Act (1998) which expressly forbids the loss of personal data but closed student groups are not affected by the DPA. It is to be superseded in 2018 by the General Data Protection Regulation which more closely defines personal information and carries much stricter penalties for non-compliance. Limitations in the data types supported by Facebook and the News Feed algorithm (Facebook, 2016a; 2014a; 2013) make the platform less useful than a VLE.

Facebook participation by students and faculty may increase individual social capital (McLoughlin and Lee, 2014) and strengthen relationships between students and increase their sense of belonging to their HEI leading to greater student retention (Wells, 2008; Zheng et al., 2016) and an increase in the reputation of their HEI.

Overall, Facebook has the ability to strengthen student-to-student bonding (Kuh, 2009; Pascarella and Terenzini, 2005) but privacy concerns, legal and social preclude many academic uses of Facebook in HE.

In response to RQ1, despite the heavy Internet usage within the sample, and regular Facebook usage, the types of activities and items interacted with do not align with academic work, however inter-student communication is facilitated and valuable for social reasons. The sample expressed a preference for face-to-face teaching methods and in conjunction with the factors described above, would not choose to use Facebook for formal learning.

4.7.6.2 RQ2: Does ease of embarrassment predict the number of Facebook items that students share?

The total number of Facebook items shared was inversely proportional to the self-reported ease of embarrassability of participants. Female participants reported greater levels of embarrassability and shared fewer items than their male counterparts. This may lead to lower participation in any structured Facebook activities by more easily embarrassable students and indicates that emotions are as valid offline as online (Oeldorf-Hirsch, Birnholtz and Hancock, 2017), however Tang and Wang (2012) reported greater depth of disclosure by female bloggers in face-to-face encounters with their best friend and parents. Emotions have been suggested as being linked to social media behaviour such as loneliness which has a positive influence on the personal information disclosed on Facebook (Al-Saggaf and Nielsen, 2014) but a negative impact on posting of certain photos (Scott et al., 2017). If the embarrassment within the sample is grounded in the possibility of faculty seeing shared personal items, assurance that faculty will keep away from their Facebook space may mitigate the feelings of embarrassability and promote greater levels of sharing.

In response to RQ2, ease of embarrassment was inversely related to the number of Facebook items that the sample shared and this result indicates that there was sufficient sense of copresence conveyed by Facebook to allow Goffman's embarrassment avoidance framework to apply to this question.

4.7.6.3 RQ3: Do individual students have different disclosure boundaries when sharing information with their personal networks and on Facebook?

The decision on whether to share an object was dependent on both the nature of the item itself and with whom it was being shared. Figure 4.14, 4.16 and 4.17 display the variability in disclosure boundaries for Facebook objects when shared with their personal networks. Type of object had a 1.28 times greater impact the decision whether or not to share than personal network. Pictures were least likely to be shared however music did not follow this pattern and was the item most likely to be shared and thus least likely to cause embarrassment. Films and jokes shared a position between music and pictures. The most trusted personal network for any object was partners and the least was faculty, occupying a similar position as Facebook and management at work. Programmes of study related to music may well benefit from structured Facebook groups as music sharing was generally viewed as having the ability to cause the least embarrassment no matter with whom it is shared, agreeing well with the study by Jabeen, Kousar and Shreerekha (2014). These results suggest that there is not a binary public/private distinction that can be attached to any particular digital object, rather there is a complex internal calculation dependent on the audience too, disagreeing with the simple public/private distinction of Jourard and Lasakow (1958). The risks expressed by participants that personal data and objects might be seen by faculty are reflected in the responses to survey questions which indicate that 45% of participants (n=22) actively exclude university staff and lecturers from viewing their Facebook information. This may indicate that participants find faculty to staff contact intrusive (Wankel and Wankel, 2011) and would exclude these two groups from their Facebook pages and information. Low levels of trust shown by the sample towards university staff indicated that Facebook's potential for encouraging contact between students and faculty is severely limited. This may be due to the fact that over a third of the sample had unwittingly embarrassed themselves on Facebook and would not want to widen their audience to include those with whom they shared limited intersubjectivity.

Facebook's security settings were used by the entire sample to restrict the audience for their content, contrary to a report by SOPHOS (2007) that indicated 75% of Facebook users did not change their security settings, showing a greater level of concern for

privacy since that report was published. Almost three quarters, 73%, did not trust those settings to work showing a wide concern for the security of their data. There was no relationship between the personal networks, (2) fellow students and (5) university staff and lecturers, that students actively excluded from Facebook using privacy settings and the personal networks they preferred to exclude from Facebook and this indicates that Facebook users may not find the privacy settings to be suitable to adequately deal with certain personal networks.

Reciprocity and cooperation among students using Facebook is facilitated by the high level of trust they reported with each other as most (91%) of the sample were happy for their fellow students to be Facebook friends but surprisingly had a lower level of trust for sharing analogue objects with their peers. Five percent of the sample would exclude fellow students from seeing some or all of their Facebook information and objects but 45% would exclude faculty from access to the same information. This could indicate that some aspect of Facebook, maybe a perceived online anonymity, facilitates student computer mediated communications over copresent levels.

Student-staff interactions suffer due to mutual reluctance to Friend each other (Bosch, 2009) so consideration must be given by practitioners to gaining the trust of students (Sánchez, Cortijo and Javed, 2014). Staff may also feel reluctant to friend their institution or students for similar issues relating to disclosure boundaries of their own digital objects and information. Faculty are not trusted by the majority of students to view their Facebook activity and this may compromise faculty-to-student use of Facebook (Hewitt and Forte, 2006; Madge et al., 2009; Kent, 2014).

The response to RQ3 was that students do have different disclosure boundaries when sharing information and the location of the boundaries is slightly dominated by the nature of the object rather than the network with which the object is shared. The incompatibility between actual privacy setting use and preferred use indicates that the settings are not fit for the task of allowing more intersubjectively distant but important social networks into student Facebook regions. The difficulty of managing these disclosure boundaries on Facebook may account for student unwillingness to Friend faculty.

4.7.6.4 **Overall analysis for results**

So, what does this mean for the thesis question; to what degree are social networking systems, such as Facebook, suitable systems for augmenting teaching in HE?

There may be difficulty in persuading students to friend their university and staff, as shown in Table 4.23 but easier to get them to friend each other for reasons arising from issues related to security and nature of their data. Facebook may be suitable for announcements (Jong et al., 2014), but is not the choice of students for education itself as indicated by the outcome of RQ1. Facebook has the ability to promote social cohesion (Sánchez, Cortijo and Javed, 2014), increasing social capital among students (Ellison, Steinfield and Lampe, 2007; McLoughlin and Lee, 2014) and this may be institutionally beneficial for student retention (Wells, 2008; boyd, 2008; Zheng et al., 2016). Vygotsky's (1978) theory of social constructivism indicates that the learning paths of students are augmented by active involvement of classmates. Culture and social factors were seen as important for learning by Vygotsky, an aspect that Piaget (1985) did not emphasize. Conversely, there are those, such as Friesen and Lowe who argue against this.

> 'Knowledge is not exclusively embodied in ever-growing networks of connection and affiliation and it does not just occur through building and traversing these proliferating nodes and links. Education is clearly a social process but it is probably much closer to an ongoing discussion or debate than an extended celebration with an ever-expanding network of friends' (2011: 190).

Perhaps they were thinking of formal pedagogy, embedding education within SNS rather than using its ability to connect and maintain relationships.

Instructors have little control over the Facebook interface or the News Feed algorithm which together constrain its usefulness as a tool for top-down education, leaving limited scope to promote the behaviours and cognitions that contribute to engagement and learning (Wise, Skues and Williams, 2011: 1340). This lack of control may mean that success can only be achieved in highly scaffolded environments (Wang, 2012) such as the virtual learning environment and avoids issues relating to student personal information and the DPA.

These results do not bode well for the use of Facebook for formal teaching purposes but as an adjunct to the VLE and to expand student social space, it has practical uses that could be promoted within private study groups provided that students are assured that teaching staff are not able to enter their social space.

4.7.7 **Validity of results**

The completion rate for the survey was 81% compared to an average completion rate for online surveys of 78.6%, suggesting above average results (FluidSurveys, 2014). Non-completion was due to participants who failed to complete the research sign-up process. The nature of the questions was chosen to be as impersonal as possible and no typed responses were necessary, however from the returned surveys, the greatest non-response rate of 44% was for questions about the participants' analogue selves, 39% was for communication questions, 11% was for Facebook questions and 5.5% concerned the digital self, lowering the effective sample size for these questions. The results that could have been affected were concerning the participant use of Facebook, those with whom a photograph would not be shared and the result indicating that term-time location had no effect on time spent online, however for each of these questions, the sample size was only reduced by 5.5% causing a low chance of error. Of the questions that were not responded to, 66% of the non-responses were in questions not used to provide results. Personally identifiable demographic variables were not collected to increase participant anonymity so it was not possible to identify any demographic traits in the unanswered questions.

The face validity of the survey appears to be high due to the simplicity of the questions and the spread of responses returned indicate that the survey had content validity (Hardestya and Bearden, 2004). Internal validity for the outcome of RQ2 was not established as there may be other factors involved in the outcome other than embarrassment, resulting in a false positive outcome.

It is possible that the outcome of RQ2 was caused by other personality traits than embarrassment. A study by Ryan and Xenos (2011) indicated that extroverts were likely to use the communicative features of Facebook more than introverts. The findings of Lee et al. (2014) showed that extroverts shared more News Feed items than introverts, in agreement with Marshall et al. (2015) who found that extroverts shared

their social activities more frequently than introverts. This was consistent with the findings of Eşkisu et al. (2017) indicating that extraverts use Facebook for social interaction more than introverts.

This thesis examined sharing of News Feed items rather than the authoring of posts and can only be truly compared with the findings of Lee et al. (2014), however the common feature of each of the studies concerning Facebook usage and extroversion was that they used self-reported survey data to produce their results. A study conducted by Kobayashi and Boase (2012) into the validity of self-reported mobile phone communication noted that participants routinely over-report their frequency of communication which, by extension, may reduce the validity of self-reported data employed in Facebook usage studies. This study used objective live Facebook data to remove doubts concerning the validity of participant survey responses to questions involving their usage of Facebook.

In order to increase the internal validity of RQ2, improvements to the survey data collection are discussed in the following chapter.

External validity for the university was good as the survey respondents' demographics were a close match to the university population demographics for the year of the survey. Internet usage in Great Britain is highest in London and the South East (ONS, 2017) constraining external validity to this area of the country. Any wider validity must be questioned in the light of reported successes (Rahman, 2014; Hu, 2014; Qureshi, Raza and Whitty, 2015; Marquez Jr, 2016), mainly from studies conducted overseas as different societies produce individuals possessing 'differing self-disclosure habits' (Jourard, 1961: 320).

4.7.8 **Reliability of data**

The reliability of the results stands or falls on the sample size. Although there are significant results reported, it would be unwise to make extravagant claims based on 22 participants. Better measures for constructs and a much larger sample would have led to increased reliability.

The main research question was answered using the two perspectives of HE students derived from the survey and of the capabilities of Facebook. The Facebook survey data was an objective data source but participant responses were subjective and may not be a reflection of the objective truth. The ability of Facebook to meet the needs of HE was judged against objective documented metrics (Gagne, 1977; Chickering and Gamson, 1987), however more applicable metrics may have been employed.

The data used for the independent samples t-test used a dependent variable that was measured on a continuous scale, the independent variable was two categorical and independent groups and there was independence of observations. There were no significant outliers and the dependent variable was approximately normally distributed for each group of the independent variable. The homogeneity of variances between the two groups was 11.22, so Levene's test was carried out to correct the results (Cochran and Cox, 1957; Satterthwaite, 1946). The results of the independent samples t-test suggested that a significant difference existed between the two groups ($p = 0.27$) and a further non-parametric test, Mann-Whitney U, conducted on the same data set also indicated a significant difference ($p = 0.026$) in the total numbers of Facebook objects shared by the group that reported greater ease of embarrassability compared to the group that reported lower levels of embarrassability. Both the independent samples t-test and the Mann-Whitney test indicated that the difference was significant. Proximity of the data to the conditions required for the t-test raised the possibility of a type 1 error, incorrect rejection of the null hypothesis.

The data for the 2-way ANOVA met the six necessary assumptions and was derived from survey results which were subjective and depended on the accuracy of the experimental design. Student sharing behaviour may be caused by something other than embarrassment, as indicated by the adjusted R squared indicating that only 68.2% of the variance in embarrassment was attributable to object and personal network.

4.8 Conclusion

This chapter started by describing the outcomes of the research questions in turn and discussed the meanings of those results with respect to both the research questions and the literature review and explored sources of bias, validity and reliability of the results.

A brief summary of all results and significant regulatory, bias and reliability issues are now presented.

All participants were digitally literate and made extensive use of the Internet but their preference to study using methods involving copresence over remote learning methods makes study by Facebook an unlikely first choice. Blumer (1986) asserted that individuals interpret the actions of other humans and act according to that interpretation. Facebook allows limited interpretation of the 'other' and this may have affected the choice of learning environment away from Facebook. The Facebook privacy settings are not suited to exclude faculty so it may be easier to refuse to Friend them altogether. Student group use of Facebook is not affected by trust issues to such an extent and there is evidence that this is already rather successful in HE (Kent and Leaver, 2014; Gardner, 2014). The negative relationship between participants' self-reported ease of embarrassment and the number of Facebook items they share may inhibit affected students from full participation in Facebook learning activities but this result indicates that Goffman's embarrassment avoidance framework may be applied to particular social contexts in a quantitative manner. The complex interplay between what is shared and with whom the object is being shared and its impact on privacy boundaries may also negatively impact full participation. When sharing with personal networks, faculty members were most likely to cause embarrassment and partners were the least likely. For objects, shared pictures showed the greatest ability to cause embarrassment and music the least.

Restrictions imposed by the DPA (1988) and its forthcoming successor, the General Data Protection Regulation, forbid use of Facebook by teaching staff where personally identifiable information is involved, severely limiting faculty-to-student use of Facebook for detailed communication. This restriction does not apply to student study groups.

Low participant numbers reduced the reliability of the answers derived through analysis of Facebook student use, and the results derived from a discussion of the statements of Chickering and Gamson (1987) and Gagne (1977) depend on the validity of those statements themselves. External validity is limited to regional UK universities only. The bias introduced by the social networking background of the author in creating the survey and experimental design was discussed and may have distorted discussions

towards social uses of Facebook, however the outcomes appear to agree well with Goffman and social penetration theories.

In conclusion, Facebook's place in HE appears to be limited to social and private group use, allowing for students to gather online without fear of faculty intrusion. Private group uses for Facebook are most effective for discussing items related to courses and for language instruction, where dialogue between users can improve written language skills and study groups that do not include teaching staff have been used successfully, however the majority of the studies did not originate in the UK and may be subject to cultural bias. Facebook is not particularly suitable for pedagogic purposes in higher education but has social uses that could directly benefit students with the provision of increased social capital and connectedness and indirectly enhance HE with improved student retention statistics.

A discussion of what these results mean for higher education is presented in the final chapter.

5. CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

> Our community is now two billion people and we're focusing on bringing the world closer together. (Mark Zuckerberg, 2017).

5.1 Introduction

This chapter is divided into four sections and draws together the findings from the research in the previous chapters. Section 5.2 discusses the outcomes from data analysis and their implications. Section 5.3 discusses general and personal recommendations, section 5.4 describes the limitations of the research while section 5.5 discusses directions for further research, particularly in the light of the data collection changes that took place when Facebook changed its page delivery methods. In section 5.6, I conclude that whilst some questions have been answered, many more questions are raised for our future which confirms social networking as an ideal subject for continued educational research.

The aim of this research was to discover the suitability of Facebook and its communication systems for augmenting teaching in HE. The Facebook activity of 22 students was observed, using a survey and covert recording of online activity. Goffman's (1956; 1959) embarrassment avoidance framework, Altman and Taylor's (1973) social penetration theory and Petronio's (2002; 2007) communication privacy management theory were used to model student behaviour on and offline and indicated the existence of emotional and privacy-related barriers to integration of their Facebook accounts for formal learning purposes. Privacy boundary conflicts were uncovered between students and staff and sharing of objects online was mediated negatively by feelings of embarrassment.

5.2 Research findings

Despite the heavy Internet usage among the students and regular use of Facebook, students demonstrated a preference for face-to-face teaching methods and Internet usage did not vary between genders nor for students living at home compared to away from home.

The privacy settings provided by Facebook for users to secure their posts and personal information have been widely criticised as confusing and an underlying cause of boundary turbulence, agreeing with boyd and Ellison (2007). The coarseness and security settings themselves may have been contributory to the unease felt by research participants and a major factor in their feelings of reported embarrassment in relation to online audience segregation.

Students who experienced greater ease of embarrassment in their daily lives shared less content on Facebook. This complements the results of the study by Oeldorf-Hirsch, Birnholtz and Hancock (2017) and indicates that online embarrassment is as real as offline. Students reported low levels of trustworthiness when sharing commonplace objects with faculty staff and many actively excluded them from viewing their online activities to avoid privacy violation and boundary turbulence (DeGroota and Vik, 2017). From a student perspective, faculty shares a position of trust very close to management at work and Facebook as the personal networks most associated with embarrassment. Student partners were least associated with feelings of embarrassment and were separated the greatest distance from faculty. For objects that are shared, music has the least potential to cause boundary friction whereas pictures have the greatest.

The generalisability of the results any wider than London and the South East of the UK is unwise as different societies produce individuals possessing 'differing self-disclosure habits' (Jourard, 1961: 320) which situates the results to this region only.

The use of Goffman's embarrassment avoidance framework in a quantitative manner as a predictor of individual behaviour has been shown to apply to this study, indicating that, for the emotion of embarrassment in the binary context of sharing or not sharing items on Facebook, sufficient information is conveyed between users to establish the intersubjective semantic accord necessary for Goffman's work (1956; 1959; 1963) on embarrassment avoidance to become applicable to online behaviour. Care should be taken in the use of this framework to ensure that the behaviour arising from a tactic of embarrassment reduction can be adequately measured and that more rigorous measures of participant embarrassment are involved at the design stage of research.

5.3 Recommendations

This section contains suggestions for designers of social networking systems that may enhance their current affordances. This is followed by recommendations for university managers and practitioners who wish to maintain a successful Facebook presence whilst simultaneously enhancing the learning of their students. The section concludes with a description of some of the errors made during the research that may prove of use to others wishing to carry out research into SNS.

5.3.1 General

I believe that the overall message from this thesis is that students feel social presence and this presence underpins many of their daily decisions, whether its origin is analogue or digital. As a result, policy within HE should aim to reduce emphasis upon IT that lacks social presence and increase social presence in teaching, whether that is corporeal or provided by IT systems that are capable of conveying social presence.

Although this work was concerned with Facebook, many of the findings may be applied to other social networking systems. In order to make SNS fit the *public place* label more closely, designers of these systems should allow users to see who is looking at their posts in real time. Whilst this is possible in one-to-one communication systems such as *Messenger*, for broadcast-type communication it would be more complicated to present this information to a user, however forward-facing cameras are commonplace on mobile phones and could be used to track eye movement over posts.

It is not possible to tell if someone you are communicating with online has become embarrassed unless they explain explicitly. Misjudgement of the mood and emotion of the sender will affect intersubjective accord between users and hence how their message is interpreted which may be mitigated by greater emphasis on live face-to-face communications, however the full range of given-off signals still cannot be transmitted using current technologies. Perhaps the inability of the receiver to see any discomfort in the sender is sufficient to lower disclosure boundaries because a sense of perceived emotional anonymity develops because we cannot be seen blushing as we type that which we disclose.

The nature of delays inherent in Facebook question-response pairs tends to make live conversations rare and posts are more suited for announcements, which unless replied to, or promoted, soon sink off the page. The name Facebook itself suggests that faces are a major part of this system and research into human face recognition has indicated that facial recognition is innate (Frie et al., 2016) with 68% of the participants in the study stating that they either frequently or always responded to Facebook posts containing pictures of people that they know. Participants reported liking seeing faces of people that they know in a photograph (Pearce, 2014) and may respond less readily to photos that do not contain known faces.

Individuals have a need for clear privacy boundaries and those who would stand to benefit from increased online communication should consider this. A complex centralised AI-based solution proposed by Metz (2014) could prevent individuals from uploading potentially embarrassing pictures and send alerts if someone else was posting your photo.

A simple distributed solution to user privacy boundaries would be to link the smartphone calendar and GPS location to each communication application so that each user can create spatio-temporal zones where and when particular personal networks are allowed or denied access to the user. For lecturers, this could prevent friends calling during class for a casual chat and students messaging staff at home, technologically enforcing essential privacy boundaries that a proper work-life balance should enjoy. Anybody with the need to separate their personal networks in different time-space contexts could benefit from this simple solution.

5.3.2 Technology enhanced learning in higher education

The zeal for technology enhanced learning in education needs to be reviewed in the light of the effort and time that has been spent trying to squeeze Facebook into the classroom. The problem is laid out below,

> Does technology enhance learning? It's not unreasonable to ask this question, but unfortunately it's the wrong question. A better question is: how can we design technology that enhances learning, and how can we measure that enhancement? (Director of TELRP, in Kirkwood and Price, 2013: 2).

The TELRP director talks in a positivist manner of designing technology, as if it can be built to a certain specification and imposed on learners and then measured. The reality of social media denies such an approach. The real question ought to have been,

How can educators make informed decisions about the *use* of technology to enhance learning in the pursuit of specific positive outcomes?

The engineering approach to TEL stated by the director of TELRP does not take human nature into account. Education cannot be built and imposed on learners; it is a social process that requires a thorough understanding of the interplay between learners and technology (Vygotsky, 1978; 1997). Social media and mobile phones have changed student communication forever. Education managers may need to realign their assumptions of the way that learners interact with technology in the light of the massive increase in communication enabled by the Internet,

> '[D]uring occasions of marked social change....when new industries and technologies are developed, the physical and physiological details usually taken as a given can become a matter of concern, with consequent clarification of the assumptions and conception of what we have of what individuals are' (Goffman, 1969: 3-4).

Higher education managers should review their conceptions of student privacy boundaries and develop informed contextual communication policies aimed at discouraging staff from contacting students by social media which fits in well with the reality of Facebook use among students who view faculty contact via social media as intrusive, so the following suggestions to enable TEL are offered.

University managers should ensure that they have a Data Protection Officer in place in time for the General Data Protection Regulation (GDPR) (ICO, 2017a) which replaces the DPA (1998) in May 2018. Mandatory Data Protection Impact Assessments will be required 'where a new technology is being deployed' (ICO, 2017b) and this might apply to Facebook usage by staff for contact with students. Clarification should be sought from the ICO to clarify what constitutes lawful use of social media. The GDPR accountability principle indicates that staff communicating via social media must be aware of what they may and may not share to avoid their institution being fined up to £20 million and staff may be required to complete an audit of their social media use if students are involved. It may be safer to forbid staff from direct communication with

students via Facebook entirely but if there is a demand for a side channel to broadcast announcements (Wang et al., 2012), messages such as room changes could originate from one official Facebook account, managed by administrative staff. Such an account should incorporate a profile that is appropriate to being public (Coughlan and Perryman, 2015b) and remain passive (Teclehaimanot and Hickman, 2009), other than making the announcements.

Practitioners should note that social networks are integrated into the majority of learners' lives and they see Facebook as their place. Students are wary of breaking self-imposed privacy boundaries (Forte et al., 2016), such as conversation topics with university staff. A student-centred approach to using Facebook student groups may increase the trust of learners (Forte et al., 2016) and promote student retention by increasing social capital (Kalpidou, Costin and Morris, 2011; McLoughlin and Lee, 2014) provided that lecturers keep away from where students clearly see as their place. Students should be given the opportunity to operate their own Facebook groups, to enable trust and privacy to develop among learners (Leaver, 2014) as increased connectivity leads to greater engagement (Kuh, 2009; Cain and Policastri, 2011). Certain courses may benefit from Facebook study groups where much student interaction is required, such as languages (Ooi and Loh, 2010; Hu, 2014; Hajin, 2014), but staff must take a passive role (Teclehaimanot and Hickman, 2009) by advising learners of the benefits of Facebook student groups and only use it to host online student discussions. Success will involve staff using Facebook to have skill using social media to obtain the best results (McLoughlin and Lee, 2014). When using Facebook groups for educational purposes, staff should be aware that the nature of objects makes them more or less contentious to share and advise learners accordingly. Students and staff need to be made aware of the necessity for rigid boundaries between work and home life (Kent, 2014) rather than expecting 24/7 access to staff (Snowden and Glenny, 2014) and it has been shown that the VLE and Facebook can coexist with less formal inter-learner communication being ceded to Facebook (Matar, 2014).

My concluding pedagogical recommendation is that Facebook should never be used as a teaching platform (Selwyn, 2009) however as a private group learning tool it can enhance student communication and research skills. When using social media to contact students, take informed steps and exercise 'caution when considering when and

how to connect with students via Facebook', the advice of Wankel and Wankel (2011: 19).

5.3.3 **Personal**

The small sample size affected the validity of the results as a direct result of difficulties in recruiting participants once they realised that their Facebook actions would be recorded. A larger, more representative sample, gathered over a longer period of time would greatly improve the validity of the results presented here. One proposal would be to use an existing Facebook account rather than a new fictitious one but this may introduce bias depending on the perception of the account holder by the participants.

Other recommendations are made on the basis of flaws in my methodology, one of which was caused by taking willingness to participate for granted as early classroom conversations with students had led me to believe that participation rates would be higher. During the period of attracting participants, I wrongly assumed that emails inviting participants would have a greater response rate and that the students would be more willing to participate in research. External factors such as the student social research background of the university had a negative effect on student participation and I ought to have accounted for this by advertising for participants earlier, more widely and in alternative manners.

The challenge of obtaining sufficient valid and complete online data from Facebook must be overcome before reattempting such an investigation. At the outset of this research, pilot studies on my own Facebook account uncovered patterns in responses to posts. I decided that this thesis could search for differences in Facebook comment patterns, with the intention of investigating recurring traits of comments that led to a post going viral (Prigg, 2014; Cheng et al., 2016). Until 2014, Facebook pages were transmitted in plain HTML and it was possible to capture up to 1000 posts containing the times of all comments and carry out detailed frequency analysis. An example of the patterns I discovered is shown in Figure 5.1.

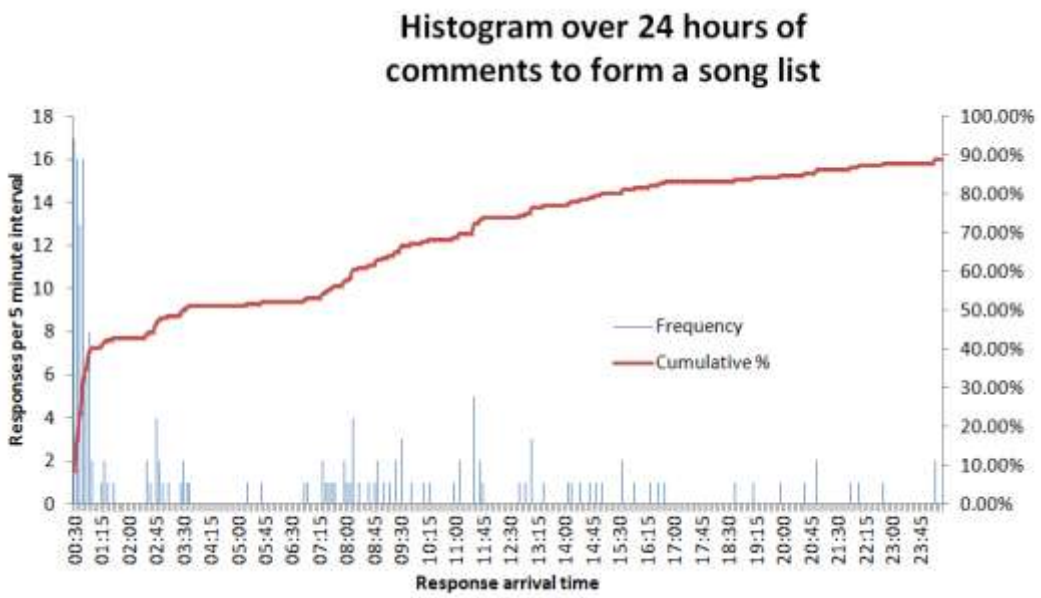


Figure 5.1: Responses to a Facebook post showing recurring patterns

During the summer of 2014 Facebook changed its method of page delivery and it was no longer possible to collect data using the tools I had developed to extract the data from the News Feed necessary to research comment creation. This occurred while my application to the Research Ethics Committee was being considered so I used the Graph Search to capture user interaction data, however the *posts* files did not contain sufficient data to answer my original question. This forced me to examine the *posts* data and adjust the focus of this work to the one presented here. I did not foresee the change of Facebook delivery technology and in retrospect the possibility of data acquisition failure ought to have been accounted for.

This failure could have been avoided by joining the Facebook partner program or an in-browser tool such as F! Data Miner (F! Data Miner, 2017), however neither of these are free options. Few third-party tools were available for collecting data from Facebook when the experiment was under design in 2012-3, however many more are available today.

Participant recruitment could be improved using Facebook itself for snowball sampling. (Goodman, 1961; Kosinski et al., 2015) where Facebook users are asked to join a survey and recommend their Friends to join the study. This would increase the number

of participants and would include a wider variety of users then university students, increasing the external validity of the outcome.

5.3.4 Professional development

I am a different person than the one who began working on this thesis. I have a greater understanding of the social role that educators play whilst teaching and how it can enhance or undermine learning. It has allowed me to support more accurately the learning processes of students undertaking research and to offer a richer level of supervision and support. I have learnt to take failures in my stride and to seek alternative strategies to solving diverse problems through the development of diverse research strategies.

I developed a referencing plug-in for Microsoft Word to match the Harvard style necessary for this thesis and it has been disseminated to the university IT team. Overall, I believe that my potential as an educator has been greatly enhanced and that I am a more valuable commodity to students than ever before. I have to give thanks to all those who supported me in undertaking this enterprise.

5.4 Limitations

This research was carried out in a post-1992 UK university and the participants were students with an average age of 26. The majority of UK Facebook users lie in the 25-34 year age group which indicates that the participants grew up alongside the computer communications age and may approach online communication differently to older users who grew up without social networking. The result reliability is limited to London and the South East of the UK in keeping with the cultural differences in self-disclosure reported by Posey et al (2010). Outcomes were underpinned by the individual intersubjectivities between social networks and this has been shown to differ across cultures (Correa-Chávez and Roberts, 2012; Danziger and Rumsey, 2013).

When I began this research, the penetration of mobile phones was low, but today most users access Facebook using their mobile phone (OFCOM, 2016). More than two thirds of the participants stated that they used their mobile phones for online communications

and the choice of communication device may influence communication patterns and behaviours.

Facebook has changed greatly since the data were recorded. Alongside the ability of users to 'like' a post, a quick way to express feeling (Quintly, 2017), in February 2016 Facebook introduced the opportunity to respond to a posting in a finer grained manner by selecting one of six 'Reactions' which are Like, Love, Haha, Wow, Sad and Angry (Krug, 2016). Facebook also now relies heavily on advertising revenue, generating £3.24 in sales from each user in Q1 2017 (CNBC, 2017) and this is targeted at groups of individuals based upon their profile information. Facebook is also introducing much video content to its platform as bandwidth gets cheaper and mobile devices increase in their capabilities.

5.5 Directions for further research

The change of delivery of Facebook pages from HTML to encrypted DHTML has had no effect upon users and their online interactions as this change was transparent to users, the changes occurred in the network traffic itself and within the browser engine, however from the perspective of live Facebook data collection, reliance on simple text manipulation of HTML is not possible. A workaround might be to develop a program that automatically scrolls backwards in time through the Facebook News Feed and saves the page contents on a regular basis. This would be possible but would result in a large number of data repetitions unless the program could sense where the next chunk of the News Feed began. Examples of programs that harvest Facebook data are Facedominator and uScraper. Facebook is aware of this type of data collection and may close the account that is being used to collect such information due to the number of page requests. Commercially, membership of a Facebook partner program may allow legitimate data collection, however this is not free.

A future study into the suitability of Facebook as an enhancement to HE could employ my modified measures of Chickering and Gamson (1987), section 2.6.8, and those of Gagne (1977), section 2.6.9 as Likert scale survey questions to obtain the opinions of both HE staff and students. Results could confirm or deny the usefulness of Facebook as a learning tool as perceived by these two groups.

Section 4.7.7 noted that there may be issues with the internal validity of data used to answer RQ2, with a false positive caused by a personality trait not controlled for. Studies into Facebook usage (Ryan and Xenos, 2011; Lee, Ahn and Kim, 2014; Marshall, Lefringhausen and Ferenczi, 2015; Eşkisu, Hoşoğlu and Rasmussen, 2017) reported that extroverts use Facebook more than introverts so a follow-up experiment ought to control for personality traits. Usage of elements of standard personality measurement tools such as the Eysenck Personality Questionnaire Revised (EPQ-R) (Eysenck, Eysenck and Barrett, 1985) to measure extraversion/introversion of participants, the Revised Cheek and Buss Shyness Scale (RCBS) (Crozier, 2005) and the Susceptibility to Embarrassment scale (SES) (Kelly and Jones, 1997) in a survey would improve the validity of the results. It may be necessary to join the Facebook partner program to ensure collection of the live data necessary to complete this follow-up study, however this is likely to incur costs.

In addition to the proposal to control for personality traits, a longer period of data collection would allow the question of whether embarrassment also affects the number of Facebook posts authored rather than News Feed items shared.

This study was unable to show how the participants formed their attitudes towards sharing of digital objects. Was it in the analogue world, online or were they developed ad hoc according to the context? A qualitative study with finer-tuned variables for shared items both on and offline combined with participant interviews may reveal answers to better explain the self disclosure correlations.

Qualitative research to compare the attitudes of higher education students in the UK and students attending overseas universities towards Friending their teaching staff may reveal cultural reasons behind the more relaxed faculty-student communication reported in many overseas studies.

As a direct result of being unable to continue my research into the recurring patterns revealed by comment arrival-time analysis, discussed in section 5.3.3, it would be instructive to begin such an investigation again, making use of guerrilla research tactics (Caldwell et al., 2015) for data collection. Human-computer interface research should look towards capturing user emotions such as a keyboard that recognises how the keys have been pressed and can add meta-information to an email, such as, ‘This email was

typed in anger', or 'This email was typed with care', increasing social presence and intersubjectivity.

The paucity of studies centred on the role of individual embarrassment in the sharing of information and objects on social media indicates that this is an area open for further research.

For researchers wishing to make sociological use of Goffman's early work I offer this advice. Look far beyond his dramaturgical turn and carry out careful bricolage because hidden behind the front stage of actors and audiences lie minute and often overlooked nuanced observations of human interactions in the wings, such as his emphasis on deference and demeanour as predictors of interaction behaviour (1956; 1959; 1967), his discussions of shame and humiliation (Scheff, Phillips and Kincaid, 2006; Scheff, 2017), that may provide further clues to the workings of human interaction when applied to alternative disciplines.

5.6 Conclusion

I wondered at the outset of this work whether I could apply frameworks developed from *Self* (1959) and *Public Places* (1963) to a study of human digital communication and arrived at an answer, yes and no.

What does apply is Goffman's (1956) framework for embarrassment as the driver of human behaviour which indicates that sufficient information about the 'other' can be conveyed by social media between its users to establish the necessary semantic accord for the framework to become applicable. The participants displayed similar behaviour when sharing digital objects through Facebook as they might when face-to-face with those they trust least. Goffman's explanation of the role of implicit and explicit signals in establishing intersubjectivity modelled the technical capabilities of Facebook and may explain why users do not interact with Facebook in the same way as during analogue interactions and indicates that emotions generated online are just as valid as those generated offline (Oeldorf-Hirsch, Birnholtz and Hancock, 2017).

Goffman's dramaturgical approach to social analysis does not yet apply to social networking due to system and digital communication channel limitations on allowing

their actors to directly perceive their audiences 'looking' at them and perceiving emotions in real time, so Facebook cannot be considered a Goffmanian public place, yet. Future incarnations of social networking may become open for dramaturgical analysis when the currently unseen audience becomes visible to Goffman's actor, a user of such a system.

Although I am at ease operating digital technologies and have little trouble learning the mechanics of their operation I do feel that my adolescence did not prepare me for the blurred social boundaries and narcissism of the Facebook profile and this leaves me simultaneously inside and outside of online social networking. The members of Generation Z seem to embrace, or are being embraced by, the world inside their mobile phone and appear not to live by the same clock as I do. They see Facebook as their space and do not welcome intrusion by faculty.

The secondment of Facebook as a teaching tool in higher education is complex where traditional methods and the challenges of new technologies have become entangled. These findings augment my initial belief that Facebook should not be used formally for teaching in higher education in agreement with the results of other studies (Selwyn, 2009; Madge et al., 2009; Manca and Ranieri, 2013) but should be left to students to make their own uses (Fewkes and McCabe, 2012). Perhaps greater collaboration between students and faculty involving exchanges of experiences may allow informed uses of new technologies to enjoy greater success (Cook-Sather, 2010).

Joint cultural understanding for individuals is achieved through interactions with other members of a society, leading to differences in intersubjectivity across multiple cultures (Correa-Chávez and Roberts, 2012). If we accept Facebook as a sui generis culture, then a Facebook society exists with a digitized intersubjectivity that bears some responsibility for shaping the endeavours and goals of its users (Danziger and Rumsey, 2013). A culture based on cyberspace rather than human nature and natural contexts may have unexpected consequences. As digital communication technologies advance, the possibility of transmitting given-off signals may allow social networking to approach the public place. Changing technology invites changes in society and we may become the culture depicted by Forster in *The Machine Stops* (1909) where copresent communication is actively avoided. I sincerely hope not.

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7. APPENDICES

7. APPENDICES

Contents

7.1 Further demographic results

This section presents some of the demographic results that were not used in the thesis. Whilst not directly connected to the outcomes of this work, they may prove useful to others studying in this field.

The *posts* files allowed the types of posts and the number of interactions that each post type elicited to be calculated. The data were tabulated in Table 7.1 and are shown graphically Figure 7.1.

Action	Total events	Likes received	Comments received	Likes per post type	Comments per post type
Updated cover photo	20	198	17	9.9	0.09
Added video	6	52	34	8.7	0.65
Added photos	67	518	192	7.7	0.37
Mobile status update	141	841	282	6.0	0.34
Tagged in photo	75	398	91	5.3	0.23
App created story	15	60	9	4.0	0.15
Shared story	137	286	159	2.1	0.56

Table 7.1**: Types of post and their interactions by participants**

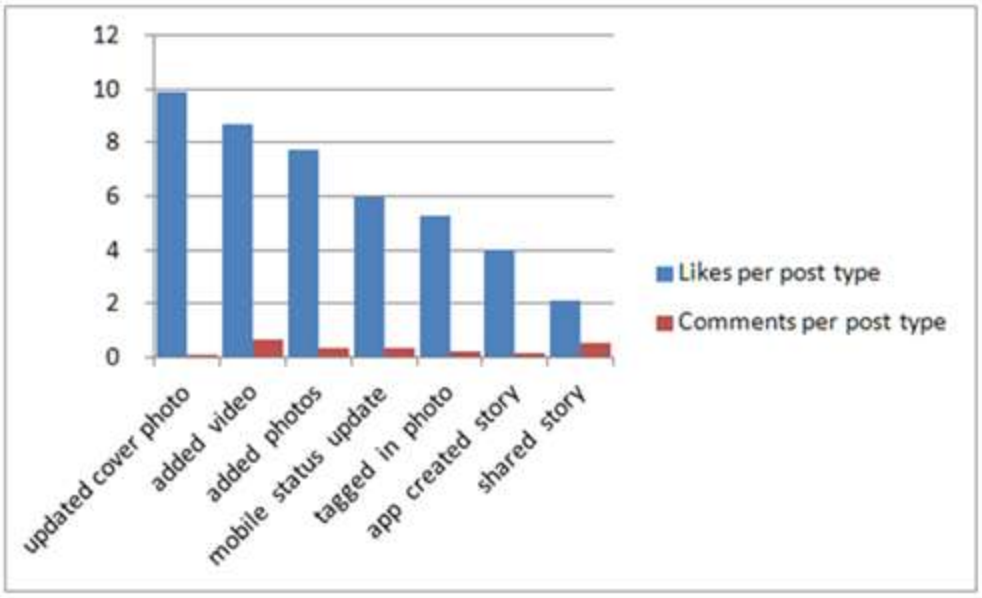


Figure 7.1**: Likes and comments per type of Facebook post**

The top three post types for likes involved the visual domain.

Participant unwitting self-embarrassment on Facebook

Response options: (1) ‘yes’, (2) ‘no’. The distribution and percentage of positive responses was calculated.

Participant Facebook activities

The options, derived from a pilot study, were: (1) ‘reading status updates’, (2) ‘looking at pictures friends have posted’, (3) ‘writing status updates’, (4) ‘posting your own videos or pictures’, (5) ‘sharing friends' videos or pictures’, (6) ‘looking at videos friends have posted’, (7) ‘messaging any Facebook 'friends' also connected’, (8) ‘doing work of any description’, (9) ‘playing Facebook mini-games’, (10) ‘listening to music friends have posted’, (11) ‘sharing gossip’. Responses: (1) ‘never’, (2) ‘rarely’, (3) ‘sometimes’, (4) ‘most times’, (5) ‘always’.

The responses were coded as shown in Table 3.8 and the total for each response was calculated as a percentage of the total possible for each category.

Available responses	Coding
Never.	1
Occasionally.	2
Sometimes	3
Frequently.	4
Always.	5

Table 7.2: Coding for Facebook pastimes and post interaction

Facebook post interaction by participants

The options were: (1) 'amusing comments or jokes', (2) 'photographs of people you know', (3) 'informative videos', (4) 'music', (5) 'text without images', (6) 'funny pictures', (7) 'serious content', (8) 'amusing videos'.

Responses: (1) 'never', (2) 'occasionally' (3) 'sometimes', (4) 'frequently', (5) 'always'.

The responses were coded as shown above and the total for each response was calculated as a percentage of the total possible for each category.

Facebook activities from posts data

Frequency analysis of the data retrieved from the participants' actions on Facebook would reveal the common activities of participants across the 25 actions contained per user in the *posts* files.

The *posts* files allowed the types of posts and the number of interactions that each post type elicited to be calculated.

Frequency of participant social media usage

The options were: (1) Twitter, (2) Instagram, (3) Facebook, (4) SnapChat, (5) LinkedIn, (6) any other social networking systems.

Responses: (1) 'never', (2) 'rarely', (3) 'once or twice a month', (4) 'once or twice a week', (6) 'every day'.

The responses were coded as shown above and the total for each response was calculated as a fraction of the total possible for each category, allowing the ranking of social network usage to be calculated.

Digital maturity of participants

Participant age ranges: (1) '18 to 23 years', (2) '24 to 29 years', (3) '30 to 34 years', (4) '35 to 39 years', (5) '40 to 65 years'.

Choices of technology: (1) 'The Internet', (2) 'PC or laptop', (3) 'mobile phone', (4) 'Facebook', (5) 'games console'.

Responses: (1) 'less than 1 year', (2) 'between 1 and 2 years', (3) 'between 3 and 5 years'. (4) 'between 6 and 9 years', (5) 'between 10 and 19 years', (6) '20 years or more'.

The midpoint of each age range was substituted for each survey response. The midpoint of length of exposure to digital technologies was substituted for each survey response.

The digital maturity of participants was sought to determine whether a relationship existed between the variables (1) *age of participants* and (2) *length of exposure to digital technologies*.

Disabilities

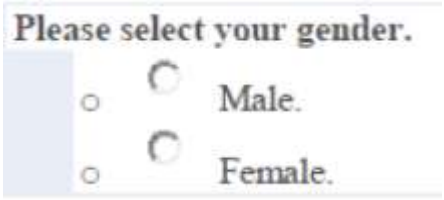
One participant reported having a visual disability, two reported having reading and writing disabilities and one reported having a typing disability. None of the participants reported an auditory disability.

7.2 Survey questions

Some of the questions are not shown as they were not used in the research, see section 5.3.3 where I discuss the original intention for the research before the Facebook changed in 2014.

Question 1

Question 2



Question 3

While you are studying at university this term, are you living away from home?

- Yes.
- No.

Question 4

Please select your age group.

- 18 to 23 years.
- 24 to 29 years.
- 30 to 34 years
- 35 to 39 years.
- 40 to 65 years.

Question 5

For approximately how long have you had regular access to the following technologies?

	Less than 1 year.	Between 1 and 2 years.	Between 3 and 5 years.	Between 6 and 9 years.	Between 10 and 19 years.	20 years or more.
PC or laptop.						
The Internet.						
Games consoles.						
Mobile phone.						
Facebook.						

Question 6

How often do you communicate with other people in your life, using any method?
Please estimate the frequency that you communicate with the following groups of people.

	Every day.	3 or 4 times per week.	About once per week.	Once or twice per month.	Rarely.	Never/ not applicable.
University staff and lecturers.	○	○	○	○	○	○
Fellow students.	○	○	○	○	○	○
Friends outside of university.	○	○	○	○	○	○
Management at your place of work.	○	○	○	○	○	○
Family or significant carers.	○	○	○	○	○	○
An intimate friend or partner.	○	○	○	○	○	○

Question 7

How much time in total do you think you spend actively connected to the Internet per week during term-time?
This includes activities such as watching streamed content, writing emails, browsing, working, studying, playing on-line games and using a mobile phone?

- ○ 0 to 4 hours per week, (maximum 35 minutes per day).
- ○ 5 to 19 hours per week, (maximum 2 hours 40 minutes per day).
- ○ 20 to 39 hours per week, (maximum 5 hours 35 minutes per day).
- ○ 40 to 59 hours per week, (maximum 8 hours 25 minutes per day).
- ○ 60 to 79 hours per week, (maximum 11 hours 25 minutes per day).
- ○ 80 to 99 hours per week, (maximum 14 hours 10 minutes per day).
- ○ 100 to 119 hours per week, (maximum 17 hours per day).
- ○ More than 120 hours per week, (over 17 hours per day)..

Question 8

Do you think that you might spend more time connected to the Internet if you had any of the following?

	Yes, I would spend more time online.	No, I would not increase the time I spend online.
Longer battery life in your mobile devices.	○	○
Wireless connection to the Internet everywhere you go.	○	○
Cheaper Internet usage rates.	○	○

Question 9

Do you use the privacy settings provided by Facebook to select who is able to see your information?

This could be posts, Timeline, personal information etc.

- ○ Yes.
- ○ No.

Question 10

Who do you exclude, using the built-in privacy settings, from viewing all of your Facebook information and communications?

This includes could be posts or Timeline or tagged items. Select all that apply.

- ☐ Friends outside of university.
- ☐ Family or significant carers.
- ☐ University staff and lecturers.
- ☐ Management at your place of work.
- ☐ Fellow students.
- ☐ Intimate friend or partner.

Question 11

Please select how often you use the following social media applications.

	Never.	Rarely.	Once or twice a month.	Once or twice a week.	Every day.
Twitter.	○	○	○	○	○
Instagram.	○	○	○	○	○
Facebook.	○	○	○	○	○
SnapChat.	○	○	○	○	○
LinkedIn.	○	○	○	○	○
Any other social networking systems.	○	○	○	○	○

Question 12

How often do you use the following devices for your Internet communications?

	Never.	Occasionally.	Sometimes.	Frequently.	Most times.
Mobile device e.g. smartphone, iPad, tablet.	○	○	○	○	○
Fixed device e.g. personal computer.	○	○	○	○	○
Portable device e.g laptop.	○	○	○	○	○

Question 14

When you use the following forms of communication, how much do they cost you?

	High cost	Low cost	Nothing.
Videoconferencing.	○	○	○
Telephone conversation.	○	○	○
Text message (SMS).	○	○	○
Speaking face to face.	○	○	○
Using a written or typed document and the postal service.	○	○	○
Email.	○	○	○

Question 17

When you use Facebook, how do you spend your time?
This is about how you pass your time when connected to Facebook.

	Never.	Rarely.	Sometimes.	Most times.	Always.
Reading status updates.	○	○	○	○	○
Looking at pictures friends have posted.	○	○	○	○	○
Writing status updates.	○	○	○	○	○
Posting your own videos or pictures.	○	○	○	○	○
Sharing friends' videos or pictures.	○	○	○	○	○
Looking at videos friends have posted.	○	○	○	○	○
Messaging any Facebook 'friends' also connected.	○	○	○	○	○
Doing work of any description.	○	○	○	○	○
Playing Facebook mini-games.	○	○	○	○	○
Listening to music friends have posted.	○	○	○	○	○
Sharing gossip.	○	○	○	○	○

Question 18

Which of the following types of posts from Facebook Friends do you tend to interact with?
This can be when you 'Like' , comment, share etc.

	Never.	Occasionally.	Sometimes	Frequently.	Always.
Amusing comments or jokes.					
Photographs of people you know.					
Informative videos.					
Music.					
Text without images.					
Funny pictures.					
Serious content.					
Amusing videos.					
Attending seminars.					
One-to-one or small group tutorials.					
Practical work.					
Informative videos.					
Audio books and informative mp3s.					

Question 20

Who you would prefer not see all of your posts, Timeline and information on Facebook?
Your responses can be wishful thinking and separate from any possibilities provided by the security settings that you may have already made on Facebook.

	This group can see all of the Facebook postings and information on my account.	I would prefer not to allow this group to see all of the Facebook postings and information on my account.
Friends outside of university.		
University staff and lecturers.		
Management at your place of work.		
Family or significant carers.		
Intimate friend or partner.		
Fellow students.		

Question 21

When you are in the following settings, do you have to carefully consider your conversation topics?

	I have to be careful what I say.	It does not matter what I say.
At a family occasion, such as a wedding.	○	○
On Facebook.	○	○
In front of fellow university students or classmates.	○	○
With non-university friends in a busy café or bar.	○	○
At work.	○	○
In the company of university staff and lecturers.	○	○
When alone with your partner.	○	○

Question 23

Can you think of an occasion where you have wanted to say you like a piece of music but you have felt unable to because of the others around you?

	I can always freely express my taste in music with this group of people.	Sometimes I keep my true musical taste to myself.
In your manager's office at your place of work.	○	○
An intimate friend or partner.	○	○
At a family occasion, such as a wedding.	○	○
In front of fellow university students or classmates.	○	○
With non-university friends in a busy café or bar.	○	○
In the company of university staff and lecturers.	○	○
On Facebook.	○	○

Question 24

Do you know any jokes or stories that you could NOT tell to the following groups of people?

	No, this group does not like jokes or stories.	No. I have to be careful about the content of jokes and stories I tell to this group.	Yes. I can speak freely with this group.
Fellow university students or classmates.	○	○	○
Adult members of your family.	○	○	○
Management at your place of work.	○	○	○
Your friends outside of university	○	○	○
On Facebook.	○	○	○
University staff and lecturers.	○	○	○
An intimate friend or partner.	○	○	○

Question 25

Of all the films or videos that you have ever seen, are there any that you would NOT recommend to the following groups of people?

	Yes, it could cause embarrassment.	Yes, some other reason.	No.
Fellow university students or classmates.	○	○	○
Your friends outside of university	○	○	○
Adult members of your family.	○	○	○
An intimate friend or partner.	○	○	○
On Facebook.	○	○	○
Management at your place of work.	○	○	○
University staff and lecturers.	○	○	○

Question 26

Of all the pictures that you have ever seen, are there any that you would NOT recommend to the following groups of people?

	Yes, it could cause embarrassment.	Yes, some other reason.	No.
Adult members of your family.	○	○	○
Fellow university students or classmates.	○	○	○
On Facebook.	○	○	○
Your friends outside of university.	○	○	○
To an intimate friend or partner.	○	○	○
University staff and lecturers.	○	○	○
Management at your place of work.	○	○	○

Question 28

Have you ever embarrassed yourself in any of the following settings?
Select the appropriate frequency.

	Never.	Occasionally.	Sometimes.	Frequently.	Always.
In a setting such as a busy café or bar with friends outside of university.	○	○	○	○	○
At a family occasion, such as a wedding.	○	○	○	○	○
On Facebook.	○	○	○	○	○
In a setting such as a busy café or bar with friends outside of university.	○	○	○	○	○

Question 29

Have you ever become embarrassed by the actions or behaviour of someone else in any of the following settings?
Select the appropriate frequency.

	Never.	Occasionally.	Sometimes.	Frequently.	Always.
In a setting such as a busy café or bar with friends outside of university.	○	○	○	○	○
At a family occasion, such as a wedding.	○	○	○	○	○
On Facebook.	○	○	○	○	○
In a setting such as a busy café or bar with friends outside of university.	○	○	○	○	○

Question 30

Have you ever posted any content on Facebook that at the time of posting seemed fine but the later comments of others on Facebook made you realise the posting was embarrassing to you?

- ○ Yes.
- ○ No.
- ○ I would rather not say.

Question 31

Do you think that you get embarrassed easily in any aspect of your life?
Select the appropriate frequency.

- ○ Never.
- ○ Occasionally.
- ○ Sometimes.
- ○ Frequently.
- ○ Always.

Question 32

Do you trust that the privacy settings that are available on Facebook can keep all of your personal or sensitive information that is already on Facebook, e.g. pictures, stories, from becoming public or otherwise available to those you do not trust?

- Yes.
- No.

Question 33

Do you have any significant disability in any of these areas?

	Yes.	No.	I would rather not say.
Vision.			
Hearing.			
Reading.			
Writing.			
Typing.			

7.3 Survey preface

Facebook Research Questionnaire

Thank you for allowing your public events on Facebook to be recorded. In order to make sense of this data, this questionnaire has been designed to triangulate your communication behaviour patterns with those I have recorded.

Three prizes of £15 book tokens will be made available to questionnaire respondents in a prize draw to be held at the end of data-gathering process. To be eligible for the prize draw you must complete the questionnaire and include the user code sent to you in the email that gave you access to this questionnaire.

Please answer each question as truthfully as possible. There are no right or wrong answers. If you feel that there is not an option that answers any of the questions, leave the question blank and move on to the next question. You do not have to answer this questionnaire and you may withdraw from the research by not completing it.

The study has been informed by BERA 2011, and takes into account anonymity of participants and all data will be treated anonymously and confidentially and will not be used for any purposes other than this study as described in the Participant Information Sheet.

The data gathered by collecting postings on Facebook will only identify the type of communication and will not keep the content (textual or audio or visual) of any Facebook communications. The questionnaire will gather participants' perceptions of the privacy of their particular postings. Participants' identities will be anonymised in order to allow cross-referencing between the two data types gathered. Data held is confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

*Required

7.4 Communications and materials

Appendix description

This appendix contains the emails that were sent to attract participants and subsequent communications to those participants who chose to participate.

Email to attract participants

This email was sent on 20th October 2014 to all students in the university.

Subject: Participants required for Facebook study

Dear All

As part of my studies for my doctorate in education, I have designed an experiment into student usage of Facebook to discover if there are differences in the way humans communicate and behave socially between analogue and online settings.

If you would like to participate in this study, I will hold a short briefing session on 27th October 2014 in room XXXX. Full details of the experiment and your participation are available at [HYPERLINK]. You may also download a copy of the consent form from [HYPERLINK]. If you are unable to attend the briefing session, you may contact me by email for further details of the study.

The experiment will record anonymously the actions of participants on Facebook over a 2 week period in November 2014, collecting the communication tools used and the time of use. The type of information gathered will be of the form:

AZ123 shared a link 8/10/2014 15:19:37,
or
BY437 commented on a video 8/10/2014 16:29:12.

There will be no collection of the posted content itself. This means that NO photographs, videos, personal information or text posted by any participants on Facebook will be saved at any time before, during or after the study, nor will any other information from your Facebook account be viewed or used. Information gathered from Facebook members who have not agreed to participate in the study will be anonymised during data analysis.

To participate in the experiment, you will be asked to 'Friend' a particular Facebook account holder that has been created purely for this study and no other purpose and later to complete an online questionnaire to gather information on your online habits, age group, number of Facebook Friends, gender etc. and then several questions that seek to establish your boundaries and strategies for sharing of information with online and offline social groups. There will be no communication made by the experimental Facebook account during the experiment. Three prizes of £15 book tokens will be made available and drawn at random from the participants at the end of the study.

Participants may decide to withdraw from the experiment at any time for any reason, without any consequential impact on their studies, by 'unfriending' the Facebook account, not returning the questionnaire or by informing Mark Clements via email or in writing.

All participants' identities will be anonymised as part of the data gathering process and all participants will remain anonymous in any published work. No information other than that given freely by the participants for the study and collected during the study will be used. This means that no official sources of information within the XXXXXXXXXXXXXXXX e.g. XXXXXX, XXXXXX, or indeed from elsewhere, will be used or consulted in any way to complete the study.

The outcomes of the experiment will be used primarily for my thesis, but may also be used to produce journal and conference publications. All participants will be offered a copy of the thesis once it has been published.

Many thanks.

Regards,

Mark Clements
Faculty of XXXXXXXXXXXXXX

Telephone: +44 XXXXXXX Extension XXXXX
+44 XXXXXXX
Email: xxxx@xxxxxxx.ac.uk
Room: XXXX

Email sent to participants who have agreed to participate

Dear Participant

Thank you very much for your response agreeing to take part in my Facebook study.

Please 'Friend' XXXXXXXXXXXX@facebook.com next time you log in to Facebook and I will confirm your request once I have established that you are a valid participant in the study.

Please also complete the questionnaire at [HYPERLINK] using the code xxxxxx to respond to the first question. This is to ensure that only valid responses are considered.

The Facebook recording will commence at midnight on 9th November and will stop two weeks later on 23rd November at midnight.

Please remember that I am not capturing any of your content, just the Facebook tools that you use and the time of use. No other Facebook members will be identified during the study.

Best regards

Mark

Email to participants following agreement to participate

This email was sent from the Ashley Johns Google mail account once participants had completed the Participant Consent Form.

Subject: Welcome and thank you for participating.

Dear Participant

Thank you for agreeing to participate in the Facebook experiment. For a period of 2 weeks, between 10th November 2014 and 23rd November 2014, your public communication activities will be recorded. You will remain totally anonymous during the experiment as your Facebook identity will be assigned a code which will be used to identify you during the analysis of the results and in any subsequent publications.

Please friend the Facebook account Ashley Johns (XXXXXXXXXXXX@facebook.com) but do not apply any group or privacy settings to this account. Please do not attempt to communicate with the Ashley Johns account during the experiment. The account will remain passively connected 24/7 to record the tools used by 'friends' of the account. It is only the tools that you use and the time of use that will be recorded. None of the content of your communication will be kept or recorded. This means that NONE of the pictures, videos and comments that you make or share will be recorded for the experiment.

The Ashley Johns Facebook account will only respond to friend requests at the outset of the experiment. No communication will be made other than those automatically generated by Facebook. The only 'friends' of Ashley Johns will be participants in the experiment. Any other 'friend' requests will be denied.

At the beginning of November 2014, you will receive an email from Ashley Johns email account, xxxxxxxxxxx@gmail.com containing a hyperlink to a questionnaire hosted by Google. This questionnaire must be completed online. Please complete this honestly and submit the results as soon as you are able.

You are free to withdraw from this experiment at any time for any reason without any effect on your university studies. You may withdraw in one of three ways.

1. 'unfriending' the Ashley Johns Facebook account.
2. Not completing or submitting the online questionnaire.
3. By contacting Mark Clements on his University email, xxxx@xxxxxxx.ac.uk.

The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will be confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxxxx.ac.uk. The experiment has the approval of the

XXXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

Once again, many thanks for agreeing to participate in this experiment.

Best regards,

Mark Clements

Facebook experiment joining instructions for participants

To connect with the Facebook experiment, please log in to your Facebook account and enter the following

https://www.facebook.com/xxxxxxxxxx

This will take you to the Facebook account associated with this research experiment.

The user name is Ashley Johns

Click the "Add Friend" button

Please leave the security settings so that Ashley Johns is a Friend only. Please do not assign Ashley to any groups.

Information
Once you have Friended Ashley, there will be no communication via this Facebook account. Ashley will remain logged in to Facebook for the duration of the experiment. All public communications that you make will be recorded for a period of six weeks. The content of your posting will NOT be recorded. I am looking at the range of Facebook tools that users choose during their online activity.

Email sent two hours before data gathering commenced

«GreetingLine»

Thank you for agreeing to participate in the Facebook experiment. From midnight tonight and for a period of 2 weeks, between 10th November 2014 and 23rd November 2014 at 23:59, your public communication activities and times, but not posted content, will be recorded. You will remain totally anonymous during the experiment as your Facebook identity will be assigned a code which will be used to identify you during the analysis of the results and in any subsequent publications. Any information gathered in comments during the study from Facebook members who have not agreed to participate in the study will be fully anonymised during data analysis.

If you have not done so already, please 'Friend' the Facebook account Ashley Johns (http://www.facebook.com/xxxxxxxxxx) but do not apply any group or privacy settings to this account. Please do not attempt to communicate with the Ashley Johns account during the experiment. The account will remain passively connected 24/7 to record the tools used by 'Friends' of the account. It is only the tools that you use and the time of use that will be recorded. None of the content of your communication will be kept or used in the experiment. This means that NONE of the pictures, videos and comments that you make or share will be retained in the final experimental data. If you join the Facebook group, this will only be for data collection during the experiment and for no other purpose.

The Ashley Johns Facebook account will only respond to 'Friend' requests at the outset of the experiment. No communication will be made other than those which may be automatically generated by Facebook. Only the 'Friends' of Ashley Johns will be allowed to participate in the experiment. Any other 'Friend' requests will be denied.

Your user code for the questionnaire is xxxxxx and it is located at [HYPERLINK].

Please complete the questionnaire before 23rd November. The questionnaire may take around 20 minutes to complete and there are three prizes of £15 book tokens for completion of the survey and Facebook data gathering. Prize-winners will be drawn at random following the completion of data gathering. This questionnaire must be completed online.

You are free to withdraw from this experiment at any time for any reason without any effect on your university studies. You may withdraw in one of three ways.

1. 'Unfriending' the Ashley Johns Facebook account.
2. Not completing or submitting the online questionnaire.
3. By contacting Mark Clements on his University email, xxxx@xxxxx.ac.uk.

The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will be confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxx.ac.uk. The experiment has the approval of the XXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

Once again, many thanks for agreeing to participate in this experiment.

Best regards,

Mark Clements
Faculty of XXXXXXXXXXXXX

Telephone: +44 XXXXXXXXXX Extension XXXXX
+44 XXXXXXXXXX
Email: xxxx@xxxxxxx.ac.uk
Room: XXXX

Personal email: XXXXXXX@gmail.com

Email to participants containing questionnaire

This email was sent from the Ashley Johns Google mail account once participants had completed the Participant Consent Form.

Subject: Facebook experiment questionnaire.

Dear Participant

Thank you for your participation in the Facebook experiment. In order to complete the experiment, it is necessary to gather some information about the participants.

The online questionnaire should take you around 20 minutes to complete. Please answer all questions as fully and truthfully as you can. The online questionnaire will contain one set of questions to establish your Facebook identity, age and gender plus your perceived patterns of online and analogue communications. There will be a second set of questions that will attempt to discover your boundaries for sharing particular types of information in various social groups. You do not have to complete the questionnaire, however non-completion will be assumed to indicate self-removal from the study.

The questionnaire is available at [HYPERLINK].

You are free to withdraw from this experiment at any time for any reason without any effect on your University studies. You may withdraw in one of three ways.

1. 'unfriending' the Ashley Johns Facebook account.
2. Not completing or submitting the online questionnaire.
3. By contacting Mark Clements on his University email, xxxx@xxxxx.ac.uk.

The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will be confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxx.ac.uk. The experiment has the approval of the XXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

Once again, many thanks for agreeing to participate in this experiment.

Best regards,

Mark Clements

Email sent to encourage questionnaire completion

Subject: Facebook research - last chance to qualify for prize draw on Sunday

«GreetingLine»

Thanks for your participation so far.
The prize draw for participation in Facebook research will take place on Sunday 30th November.
To be eligible for the draw, please complete the online questionnaire.
Your quiz code is xxxxxx.
Log in at [HYPERLINK]

The three prize-winners of £15 book tokens will be announced in due course following a random draw.
As of today, you have a 1 in 7 chance of winning one of the prizes if you complete.
Of course, participation is entirely voluntary and you are under no obligation to continue in this research.
This will be the last reminder sent before the draw.
Once again, many thanks for your participation so far in this experiment.

Best regards,

Mark Clements

Email sent Monday 24th November to encourage survey completion

«GreetingLine»

Thanks so much for friending Ashley in my Facebook experiment.

Please now complete the questionnaire at: [HYPERLINK]

using the code xxxxxx.

Once you have completed the questionnaire I can include you in the prize draw later this week.

The three prize-winners of £15 book tokens will be announced in due course following a random draw.

Once again, many thanks for your participation so far in this experiment.

Best regards,

Mark Clements
Faculty of XXXXXXXXXXXXX

Telephone: +44 XXXXXXXXX Extension XXXXX
+44 XXXXXXXXXX
Email: xxxx@xxxxx.ac.uk
Room: XXXX

Email sent to participants on 28th November to encourage quiz completion

Subject: Facebook research - last chance to qualify for prize draw on Sunday
«GreetingLine»

Thanks for your participation so far.
The prize draw for participation in Facebook research will take place on Sunday 30th November.
To be eligible for the draw, please complete the online questionnaire.
Your quiz code is xxxxx.
Log in at [HYPERLINK]
The three prize-winners of £15 book tokens will be announced in due course following a random draw.
As of today, you have a 1 in 7 chance of winning one of the prizes if you complete.
Of course, participation is entirely voluntary and you are under no obligation to continue in this research.
This will be the last reminder sent before the draw.
Once again, many thanks for your participation so far in this experiment.

Best regards,

Mark Clements

Email to participants at conclusion of experiment
This email will be sent from the Ashley Johns Google Mail account at the end of the data recording period at the start of May 2014.

Subject: Facebook experiment is now finished.

Dear Participant

Thank you for your participation in the Facebook experiment. Over the last 6 weeks, your use of Facebook's communication tools has been recorded. None of your images, videos nor text have been recorded. Your participation throughout this experiment and your responses to the questionnaire will be treated confidentially and anonymously.

Your Facebook account will be 'unfriended' from Ashley Johns over the next few days. No data is now being recorded.

The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will be confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxx.ac.uk. The experiment has the approval of the XXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

The results from this experiment will be made available to all participants following analysis and the write-up of the results.

Once again, many thanks for participating in this experiment.

Best regards,

Mark Clements

Email sent to winners of the prize draw

Subject: Facebook experiment prize winner!

«GreetingLine»

You are one of the three lucky winners of £15 book tokens. I work at the Medway campus and may not be able to find you in person if you are based at Avery Hill or XXXXXXX. Please indicate how I can get your prize to you. The prize draw was held on Sunday 30th November at 20:30 for those who had completed all aspects of the experiment.

Thank you for your participation. Your Facebook account will be 'unfriended' from Ashley Johns as soon as all necessary data has been gathered and saved. The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will remain confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxx.ac.uk, or via the contact details given below. The experiment has the approval of the XXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

The results from this experiment will be made available to all participants following analysis and the write-up of the results. The three prize-winners of £15 book tokens will be announced in due course following a random draw.

Once again, many thanks for participating in this experiment.

Best regards,

Mark Clements

Faculty of XXXXXXXXXXXXXX

Telephone: +44 XXXXXXXXX Extension XXXXX
+44 XXXXXXXXXXX
Email: xxxx@xxxxx.ac.uk
Room: XXXX

Email sent to losers of the prize draw

Subject: Facebook experiment – you did not win the prize

«GreetingLine»

The prize draw was held on Sunday 30th November at 20:30 for those who had completed all aspects of the experiment. Unfortunately your name was not chosen for one of the prizes.

Thank you for your participation. Your Facebook account will be 'unfriended' from Ashley Johns as soon as all necessary data has been gathered and saved. The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will remain confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his University email, xxxx@xxxxx.ac.uk, or via the contact details given below. The experiment has the approval of the XXXXXXXXXXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

The results from this experiment will be made available to all participants following analysis and the write-up of the results. The three prize-winners of £15 book tokens will be announced in due course following a random draw.

Once again, many thanks for participating in this experiment.

Best regards,

Mark Clements
Faculty of XXXXXXXXXXXXXX

Telephone: +44 XXXXXXXXX Extension XXXXX
+44 XXXXXXXXXXX
Email: xxxx@xxxxx.ac.uk
Room: XXXX

Email sent to participants requesting permission to use out-of-range data

Sent Wed, 7 Sep 2016 12:59:23 +0100

Subject: Facebook experiment follow-up

Dear Participant

Thank you for your participation in the Facebook experiment in 2014. In order to complete the experiment, it is necessary to request your permission to extent the data scope from the original two week period 9th November 2014 to 23rd November 2014.

There was insufficient data gathered in the two week period, however I have gathered data from earlier in 2014 which will suit my purposes.

None of the data contains personally identifiable information and I am only looking at the type of interactions that you made with Facebook,

e.g. at 15:43 on 6th November 2014 participant FB1299 posted a video.

I have 25 examples of Facebook interactions for each participant, some of the data fall in the 2 week specified period, some is from before that time.

I will not be gathering any further data and none of the data is dated beyond 25th November 2014.

I am requesting your permission to use the data gathered in the agreed period from 2014 for my study.

If you do NOT wish me to use the data gathered, please respond by email.

The results of the questionnaire and the recorded data from Facebook will be treated in strict confidence. All data collected will be confidential and secure under the terms of University ethics guidelines and the UK Data Protection Act (1998).

If you require any information regarding this experiment, please contact Mark Clements on his personal email, mmclements@gmail.com. The experiment has the approval of the XXXXXXXX Research Ethics Committee and is supervised by two members of the University, W Goddard and Dr J Barnard.

Once again, many thanks for agreeing to participate in this experiment.

Best regards,

Mark Clements

Flyer to attract participants

- **Do you have a Facebook account?**
- **Would you like the chance to win one of three £15 book tokens?**
- **Would you like to take part in research* to further human knowledge about computer mediated communications?**

If you have answered YES to these three questions, please come along to the briefing session in room TBA on TBA October 2014 at TBA for further details.

If you are unable to attend but would like further details, please contact Mark Clements xxxx@xxxxx.ac.uk

*This research has obtained approval from the XXXXXXXXX Research Ethics Committee and is supported by W Goddard and Dr J Barnard of the Faculty of XXXXXXXXXX.

7.5 Research Ethics Committee permission

Mark Clements
University of Greenwich
Dept. of Electrical, Electronic & Computer Engineering
Pembroke, room 141
Central Avenue
Chatham Maritime
Medway ME4 4TB

Direct Line 020 8331 8842
Direct Fax 020 8331 8824
Email research_ethics@gre.ac.uk
Our Ref UREC/13.3.5.2
Date: 13 October 2014

Dear Mark,

University Research Ethics Committee – Minute 13.3.5.2

TITLE OF RESEARCH: The didacticism of the Facebook in Higher Education: deconstructing computer mediated communications for an insight into enhancing their uptake and usage for social and institutional benefit

I am pleased to confirm that the above application has been **approved** by Chair's Action on behalf of the Committee and that you have permission to proceed.

I am advised by the Committee to remind you of the following points:

- You must notify the Committee immediately of any information received by you, or of which you become aware, which would cast doubt upon, or alter, any information contained in the original application, or a later amendment, submitted to the Committee and/or which would raise questions about the safety and/or continued conduct of the research;
- You must comply with the Data Protection Act 1998;
- You must refer proposed amendments to the protocol to the Committee for further review and obtain the Committee's approval thereto prior to implementation (except only in cases of emergency when the welfare of the subject is paramount).
- You are authorised to present this University of Greenwich Research Ethics Committee letter of approval to outside bodies in support of any application for further research clearance.

On behalf of the Committee may I wish you success in your project.

Yours sincerely

John Wallace
Secretary, University Research Ethics Committee

Cc: Dr W. Goddard
Dr J. Barnard

This is to certify that

Name: Mark Clements Id: 00130313

Programme: EdD Education

has been awarded the

RESEARCH SKILLS ON-LINE COMPLETION CERTIFICATE

to confirm that the following course assessments have been completed and the required pass mark has been achieved:

Ethics 1 Good Research Practice
Ethics 2 Working with Human Subjects
IP in the Research Context
Managing your Research Supervisor or Principal Investigator
Project Management
Research Methods in the Sciences
Research Methods in the Social Sciences
Research Methods in the Arts and Humanities
Research Methods in Literature Review

Date of Issue: 12th October 2015

Professor Alan Reed
Director of Postgraduate Research

Please keep this certificate in your Research Student Logbook and Professional Development Portfolio

UNIVERSITY of GREENWICH

7.6 Facebook's Platform Policy

Available sections

1. Build a quality product
2. Give people control
3. Protect data
4. Encourage proper use
5. Follow the law
6. Things you should know

If you use these features, follow these additional policies:

7. Login
8. Ads
9. Games
10. Payments
11. App Center
12. Open Graph
13. Social Plugins
14. Ads API
15. Page API
16. Messenger Platform
17. Messenger Expressions
18. Account Kit
19. Live API
20. Profile Expression Kit
21. Definitions

Last updated May 26, 2016

Facebook Platform Policy

1. Build a quality product

Build an app that is stable and easily navigable.

Ensure that your app's content (including ads and user-generated content) meets our Community Standards.

Follow our Advertising Policies for your app name, icons, and description.

Keep your app's description and categorization up-to-date.

Don't confuse, deceive, defraud, mislead, spam or surprise anyone.

Keep your app's negative feedback below our thresholds.

Follow any instructions we include in our technical documentation.

2. Give people control

Obtain consent from people before publishing content on their behalf.

Use publishing permissions to help people share on Facebook, not to send people messages from your app.

Don't prefill captions, comments, messages, or the user message parameter of posts with content a person or business didn't create, even if the person can edit or remove the content before sharing. You may use our Share Dialogs to prefill a single hashtag in a post, but don't prefill any content a person or business didn't create via the API.

Provide a publicly available and easily accessible privacy policy that explains what data you are collecting and how you will use that data.

You may use Account Information in accordance with your privacy policy and other Facebook policies. All other data may only be used outside your app after you have obtained explicit user consent.

Include your privacy policy URL in the App Dashboard.

Link to your privacy policy in any app marketplace that allows you to.

Comply with your privacy policy.

Delete all of a person's data you have received from us (including friend data) if that person asks you to, unless you are required to keep it by law, regulation, or separate agreement with us. You may keep aggregated data only if no information identifying a specific person could be inferred or created from it.

Obtain consent from people before using their data in any ad.

Obtain adequate consent from people before using any Facebook technology that allows us to collect and process data about them, including for example, our SDKs and browser pixels. When you use such technology, provide an appropriate disclosure:

a. That third parties, including Facebook, may use cookies, web beacons, and other storage technologies to collect or receive information from your websites, apps and elsewhere on the internet and use that information to provide measurement services, target ads and as described in our Data Policy; and

b. How users can opt-out of the collection and use of information for ad targeting and where a user can access a mechanism for exercising such choice.

In jurisdictions that require informed consent for the storing and accessing of cookies or other information on an end user's device (such as the European Union), ensure, in a verifiable

manner, that an end user provides the necessary consent before you use Facebook technologies that enable us to store and access cookies or other information on the end user's device. For suggestions on implementing consent mechanisms, visit Facebook's Cookie Consent Guide for Sites and Apps.

Obtain consent from people before you give us information that you independently collected from them.

If you are tracking a person's activity, provide an opt-out from that tracking.

Provide meaningful customer support for your app, and make it easy for people to contact you.

If people come to your app from the Facebook app on iOS, give them an option to go back to the Facebook app by using the Back to Facebook banner provided in our SDK.

If people come to your app from the Facebook app on Android, don't prevent them from going back to Facebook when they press the system back button.

3. Protect data

Protect the information you receive from us against unauthorized access, use, or disclosure.

Only show data obtained from a user access token on the devices associated with that token.

Only use friend data (including friends list) in the person's experience in your app.

If you cache data you receive from us, use it to improve your app's user experience and keep it up to date.

Don't proxy, request or collect Facebook usernames or passwords.

Keep private your secret key and access tokens. You can share them with an agent acting to operate your app if they sign a confidentiality agreement.

If you use any partner services, make them sign a contract to protect any information you obtained from us, limit their use of that information, and keep it confidential.

Keep Facebook user IDs within your control. Contract with any providers who help you build or run your app to ensure that they keep the user IDs secure and confidential and comply with our policies. If you need an anonymous unique identifier to share with third parties, use our mechanism.

Don't sell, license, or purchase any data obtained from us or our services.

Don't transfer any data that you receive from us (including anonymous, aggregate, or derived data) to any ad network, data broker or other advertising or monetization-related service.

Don't put Facebook data in a search engine or directory, or include web search functionality on Facebook.

If you are acquired by or merge with a third party, you can continue to use our data only within your app.

If you stop using Platform, promptly delete all user data you have received from us (absent explicit consent from people). You can keep Account Information if you have presented your privacy policy within your app.

If you use friend data from Facebook to establish social connections in your app, only do so if each person in that connection has granted you access to that information.

Don't use data obtained from Facebook to make decisions about eligibility, including whether to approve or reject an application or how much interest to charge on a loan.

4. Encourage proper use

Add something unique to the community. Don’t replicate core functionality that Facebook already provides.

Respect the way Facebook looks and functions. Don't offer experiences that change it.

If you’re building an app with a personalized or social experience, enable people to easily share on Facebook content they've created.

Respect the limits we've placed on Facebook functionality.

Only incentivize a person to log into your app, enter a promotion on your app’s Page, or check-in at a place. Don’t incentivize other actions.

Encourage people to accurately tag and share content.

If your service integrates a person’s data into a physical product, only create a physical product for that person’s personal and non-commercial use.

Don’t build an app whose primary purpose is to redirect people off of Facebook.

If you want to use our logos or brand, follow the guidelines in the Facebook Brand Resource and Permissions Center and Brand Guidelines for Facebook Developers. Ad networks and data brokers must get our written permission before using our Platform, logos, or trademarks.

Don't sell, transfer or sublicense our code, APIs, or tools to anyone.

Only use our SDKs to develop and distribute apps for use with the Facebook Platform. You may also distribute any code libraries or sample source code included in the SDKs for inclusion in such apps.

Don’t modify, translate, create derivative works of, or reverse engineer any SDK or its components.

Be honest about your relationship with Facebook when talking to the press or users. Comply with our Developer PR Guidelines and get approval from us before issuing any formal press release or blog post mentioning Facebook.

If you use the Like button on iOS or Android, don’t collect or use any information from it.

5. Follow the law

You are responsible for restricting access to your content in accordance with all applicable laws and regulations, including geo-filtering or age-gating access where required.

Don’t provide or promote content that infringes upon the rights of any third party.

Ensure that you own or secure all rights necessary to display, distribute and deliver all content in your app.

Satisfy all licensing, reporting and payout obligations to third parties in connection with your app.

If your app contains content submitted or provided by third parties:

a. In the United States, you must take all steps required to fall within the applicable safe harbors of the Digital Millennium Copyright Act including designating an agent to receive notices of claimed infringement, instituting a repeat infringer termination policy and implementing a notice and takedown process.

b. In other countries, you must comply with local copyright laws and implement an appropriate notice and takedown process for when you receive a notice of claimed infringement.

Don’t knowingly share information with us that you have collected from children under the age of 13.

Web sites or services directed to children under 13: If you use Social Plugins or our JavaScript SDK for Facebook on sites and services that are directed to children under 13, you are responsible for complying with all applicable laws. For example, if your web site or service is directed to children in the United States, or knowingly collects personal information from children in the United States, you must comply with the U.S. Children’s Online Privacy Protection Act. You must also adhere to our usage notes.

Comply with all applicable laws and regulations in the jurisdiction where your app is available. Do not expose Facebook or people who use Facebook to harm or legal liability as determined by us in our sole discretion.

If applicable, comply with the Video Privacy Protection Act (VPPA) and obtain any opt-in consent necessary to share data on Facebook.

You agree to indemnify and hold us harmless from and against all damages, losses, and expenses of any kind (including reasonable legal fees and costs) related to any claim against us related to your service, actions, content or information.

6. Things you should know

We can analyze your app, website, content, and data for any purpose, including commercial.

We can monitor or collect data related to your use of SDKs.

We will use information we receive from you or in connection with your Platform integration in accordance with our Data Policy.

You give us all rights necessary to enable your app to work with Facebook, including the right to incorporate information you provide to us into other parts of Facebook, and the right to attribute the source of information using your name or logos.

We may share your contact info with people who want to contact you.

We may use your name, logos, content, and information, including screenshots and video captures of your app, to demonstrate or feature your use of Facebook, worldwide and royalty-free.

You give us the right to link to or frame your app, and place content, including ads, around your app. If you use our social plugins, feed dialog or share button, you also give us permission to use and allow others to use such links and content on Facebook.

We can audit your app to ensure it is safe and does not violate our Terms. If requested, you must provide us with proof that your app complies with our terms.

We can create apps or products that offer features and services similar to your app.

We don’t guarantee that Platform will always be free.

If you exceed 5M MAU, 100M API calls per day, or 50M impressions per day, you may be subject to additional terms.

Facebook and its licensors reserve all right, title and interest, including all intellectual property and other proprietary rights, in and to all SDKs.

Any SDKs you receive from us are provided to you on an "as is" basis, without warranty of any kind.

We can issue a press release describing our relationship with you.

We may enforce against your app or web site if we conclude that your app violates our terms or is negatively impacting the Platform. We may or may not notify you in advance.

Enforcement is both automated and manual, and can include disabling your app, restricting you and your app’s access to platform functionality, requiring that you delete data, terminating our agreements with you or any other action that we deem appropriate.

We communicate with developers through Developer Alerts and email from the fb.com or facebookmail.com domain. Ensure that the email address associated with your Facebook account and the email address registered to the app are current and that you don’t filter out these messages.

We may change these terms at any time without prior notice. Please check them regularly. Your continued use of Platform constitutes acceptance of those changes.

Your use of Facebook technology is subject to this Platform Policy, our Statement of Rights and Responsibilities and any other terms that apply to the applicable technology.

7. Login

Verify that you have integrated Login correctly. Your app shouldn't crash or hang during the testing process.

Native iOS and Android apps that implement Facebook Login must use our official SDKs for login.

Use a clearly branded "Login with Facebook" button and follow the Facebook Brand Guidelines.

Request only the data and publishing permissions your app needs.

If a person declines a permission, you can prompt them again after they indicate an intent to grant you the permission.

Provide a "Log Out" option that functions properly and is easy to find.

8. Ads

If you have ads in your app on Facebook, comply with our Advertising Policies.

Avoid excessive ads. Don’t let ads distract from your app’s functionality.

Don’t include ads in Page Tab apps.

If you use a third party ad provider to include ads in your app on Facebook, only use a provider from this list.

Don’t include third-party ads (including for other apps) in posts, notifications, requests, invites or messages.

Don’t include or pair Platform Integrations with non-Facebook ads.

If you run a promotion, contest, competition, or sweepstake on Facebook, comply with our Promotions Policies.

9. Games

Games on Facebook.com:

a. Don't share the same app ID with a desktop web game off of Facebook.com.

b. Don't use your Facebook.com game or email addresses you've obtained from us to promote or link to a desktop web game off of Facebook.

c. Use Facebook Payments as your only payment method for all in-game purchases.

d. Use Facebook Payments offers if you reward people for actions involving third parties.

Desktop web games off Facebook.com:

a. Only use Facebook Login, social plugins, and publishing channels. Don't use connections such as friends lists.

b. During authentication, only request age, email, and publishing permissions.

Games on mobile:

a. Don't share the same app ID with a desktop web game off of Facebook.com.

b. Don't use your mobile game or email addresses you've obtained from us to promote or link to a web game off of Facebook.

If you want to facilitate or promote online gambling, online real money games of skill, or online lotteries, get our written permission before using any of our products.

If your game includes mandatory or optional in-app charges, explain this in your app's description.

10. Payments

If you use Facebook Payments, comply with the Facebook Developer Payments Terms.

Don't use Facebook Payments to solicit, collect or transfer funds for charitable causes without our prior permission.

If you're using iOS to run your app, use an iOS approved payment method.

If you accept payments on Facebook, only do so in your app.

11. App Center

Apps eligible for the Facebook App Center must use Facebook Login or have a Facebook Canvas or Page Tab app.

App Detail and Description:

a. Ensure the app's name and information are grammatically correct.

b. Ensure the app's language matches the App Center locale.

c. Don't include URLs or use the Facebook brand.

d. Don't include keyword lists, excessive punctuation, or non-standard symbols.

All Images:

a. Use high quality, relevant images that reflect the app experience.

b. Keep any image text concise. Don't obstruct images with text.

c. Don't include ads, URLs or gimmicks such as Play buttons.

Icons:

a. Use a transparent or colored background. If your icon requires a white background, use a colored border.

b. If your logo has a drop shadow, use a colored background.

Banners:

a. Don't include rounded edges or borders.

b. Don't include third party logos.

Videos:

a. Display the app's name.

b. Clearly represent the purpose of the app and show accurate, relevant in-app experiences.

c. Keep your video high-quality and high-resolution.

d. Your video and its video cover image should be clear and recognizable. Don't include ads.

12. Open Graph

Open Graph Custom Actions:

a. Don’t recreate actions that are already supported.

b. Write the action and object in a clear and simple way.

c. Make sure the story is grammatically correct.

d. Use English for your submission.

e. Don’t indicate a person’s consumption, browsing, discovering, or viewing of content.

f. Don’t indicate a person has installed, visited, or connected to your app.

Read and Watch Actions:

a. Publish actions only after a person has been on a page for more than 10 seconds.

b. Allow people to remove stories published to Facebook on the same page where the content is hosted.

13. Social Plugins

Don’t include or pair Platform Integrations with non-Facebook advertisements.

Don’t sell or purchase placement of social plugins or sharer.php.

Don’t participate in any “like” or “share” exchange programs.

Don’t obscure or cover elements of social plugins.

Additional policies for the Quotes Plugin:

a. Don't prefill quotes with content a person didn’t select, even if the person can edit or remove the content before sharing.

b. The quotes plugin is intended to help people select their own quote to share. Use the app-defined quotes parameter if you want to suggest quotes for people to share.

c. If you use the app-defined quotes parameter, the suggested quote must not contain URLs, ads, third party branded content or any other promotional content of any kind.

d. Game apps must not use the quotes plugin.

14. Ads API

Basic and Standard Ads API access may be downgraded to Development access after 30 days of non-use.

Don't use the Ads API if you're an ad network or data broker.

Don't promote content, services, or activities contrary to our competitive position, interests, or advertising philosophy.

Don't provide Partner Category targeting options that differ from those offered by Facebook.

Don’t combine multiple end-advertisers or their Facebook connections (i.e. Pages) in the same ad account.

Free or trial versions of an ads API app:

a. Don’t allow more than 50 ad creations a day per customer.

b. Require phone or email verification on new accounts.

c. Don’t allow affiliate networks to use your technology.

Pricing transparency:

a. Only charge fees for the use of your tools and managed services with a fixed fee or variable percentage of ad spend.

b. Proactively disclose to end advertisers the amount that you spent on Facebook advertising, using Facebook metrics (e.g., CPC, CPM rate), separate from your fees.

c. Disclose the amount you charged as fees on Facebook advertising.

d. We may disclose fees or the amount you spent on Facebook advertising to your clients if they request it.

e. We may require documentation from you to ensure your compliance with these terms.

f. Don’t sell ads on a fixed CPM or CPC basis when using the Facebook advertising auction.

Data Collection and Use:

a. If you have Standard Ads API access and our prior written permission, you can place 1x1 pixel view tags on advertisements.

b. Ensure that any data that is collected is anonymous.

c. Only use data from an end-advertiser’s campaign to optimize or measure the performance of that end-advertiser’s Facebook campaign.

d. Don’t use data to retarget on or off of Facebook.

e. Don’t mix data obtained from us with advertising campaigns on different platforms.

f. Don’t use data to build or augment any user profiles.

g. Don’t use piggybacking or redirects.

h. Don’t let people other than those acting on an end-advertiser’s behalf access Facebook ad statistics.

Implement all bidding types including Optimized CPM.

Custom Audiences:

a. If you use custom audiences, comply with the Custom Audience Terms.

b. Only use a client’s data when creating custom audiences on their behalf.

c. Only use a Facebook User ID to create custom audiences when the person whose User ID is being used has logged into the client’s app and has given the necessary consent.

d. Don’t sell or transfer custom audiences.

Revoke an end-advertiser’s access to your app if we request it.

Lead Ads:

a. Only use a client's Lead Ads Data on behalf of that client.

b. Don't combine Lead Ads Data from one client with Lead Ads Data from another client.

Ensure that people agree to Facebook’s Statement of Rights and Responsibilities, including the Advertising Policies.

15. Page API

Don't charge a fee for creating, claiming, or managing a Page.

Before enabling people to create a Page, first provide a means for them to claim an existing Place to prevent Page duplication.

Ensure that people agree to Facebook’s Statement of Rights and Responsibilities, including the Advertising Policies.

Don't create or claim a Page on behalf of people without their consent.

Don't prevent people from gaining access to any Page you create or manage on their behalf.

Don't disclose administrators of a Page to third parties without the administrator's consent.

16. Messenger Platform

Follow any instructions we include in our technical documentation.

Ensure your bot is stable and functions properly.

User authentication and opt-out:

a. Place any user authentication method in a clear and conspicuous location to ensure people consent to initiating message threads.

b. Don’t contact people in Messenger unless you, or the party to whom you are operating as a service provider, have the necessary consent to do so.

c. Messenger Opt-out: respect all requests (either on Messenger or off) by people to block, discontinue, or otherwise opt-out of your using Messenger to communicate with them.

Service Providers:

a. Ensure your agreements with businesses do not conflict with, and that businesses agree to, Facebook’s Statement of Rights and Responsibilities, including these Platform Policies.

b. Ensure you have the authority to act as agent for the business to which you're providing a service, and that your use of our Platform is strictly for the benefit of that business.

c. Don't facilitate or encourage any violations of our policies. For example, if you have permission to support businesses that are eligible for Subscriptions, ensure you don't provide Subscriptions to ineligible services (see details below).

d. Your app should not receive excessive negative feedback. Be sure your app insights reflect a positive experience.

Maintain a Facebook Page that provides customer support contact information, including your mailing address and one or more of the following: email address, web address, or telephone number.

Messages and Data:

Acceptable message types:

a. After people interact with your business or Bot: You may message people within 24 hours of a person's interaction with your business or Bot (ex: messaging your Bot or interacting

with a Messenger plugin on your website). Except as permitted below, and until the next interaction, you may send one additional message after this 24 hour period in order to follow up on your conversation.

b. Message Templates: Only receipt and airline templates may be sent outside of the 24 hour period. Don’t use a message template for a purpose other than its intended purpose.

c. Subscription-based messaging:

i. Bots that primarily support the following use cases are eligible for subscription-based messaging, and these messages may be sent at any time provided people opt-in to receiving this content:

News: Bots that inform people about recent or important events or information in categories such as sports, finance, business, real estate, weather, traffic, politics, and entertainment.

Personal trackers: Bots that enable people to receive and monitor information about themselves in categories such as fitness, health, wellness, and finance.

Productivity: Bots that enable people to manage their personal productivity with tasks such as managing calendar events, receiving reminders, and paying bills.

ii. Subscriptions messages may not be used for sending advertising, marketing, solicitations, or promotional content, even if a person opts-in to receiving this content (ex: daily deals, coupons and discount or sale announcements are not permitted).

Data: Don't use any data obtained from us about the people you reach in Messenger, other than the content of message threads, for any purpose other than as reasonably necessary to support the message types you elect to use.

Healthcare: Don't use Messenger to facilitate direct conversations between people and healthcare providers or to send or collect any patient data obtained from healthcare providers.

Disclosures: Ensure that you provide all necessary disclosures to people using Messenger, such as any disclosures needed to indicate the sponsored or advertising nature of content you send.

Offers and Payments:

a. Don't share or ask people to share individual payment card, financial account numbers or other cardholder data within messages.

b. Don't include links to sites off Messenger where payment information is collected, without our prior permission.

c. If you have permission to offer or complete sales of goods or services within Messenger, adhere to the Facebook Commerce Product Merchant Agreement.

d. Don't use Messenger Platform to sell digital goods.

Things You Should Know:

a. We may limit or remove your access to Messenger if you receive large amounts of negative feedback or violate our policies, as determined by us in our sole discretion.

17. Messenger Expression

General Policies

Ensure you comply with all applicable Platform Policies.

Follow our technical documentation.

Follow our Brand Guidelines if you want to use our logos or brand.

Don't obscure or cover selected content in the share sheet.

Allow people to immediately select or create content without interruption. Don't disrupt them with other information before they share.

Notify people up front before allowing them to engage with paid content.

Don't include ads in content you send to Messenger.

Your logo and app name may only appear in the space we provide.

Don't use Messenger as an app invite channel. Facilitate real time conversations that inspire people to respond with content from your app.

Don't charge for most of the content in your app. Ensure your app contains free shareable content.

If you exceed 400K impressions per day, you may be subject to additional terms.

Additional Policies for Optimized and Featured Apps

Your app must not replicate core Facebook features or functionality, and must not promote your other apps that do so.

Your app must be free to install.

If your paid content is available in multiple apps, ensure it is offered for Messenger at the lowest price available.

If people come to your app from Messenger, ensure your app's primary share experience is to Messenger.

Don't send unengaging or long form content. Ensure your app only sends unique user generated content or engaging aggregated content to Messenger. Facilitate real time conversations that inspire people to respond to Messenger with content from your app.

Ensure your call-to-action links to the same app that generated the content.

When linking to your app from Messenger, you can present people with paid content so long as free shareable content is clearly available on the landing page.

Implement App Events in your app, including activateApp and purchase events if your app offers in-app purchases.

Optimized and featured functionality, including the availability of calls-to-action on content and in-Messenger discovery, is made available within our sole discretion and can be removed at any time.

18. Account Kit

Don't obscure any elements of the Account Kit user interface, and don't modify any element except where expressly permitted by our technical documentation.

If people log in with email addresses or phone numbers, your use of that data is subject to your privacy policy and any applicable law or regulation.

If you exceed 100K SMSs per month, you may be subject to additional terms.

If a person that logged in with an email address or phone number deletes their account or requests that such account be deleted, ensure that you notify us via the delete API.

If we remove your access to the Account Kit service, you have 30 days to request any account data that people provided through the Account Kit service as well as any data you've stored with us through the Preferences API. We will provide you with this information unless otherwise prohibited by law.

19. Live API

Don’t use the API to simultaneously stream to Facebook and other online services.

Don’t use the API to stream directly from a mobile phone or tablet camera to Facebook.

20. Profile Expression Kit

Don’t include ads or commercial content, such as logos and watermarks, in profile photos or videos.

Don’t include slideshows in profile photos or videos.

Don’t encourage people to upload profile photos or videos that they aren’t depicted in.

Only apps that have a primary purpose of creating and editing photos or videos may use the Profile Expression Kit.

21. Definitions

“App” means any technical integration we have assigned an app identification number.

"Account Information" consists of: name, email, gender, birthday, current city and profile picture URL.

"Ads API" includes all Graph APIs related to advertising, and all Real Time APIs related to advertising, including but not limited to: all Lead Ads Data coming through the Graph API or Real Time Updates.

“User data” means any data, including a person's content or information that you or third parties obtain from or through Facebook.

"SDK" means any object code library, sample source code, or documentation you receive from us that helps you create apps for use with the Facebook Platform.

By "Facebook" or "Facebook Services" we mean the features and services we make available, including through (a) our website at www.facebook.com and any other Facebook branded or co-branded websites (including sub-domains, international versions, widgets, and mobile versions); (b) our Platform; (c) social plugins such as the Like button, the Share button and other similar offerings; and (d) other media, brands, products, services, software (such as a toolbar), devices, or networks now existing or later developed. Facebook reserves the right to designate, in its sole discretion, that certain of our brands, products, or services are governed by separate terms and not our SRR.

7.7 Statistics and validation for survey questions

Description of data and processes

This document contains the initial analysis on the survey data for completeness and sense. There were 24 responses to the survey. Of these responses, one supplied an incorrect quiz code and could not be identified; the other came from a participant who did not friend Ashley. These two responses were not used in the final analysis.

All non-numerical responses were coded according to the scheme presented in chapter three, methodology. Data were copied into SPSS 20 and statistics for responses were checked for missing data

Statistics for questions 2, 3 and 4

		Variables		
		Participant gender	Where student lives term time	Age range of participant
N	Valid	22	22	22
	Missing	0	0	0
Mean		1.5909	1.4545	25.2955
Median		2.0000	1.5000	20.5000
Mode		2.00	2.00	20.50
Skewness		-.397	-.553	2.464
Std. Error of Skewness		.491	.491	.491
Range		1.00	2.00	32.00
Minimum		1.00	.00	20.50
Maximum		2.00	2.00	52.50

Table 7.3: Statistics for questions 2, 3 and 4

Question 2: participant gender

59.1% of the respondents are female and 40.9% of respondents are male, N=22.

Participant gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	9	40.9	40.9	40.9
	Female	13	59.1	59.1	100.0
	Total	22	100.0	100.0	

Table 7.4: Frequency data for question 2

Question 3: Living status of participant

While you are studying at university this term, are you living away from home?

22 responses were received with one blank response. This was coded to appear in the statistics as No response. 50% of respondents are living away from home, 45.5% are living at home and 4.5% did not respond, N = 22.

Statistics for question 3

HomeAway

N	Valid	22
	Missing	0

Table 7.5: Statistics for question 3

Where student lives term time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response	1	4.5	4.5	4.5
	Living at home	10	45.5	45.5	50.0
	Living away from home	11	50.0	50.0	100.0
	Total	22	100.0	100.0	

Table 7.6: Frequency data for question 3

Question 4: age group of participants

22 responses were received.

Statistics for question 4

AgeGroup

N	Valid	22
	Missing	0

Table 7.7: Statistics for question 4

Age range of participant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20.50	14	63.6	63.6	63.6
	26.50	5	22.7	22.7	86.4
	32.00	1	4.5	4.5	90.9
	52.50	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.8: Frequency data for question 4

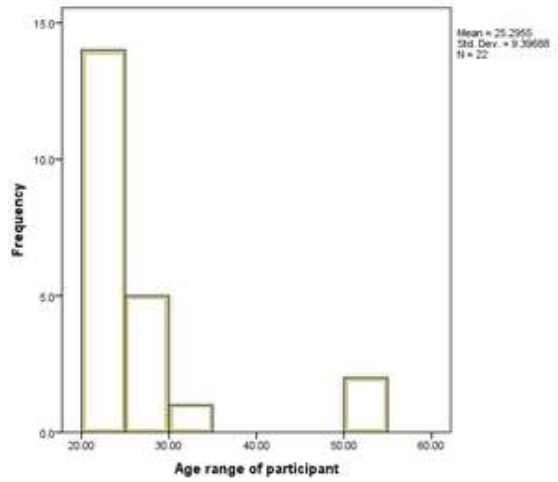


Figure 7.2: Frequency distribution of participant ages

The data shows a larger number of younger participants which is not unexpected for a university. The demographics for the entire University should be obtained for comparison.

Question 5: access to technologies

This question requests how long, in groups of years, participants have had access to a range of technologies; PC or laptop, Internet, games consoles, mobile phone, Facebook.

Statistics for question 5

		Years of access to PC or laptop	Years of access to Internet	Years of access to games consoles	Years of access to mobile phone	Years of access to Facebook
N	Valid	22	22	22	22	22
	Missing	0	0	0	0	0
Mean		11.6591	11.5000	12.1364	10.3182	6.8636
Median		14.5000	11.0000	14.5000	7.5000	7.5000
Mode		14.50	7.50	14.50	7.50[a]	7.50
Skewness		.163	.481	-.518	.024	1.284
Std. Error of Skewness		.491	.491	.491	.491	.491
Kurtosis		-1.039	-1.056	-.852	-.814	4.768
Std. Error of Kurtosis		.953	.953	.953	.953	.953
Range		16.00	12.50	20.00	19.00	10.50
Minimum		4.00	7.50	.00	1.00	4.00
Maximum		20.00	20.00	20.00	20.00	14.50

a. Multiple modes exist. The smallest value is shown

Table 7.9: Statistics for question 5

Below are the frequencies of responses to individual sub questions.

Years of access to PC or laptop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	1	4.5	4.5	4.5
	7.50	9	40.9	40.9	45.5
	14.50	10	45.5	45.5	90.9
	20.00	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.10: Frequency data for question 5a

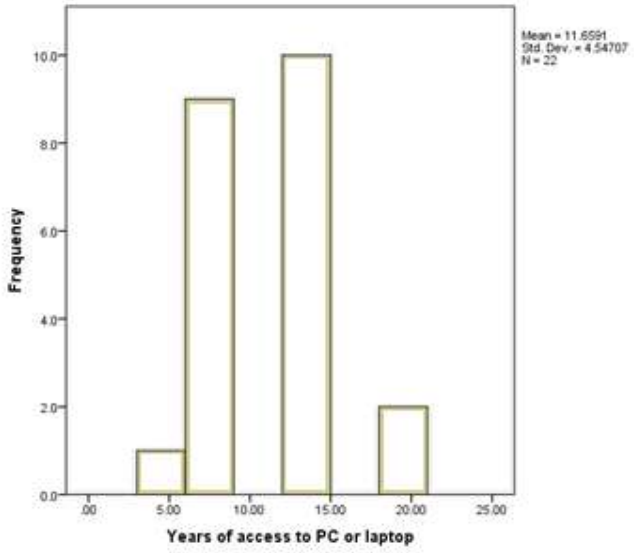


Figure 7.3: Frequency distribution of access time of participants to PC or laptop

Years of access to Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7.50	11	50.0	50.0	50.0
	14.50	9	40.9	40.9	90.9
	20.00	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.11: Frequency data for question 5b

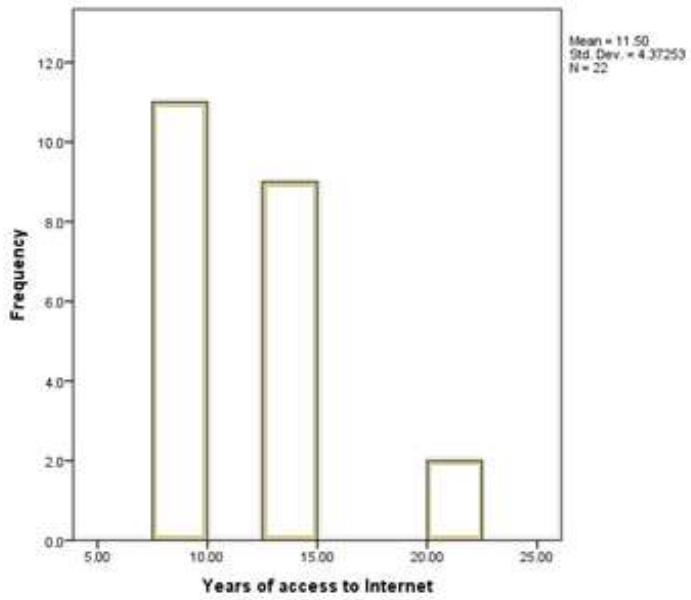


Figure 7.4: Frequency distribution of access time of participants to Internet

Years of access to games consoles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	4.5	4.5	4.5
	1.00	1	4.5	4.5	9.1
	1.50	1	4.5	4.5	13.6
	4.00	1	4.5	4.5	18.2
	7.50	4	18.2	18.2	36.4
	14.50	9	40.9	40.9	77.3
	20.00	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.12: Frequency data for question 5c

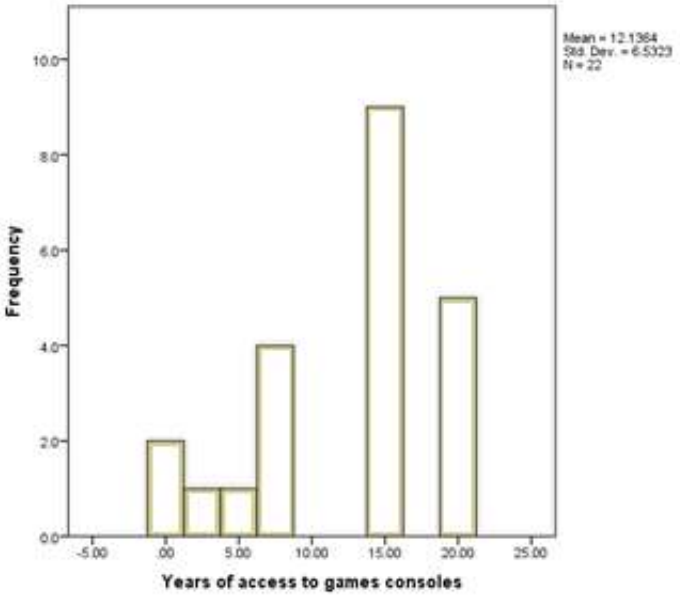


Figure 7.5: Frequency distribution of access time of participants to games consoles

Years of access to mobile phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	4.5	4.5	4.5
	4.00	2	9.1	9.1	13.6
	7.50	9	40.9	40.9	54.5
	14.50	9	40.9	40.9	95.5
	20.00	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.13: Frequency data for question 5d

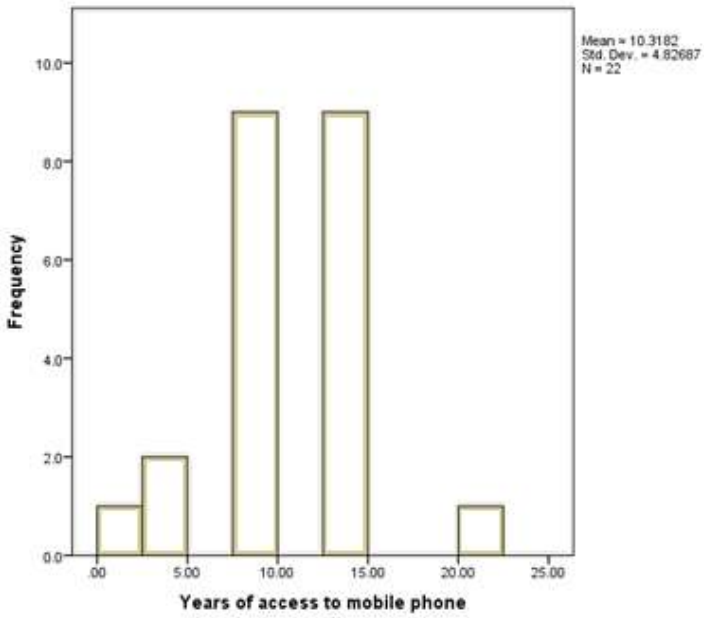


Figure 7.6: Frequency distribution of access time of participants to mobile phone

Years of access to Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	6	27.3	27.3	27.3
	7.50	15	68.2	68.2	95.5
	14.50	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.14: Frequency data for question 5e

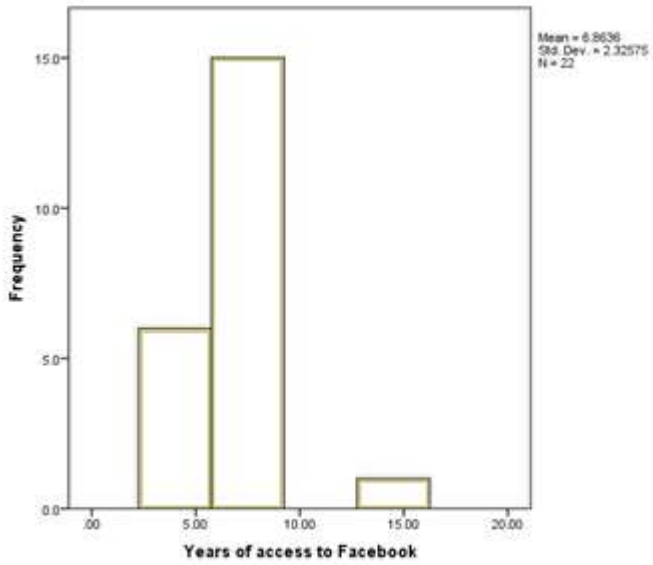


Figure 7.7: Frequency distribution of access time of participants to Facebook

Question 6: frequency of communication with others

This question requests the frequency of communication with 6 common social groups, university staff and lecturers, fellow students, friends outside of university, management at work, family or significant carers and an intimate friend or partner. The options are never, rarely, once or twice a month, about once per week, 3 or 4 times per week and every day.

Statistics

		Frequency of communication with university staff	Frequency of communication with fellow students	Frequency of communication with friends	Frequency of communication with work	Frequency of communication with family	Frequency of communication with partner
N	Valid	22	22	22	22	22	22
	Missing	0	0	0	0	0	0
Mean		3.0455	4.1818	4.0455	2.0909	4.0909	3.5909
Median		3.0000	5.0000	4.0000	2.5000	4.0000	5.0000
Mode		3.00	5.00	5.00	.00	5.00	5.00
Skewness		-.961	-1.764	-1.310	.086	-1.383	-1.069
Std. Error of Skewness		.491	.491	.491	.491	.491	.491
Kurtosis		1.426	2.645	1.664	-1.691	2.574	-.916
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953
Range		5.00	4.00	4.00	5.00	4.00	5.00
Minimum		.00	1.00	1.00	.00	1.00	.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00

Table 7.15: Statistics for question 6

Frequency of communication with university staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never/ not applicable.	1	4.5	4.5	4.5
	Rarely.	1	4.5	4.5	9.1
	Once or twice per month.	3	13.6	13.6	22.7
	About once per week.	9	40.9	40.9	63.6
	3 or 4 times per week.	7	31.8	31.8	95.5
	Every day.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.16: Frequency data for question 6a

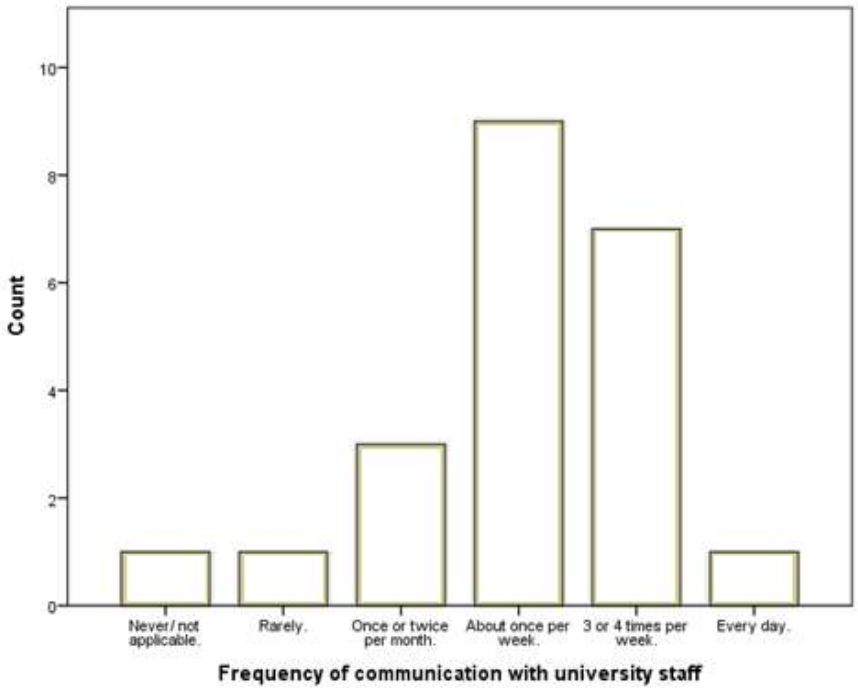


Figure 7.8: Frequency distribution of communication with university staff

Frequency of communication with fellow students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	2	9.1	9.1	9.1
	About once per week.	2	9.1	9.1	18.2
	3 or 4 times per week.	6	27.3	27.3	45.5
	Every day.	12	54.5	54.5	100.0
	Total	22	100.0	100.0	

Table 7.17: Frequency data for question 6b

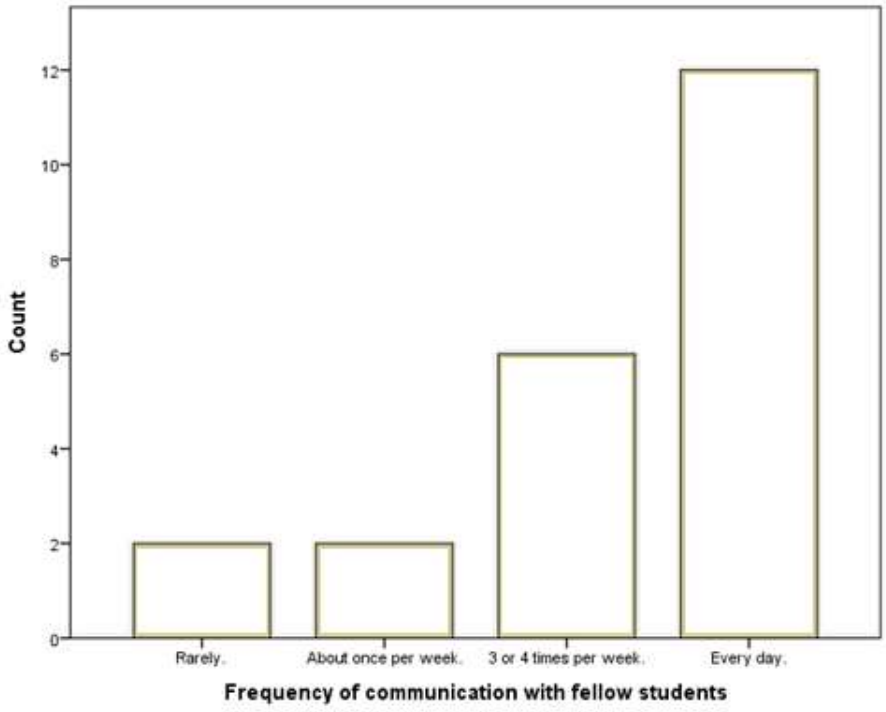


Figure 7.9: Frequency distribution of communication with fellow students

Frequency of communication with friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	1	4.5	4.5	4.5
	Once or twice per month.	1	4.5	4.5	9.1
	About once per week.	3	13.6	13.6	22.7
	3 or 4 times per week.	8	36.4	36.4	59.1
	Every day.	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

Table 7.18: Frequency data for question 6c

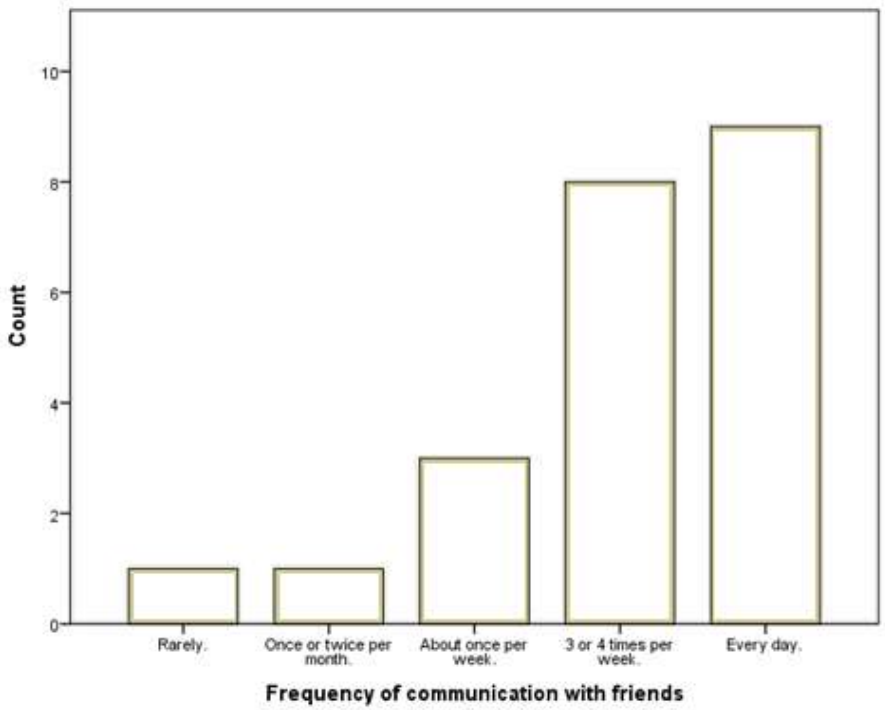


Figure 7.10: Frequency distribution of communication with friends

Frequency of communication with work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never/ not applicable.	8	36.4	36.4	36.4
	Rarely.	2	9.1	9.1	45.5
	Once or twice per month.	1	4.5	4.5	50.0
	About once per week.	4	18.2	18.2	68.2
	3 or 4 times per week.	5	22.7	22.7	90.9
	Every day.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.19: Frequency data for question 6d

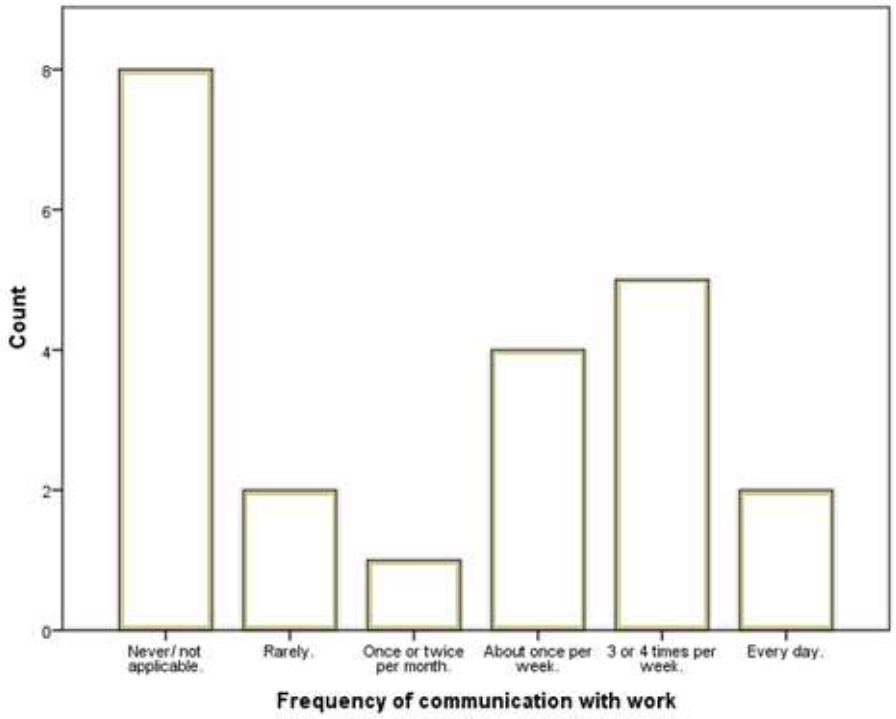


Figure 7.11: Frequency distribution of communication with work

Frequency of communication with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	1	4.5	4.5	4.5
	About once per week.	4	18.2	18.2	22.7
	3 or 4 times per week.	8	36.4	36.4	59.1
	Every day.	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

Table 7.20: Frequency data for question 6e

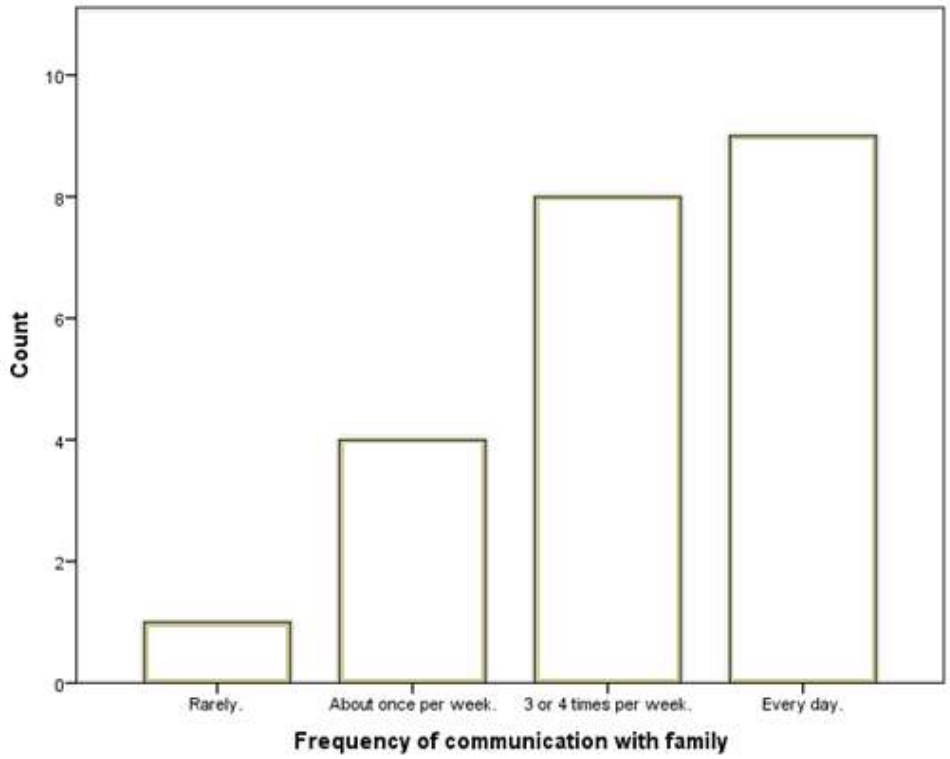


Figure 7.12: Frequency distribution of communication with family

Frequency of communication with partner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never/ not applicable.	6	27.3	27.3	27.3
	3 or 4 times per week.	1	4.5	4.5	31.8
	Every day.	15	68.2	68.2	100.0
	Total	22	100.0	100.0	

Table 7.21: Frequency data for question 6f

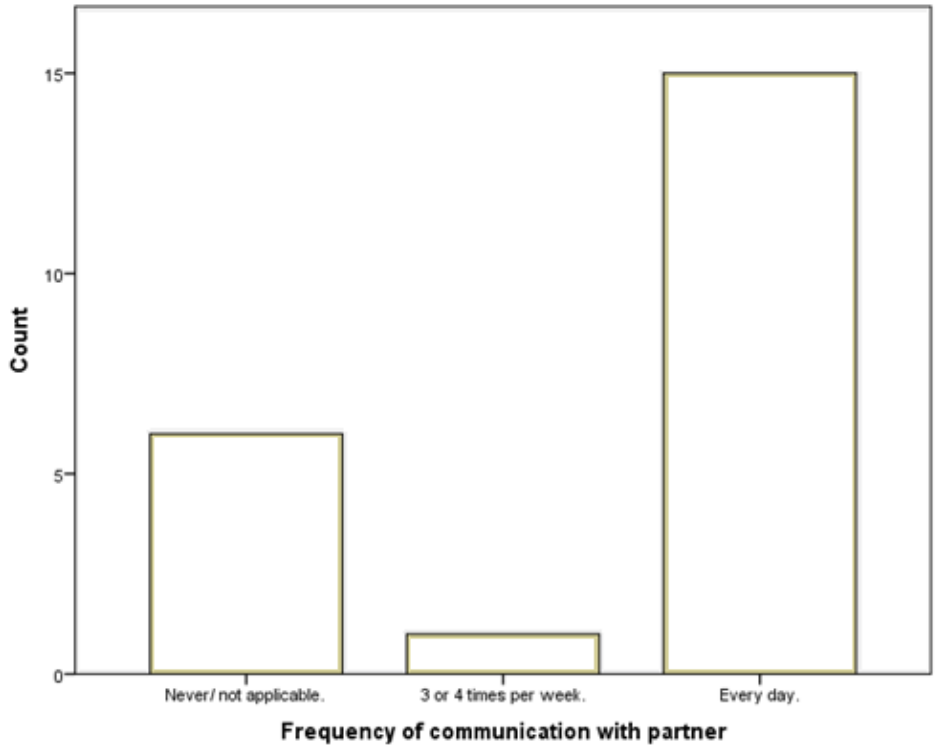


Figure 7.13: Frequency distribution of communication with partner

Question 7: How long participants spend online per week

This question asks participants to select from a range of groups, how long they think they spend online, using any technology, per week.

Statistics for question 7

Hours spent online per week		
N	Valid	22
	Missing	0
Mean		51.5455
Median		49.5000
Mode		49.50
Skewness		.217
Std. Error of Skewness		.491
Kurtosis		-.776
Std. Error of Kurtosis		.953
Range		77.50
Minimum		12.00
Maximum		89.50

Table 7.22: Statistics for question 7

Hours spent online per week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12.00	2	9.1	9.1	9.1
	29.50	5	22.7	22.7	31.8
	49.50	8	36.4	36.4	68.2
	69.50	3	13.6	13.6	81.8
	89.50	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.23: Frequency data for question 7

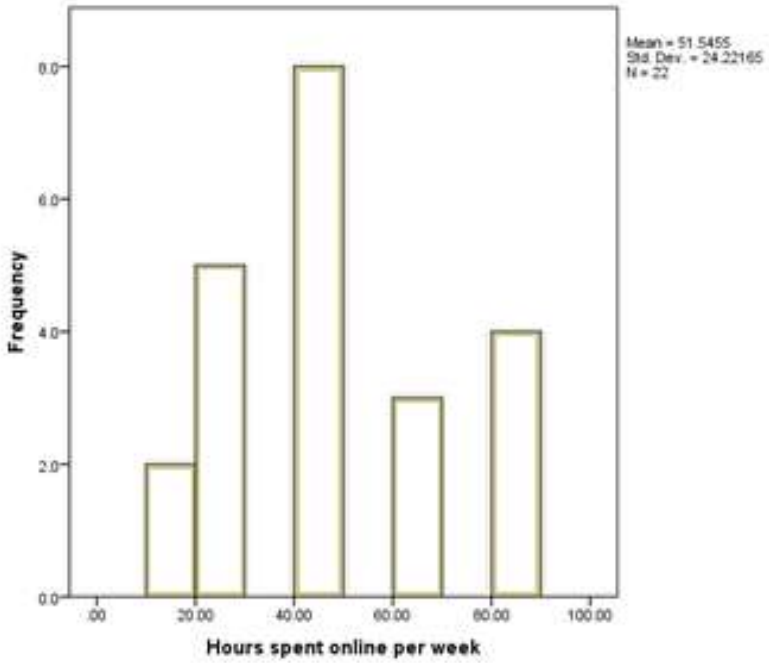


Figure 7.14: Frequency distribution of hours online per week

The graph above shows the distribution of time spent online over an average week at university by participants.

Question 8: would participants spend more time online given certain conditions

This question asks if participants would spend more time online given the following three conditions, longer battery life in mobile devices, wireless connections everywhere and cheaper Internet connection rates.

Statistics for question 8

		Participant time online with more battery life in mobile devices	Participant time online with ubiquitous wireless connections	Participant time online with cheaper Internet usage rates
N	Valid	22	22	22
	Missing	0	0	0
Mean		.4545	.7727	.4091
Median		.0000	1.0000	.0000
Mode		.00	1.00	.00
Skewness		.196	-1.399	.397
Std. Error of Skewness		.491	.491	.491
Kurtosis		-2.168	-.057	-2.037
Std. Error of Kurtosis		.953	.953	.953
Range		1.00	1.00	1.00
Minimum		.00	.00	.00
Maximum		1.00	1.00	1.00

Table 7.24: Statistics for question 8

Participant time online with more battery life in mobile devices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, participant would not spend more time online.	12	54.5	54.5	54.5
	Yes, participant would spend more time online.	10	45.5	45.5	100.0
	Total	22	100.0	100.0	

Table 7.25: Frequency data for question 8a

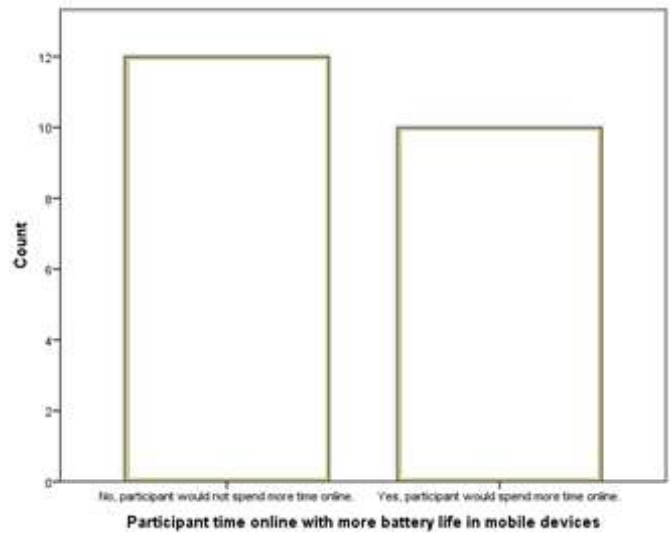


Figure 7.15: Distribution of responses

Participant time online with ubiquitous wireless connections

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, participant would not spend more time online.	5	22.7	22.7	22.7
	Yes, participant would spend more time online.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.26: Frequency data for question 8b

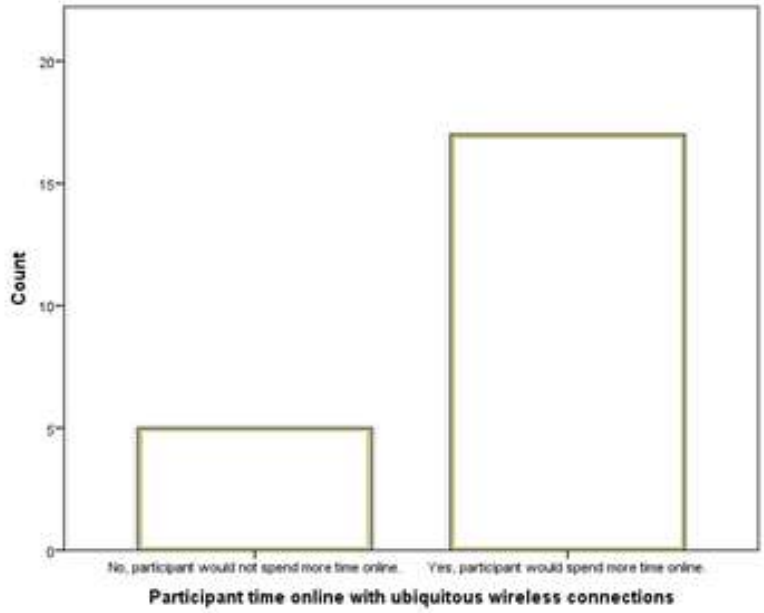


Figure 7.16: Distribution of responses

Participant time online with cheaper Internet usage rates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, participant would not spend more time online.	13	59.1	59.1	59.1
	Yes, participant would spend more time online.	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

Table 7.27: Frequency data for question 8c

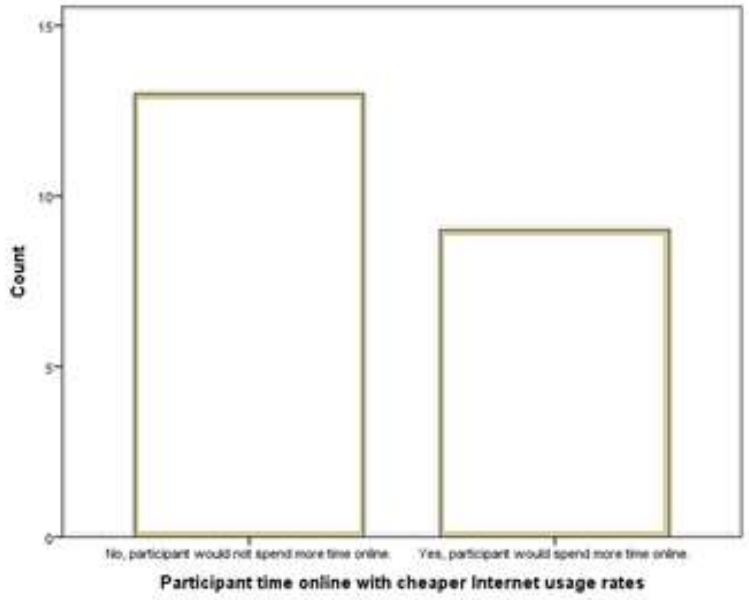


Figure 7.17: Distribution of responses

Question 9: does participant use Facebook security settings to restrict who has access to their **account**

This question seeks whether participants make use of the inbuilt security settings on Facebook to restrict who has access to account information and data.

Statistics for question 9

Does participant use Facebook privacy settings to filter access to others

N	Valid	22
	Missing	0
Mean		1.0000
Median		1.0000
Mode		1.00
Std. Error of Skewness		.491
Std. Error of Kurtosis		.953
Range		.00
Minimum		1.00
Maximum		1.00

Table 7.28: Statistics for question 9

Does participant use Facebook privacy settings to filter access to others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes.	22	100.0	100.0	100.0

Table 7.29: Frequency data for question 9

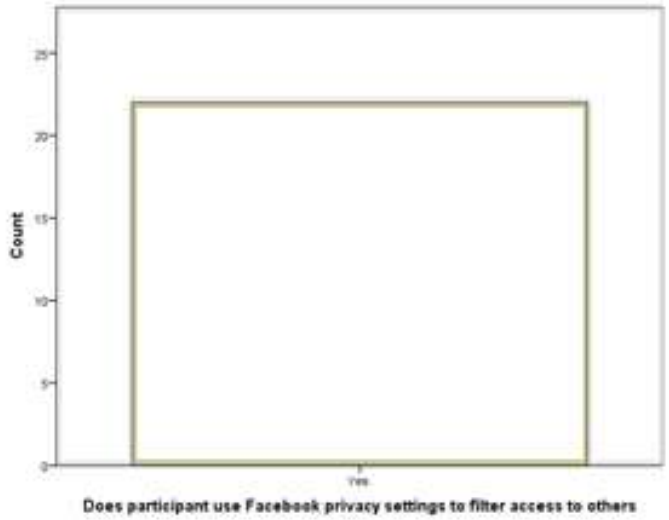


Figure 7.18: Distribution of responses

All participants make use of the security settings to filter the access to their Facebook account.

Question 10: which groups participants block from their Facebook account

This question asks which groups participants use Facebook security settings to restrict full access to their data and communications.

Statistics for question 10

		Participant excludes friends from full Facebook account access	Participant excludes family from full Facebook account access	Participant excludes university staff from full Facebook account access	Participant excludes work from full Facebook account access	Participant excludes fellow students from full Facebook account access	Participant excludes partners from full Facebook account access
N	Valid	22	22	22	22	22	22
	Missing	0	0	0	0	0	0
Mean		.3636	.2727	.4545	.5000	.0455	.0000
Median		.0000	.0000	.0000	.5000	.0000	.0000
Mode		.00	.00	.00	.00[a]	.00	.00
Skewness		.609	1.097	.196	.000	4.690	
Std. Error of Skewness		.491	.491	.491	.491	.491	.491
Kurtosis		-1.802	-.887	-2.168	-2.211	22.000	
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953
Range		1.00	1.00	1.00	1.00	1.00	.00
Minimum		.00	.00	.00	.00	.00	.00
Maximum		1.00	1.00	1.00	1.00	1.00	.00

a. Multiple modes exist. The smallest value is shown

Table 7.30: Statistics for question 10

Participant excludes friends from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	14	63.6	63.6	63.6
	Restricted access to this group.	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 7.31: Frequency data for question 10a

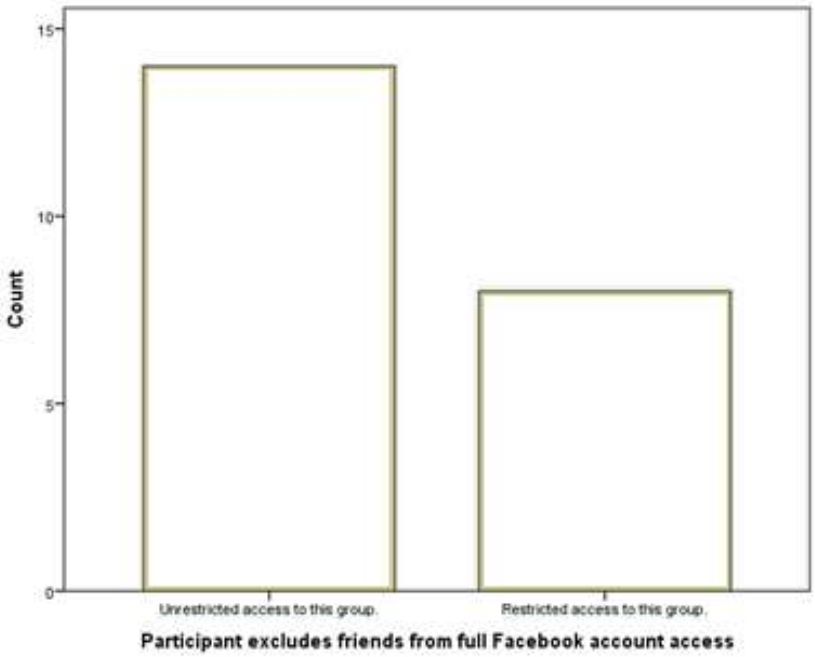


Figure 7.19: Distribution of responses

Participant excludes family from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	16	72.7	72.7	72.7
	Restricted access to this group.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.32: Frequency data for question 10b

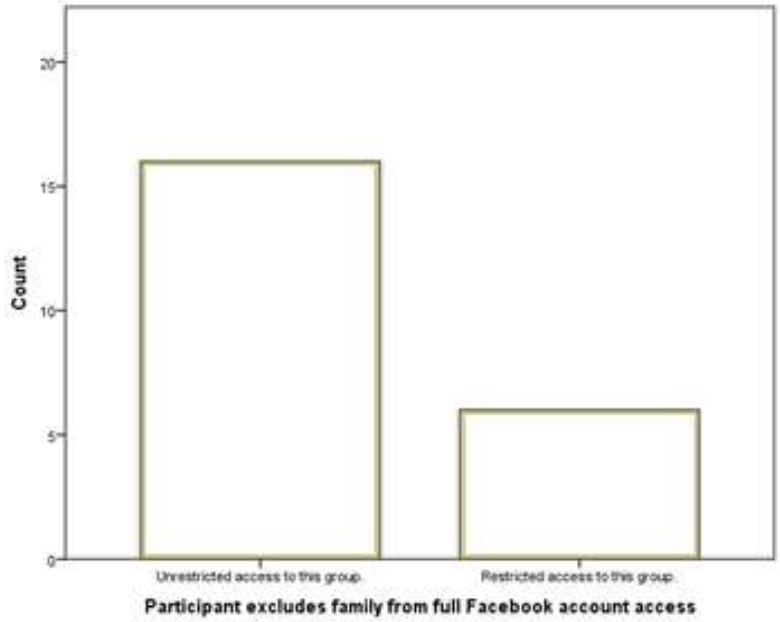


Figure 7.20: Distribution of responses

Participant excludes university staff from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	12	54.5	54.5	54.5
	Restricted access to this group.	10	45.5	45.5	100.0
	Total	22	100.0	100.0	

Table 7.33: Frequency data for question 10c

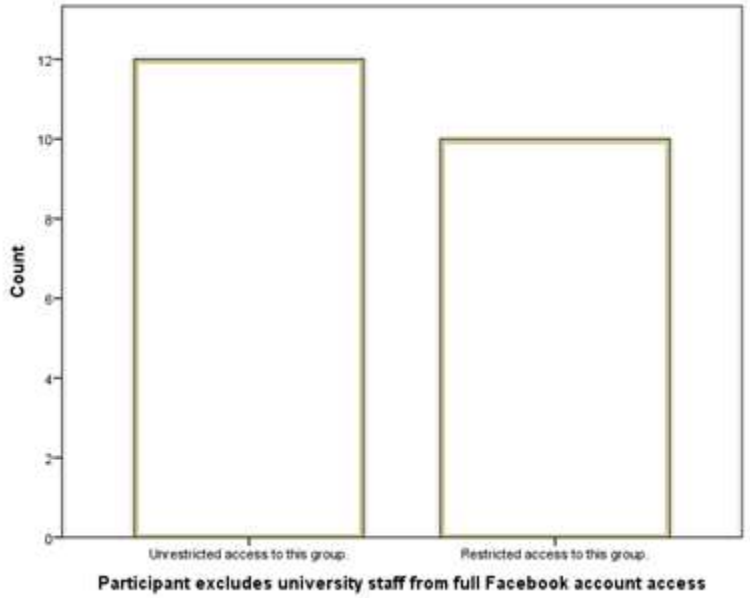


Figure 7.21: Distribution of responses

Participant excludes work from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	11	50.0	50.0	50.0
	Restricted access to this group.	11	50.0	50.0	100.0
	Total	22	100.0	100.0	

Table 7.34: Frequency data for question 10d

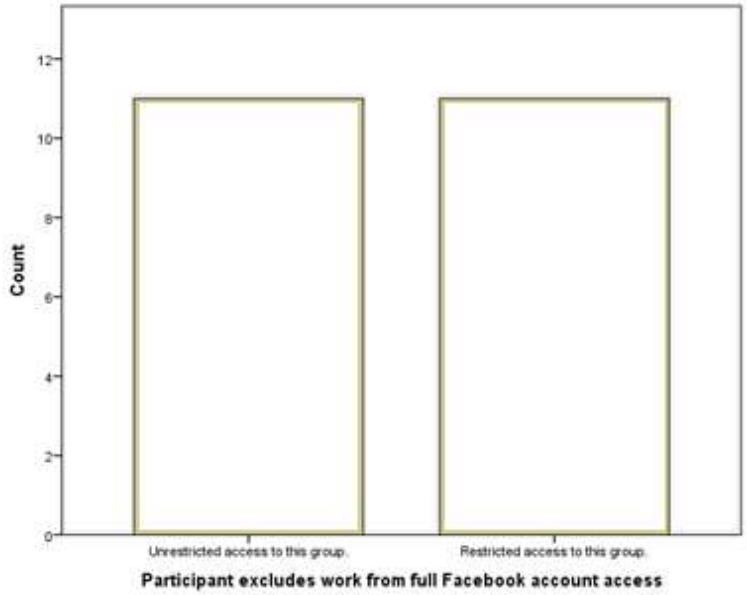


Figure 7.22: Distribution of responses

Participant excludes fellow students from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	21	95.5	95.5	95.5
	Restricted access to this group.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.35: Frequency data for question 10e

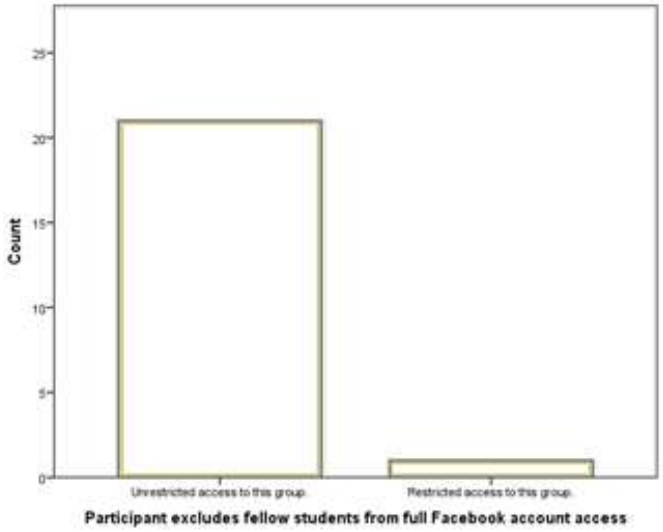


Figure 7.23: Distribution of responses

Participant excludes partners from full Facebook account access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unrestricted access to this group.	22	100.0	100.0	100.0

Table 7.36: Frequency data for question 10f

Figure 7.24: Distribution of responses

None of the participants excludes their partner or intimate friends from their Facebook account.

Question 11: frequency participant uses social networking applications

This question gathers data from participants to quantify their frequency of usage of various popular social networking applications. The frequency categories have been renamed in the results shown as follows.

Never = Never.
Rarely = Rarely.
Once or twice a month = Occasionally.
Once or twice a week = Frequently.
Every day = Daily.

Statistics for question 11

		Participant frequency of using Twitter	Participant frequency of using Instagram	Participant frequency of using Facebook	Participant frequency of using SnapChat	Participant frequency of using LinkedIn	Participant frequency of using other SNS
N	Valid	22	22	22	22	22	22
	Missing	0	0	0	0	0	0
Mean		1.8636	1.4545	3.9545	2.0909	.7273	1.9091
Median		2.0000	1.0000	4.0000	3.0000	.0000	2.0000
Mode		.00	.00	4.00	.00	.00	.00
Skewness		.034	.712	-4.690	-.271	.938	.044
Std. Error of Skewness		.491	.491	.491	.491	.491	.491
Kurtosis		-1.770	-1.380	22.000	-1.842	-.551	-1.988
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953
Range		4.00	4.00	1.00	4.00	3.00	4.00
Minimum		.00	.00	3.00	.00	.00	.00
Maximum		4.00	4.00	4.00	4.00	3.00	4.00

Table 7.37: Statistics for question 11

Participant frequency of using Twitter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	8	36.4	36.4	36.4
	Rarely.	2	9.1	9.1	45.5
	Occasionally.	2	9.1	9.1	54.5
	Frequently.	5	22.7	22.7	77.3
	Daily.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.38: Frequency data for question 11a

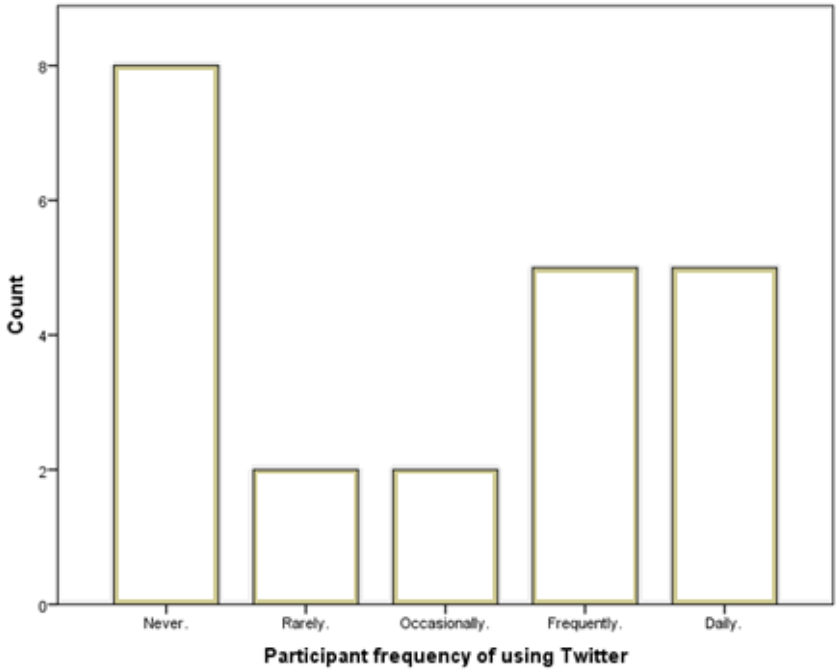


Figure 7.25: Frequency distribution of responses

Participant frequency of using Instagram

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	10	45.5	45.5	45.5
	Rarely.	5	22.7	22.7	68.2
	Frequently.	1	4.5	4.5	72.7
	Daily.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.39: Frequency data for question 11b

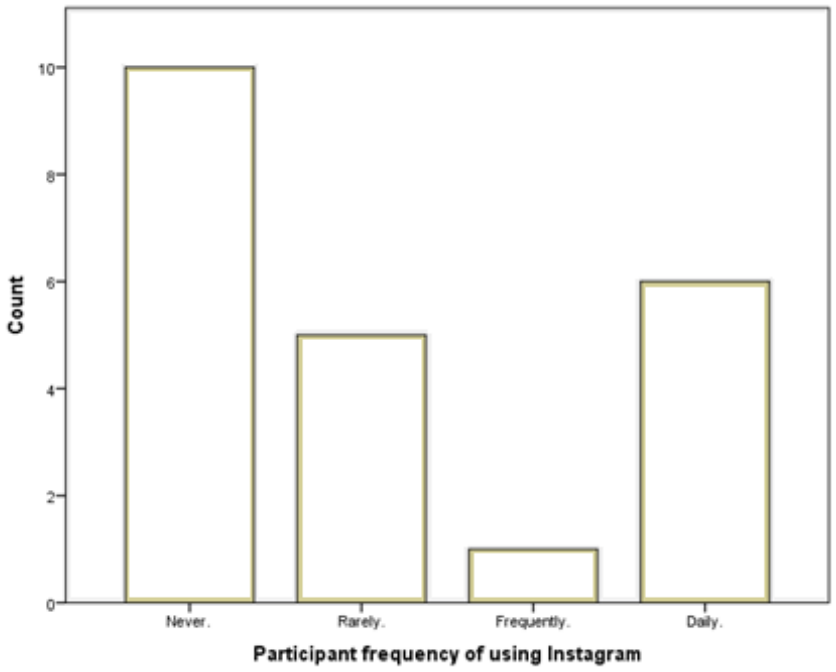


Figure 7.26: Frequency distribution of responses

Participant frequency of using Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Frequently.	1	4.5	4.5	4.5
	Daily.	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

Table 7.40: Frequency data for question 11c

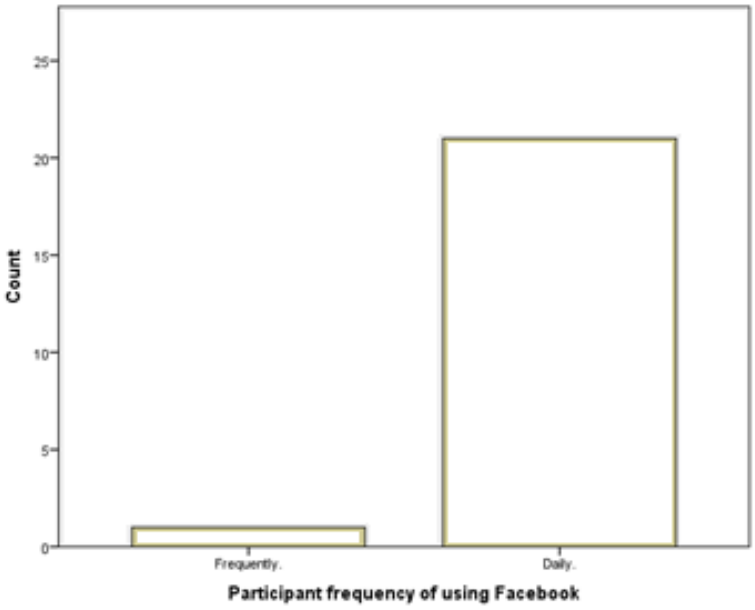


Figure 7.27: Frequency distribution of responses

Participant frequency of using SnapChat

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	8	36.4	36.4	36.4
	Rarely.	1	4.5	4.5	40.9
	Frequently.	7	31.8	31.8	72.7
	Daily.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.41: Frequency data for question 11d

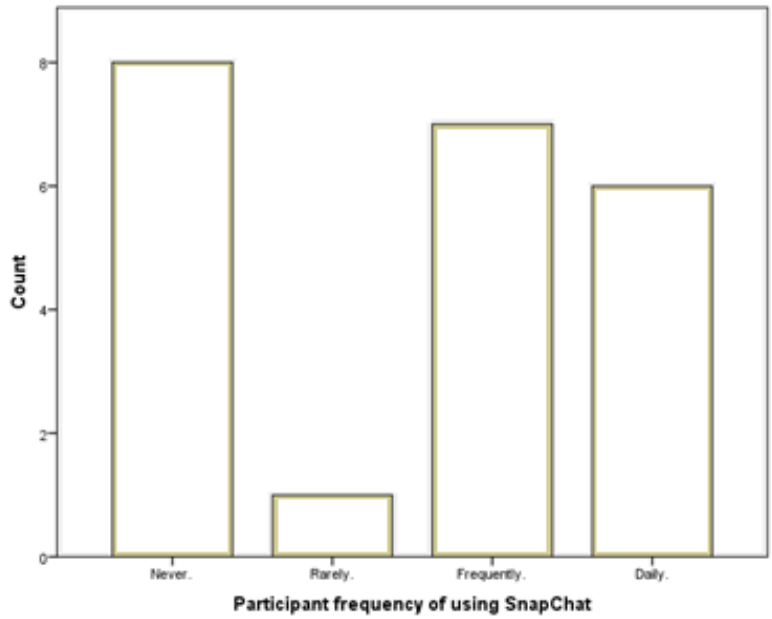


Figure 7.28: Frequency distribution of responses

Participant frequency of using LinkedIn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	13	59.1	59.1	59.1
	Rarely.	3	13.6	13.6	72.7
	Occasionally.	5	22.7	22.7	95.5
	Frequently.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.42: Frequency data for question 11e

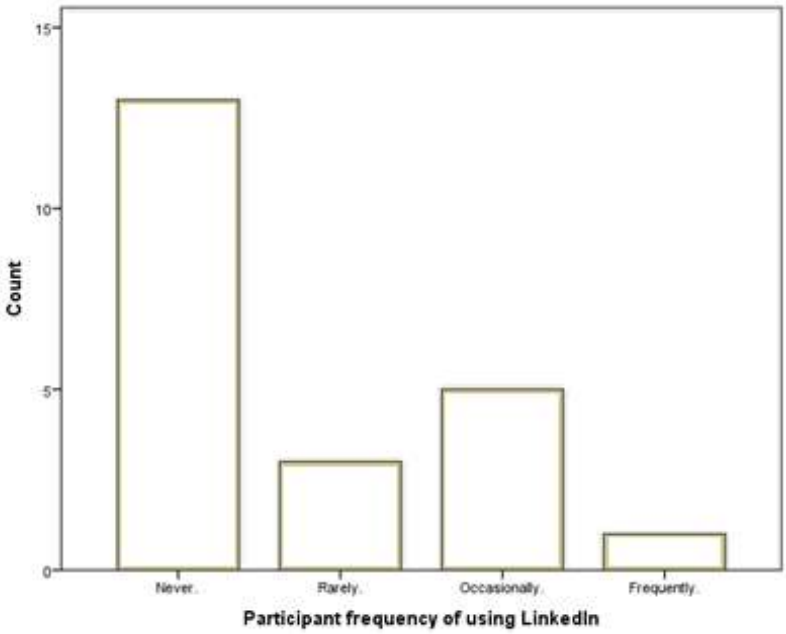


Figure 7.29: Frequency distribution of responses

Participant frequency of using other SNS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	9	40.9	40.9	40.9
	Rarely.	2	9.1	9.1	50.0
	Frequently.	4	18.2	18.2	68.2
	Daily.	7	31.8	31.8	100.0
	Total	22	100.0	100.0	

Table 7.43: Frequency data for question 11f

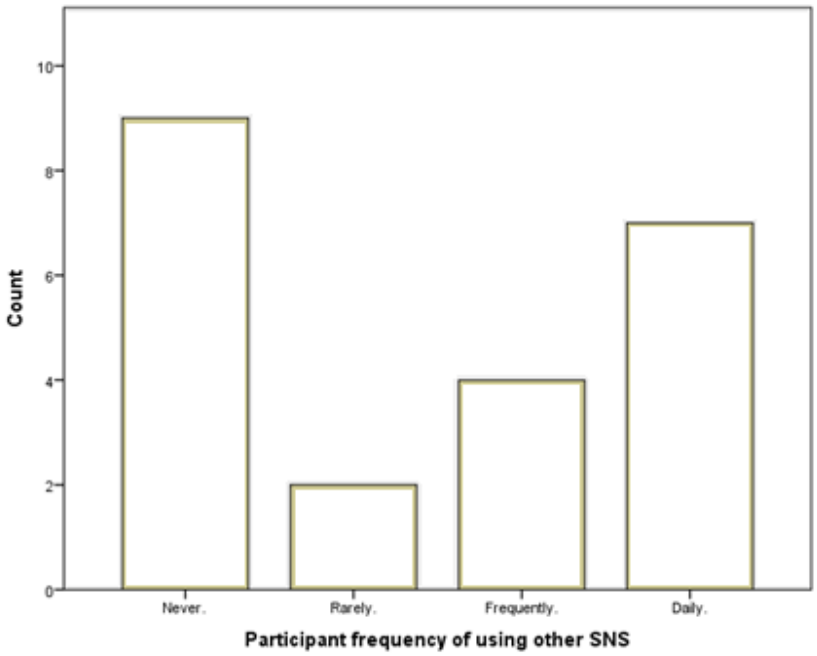


Figure 7.30: Frequency distribution of responses

Question 12: frequency of Internet access by device

This question seeks the frequency that participants access the Internet using three different devices, a smartphone, a fixed PC and a mobile device such as a laptop.

Statistics for question 12

		Frequency of usage of smartphone to access Internet	Frequency of usage of a fixed PC to access Internet	Frequency of usage of laptop to access Internet
N	Valid	22	22	22
	Missing	0	0	0
Mean		3.5455	1.8636	2.8636
Median		4.0000	1.5000	3.0000
Mode		4.00	1.00	4.00
Skewness		-2.001	.252	-.701
Std. Error of Skewness		.491	.491	.491
Kurtosis		4.052	-1.435	-.122
Std. Error of Kurtosis		.953	.953	.953
Range		3.00	4.00	4.00
Minimum		1.00	.00	.00
Maximum		4.00	4.00	4.00

Table 7.44: Statistics for question 12

Frequency of usage of smartphone to access Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Occasionally.	1	4.5	4.5	4.5
	Sometimes.	1	4.5	4.5	9.1
	Frequently.	5	22.7	22.7	31.8
	Most times.	15	68.2	68.2	100.0
	Total	22	100.0	100.0	

Table 7.45: Frequency data for question 12a

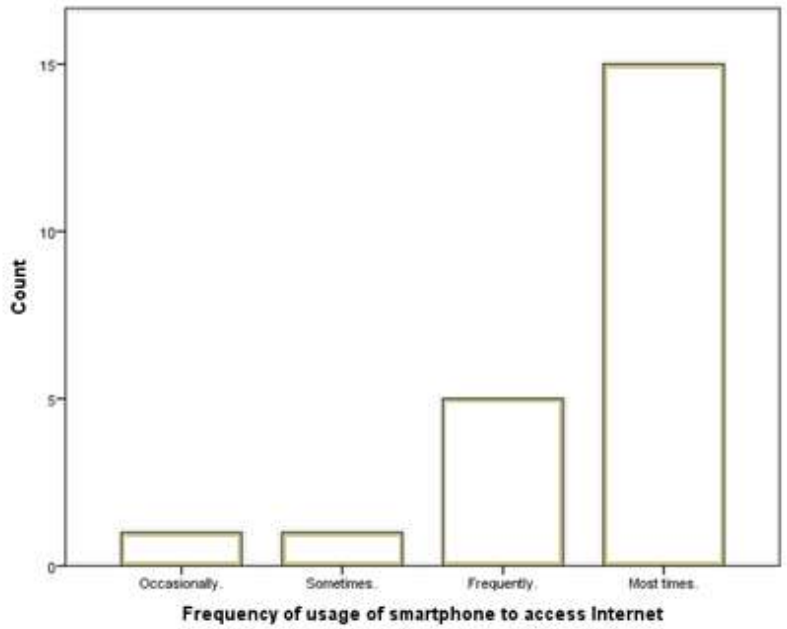


Figure 7.31: Frequency distribution of responses

Frequency of usage of a fixed PC to access Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	5	22.7	22.7	22.7
	Occasionally.	6	27.3	27.3	50.0
	Sometimes.	3	13.6	13.6	63.6
	Frequently.	3	13.6	13.6	77.3
	Most times.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.46: Frequency data for question 12b

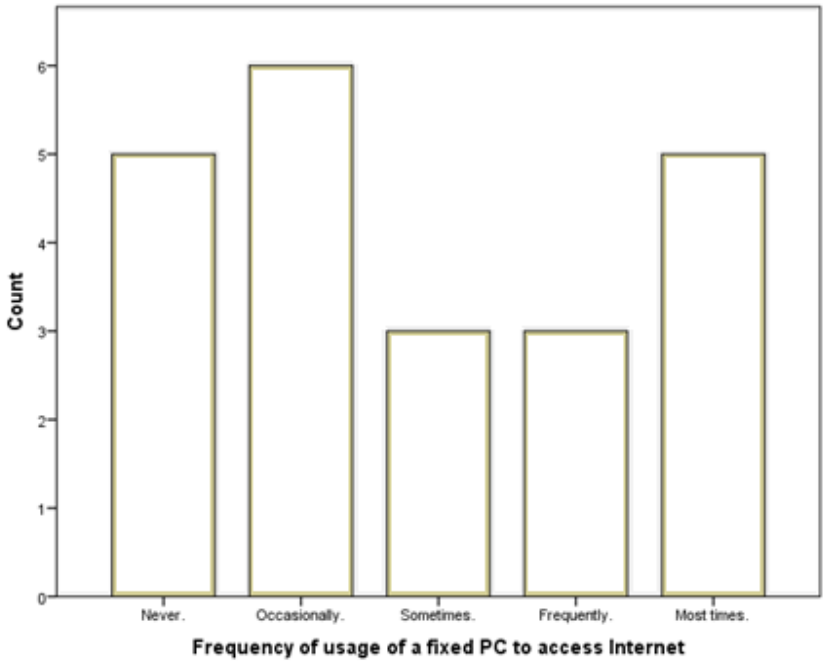


Figure 7.32: Frequency distribution of responses

Frequency of usage of laptop to access Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	1	4.5	4.5	9.1
	Sometimes.	7	31.8	31.8	40.9
	Frequently.	4	18.2	18.2	59.1
	Most times.	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

Table 7.47: Frequency data for question 12c

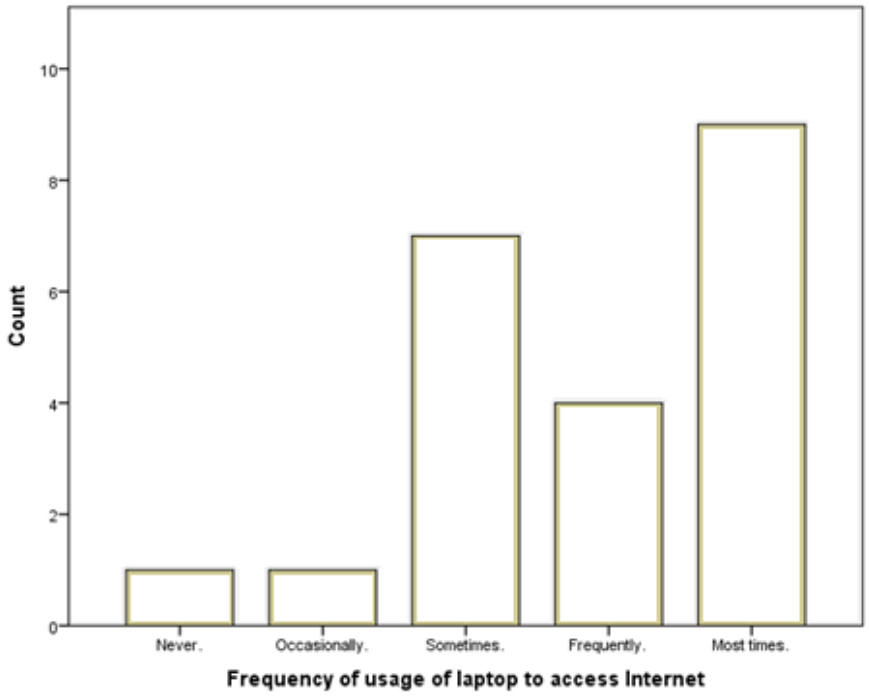


Figure 7.33: Frequency distribution of responses

Cost of using videoconferencing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Free.	11	50.0	50.0	50.0
	Low cost.	9	40.9	40.9	90.9
	High cost.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.48: Frequency data for question 14a

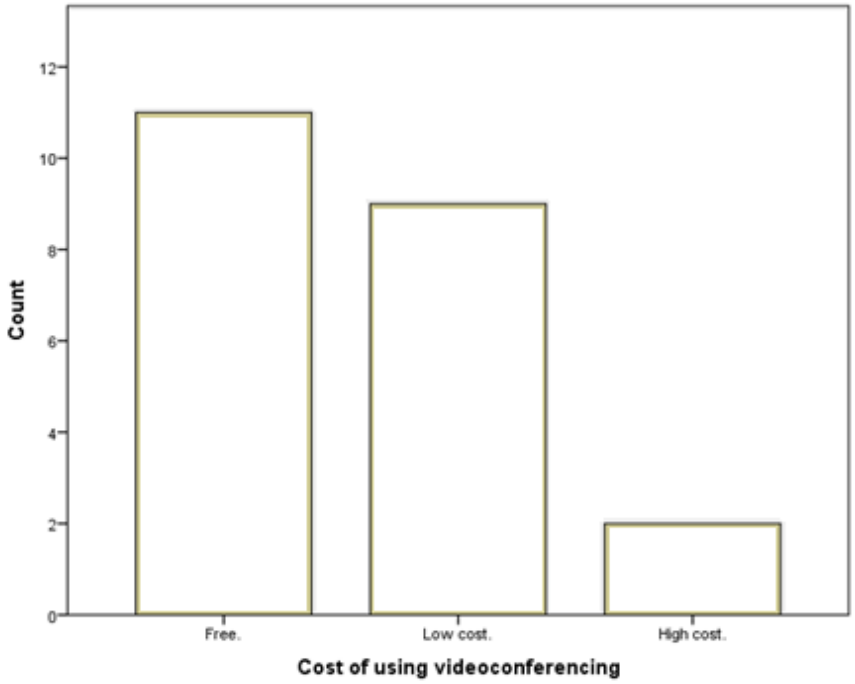


Figure 7.34: Frequency distribution of responses

Cost of using telephone call

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Free.	5	22.7	22.7	22.7
	Low cost.	15	68.2	68.2	90.9
	High cost.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.49: Frequency data for question 14b

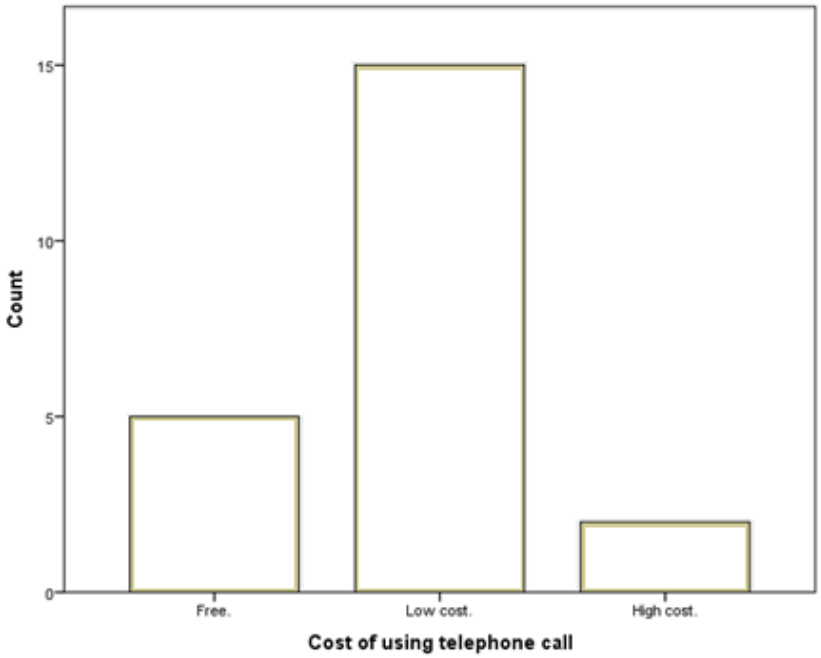


Figure 7.35: Frequency distribution of responses

Cost of using SMS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Free.	6	27.3	27.3	27.3
	Low cost.	14	63.6	63.6	90.9
	High cost.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.50: Frequency data for question 14c

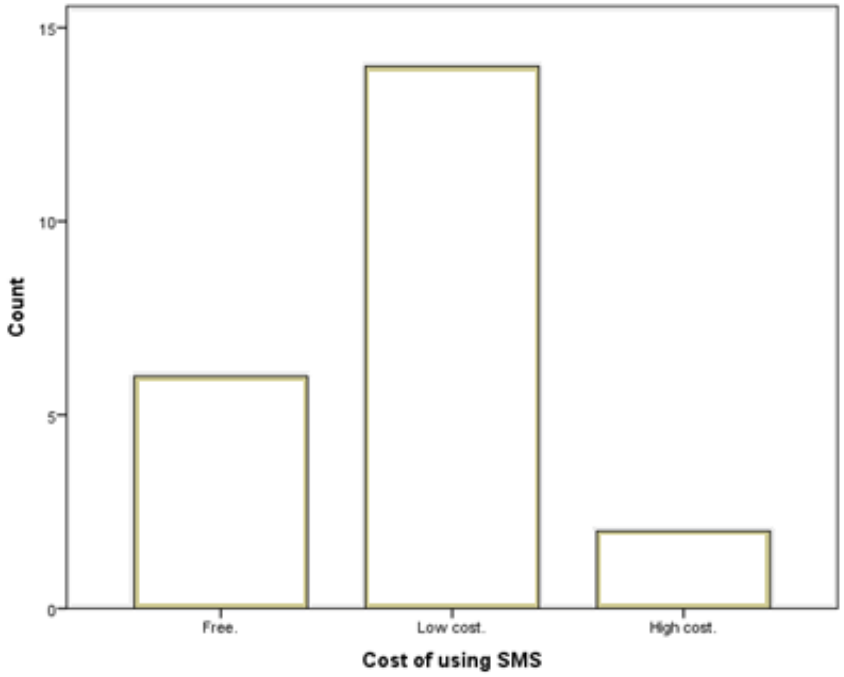


Figure 7.36: Frequency distribution of responses

Cost of using copresent communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Free.	18	81.8	81.8	81.8
	Low cost.	3	13.6	13.6	95.5
	High cost.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.51: Frequency data for question 14d

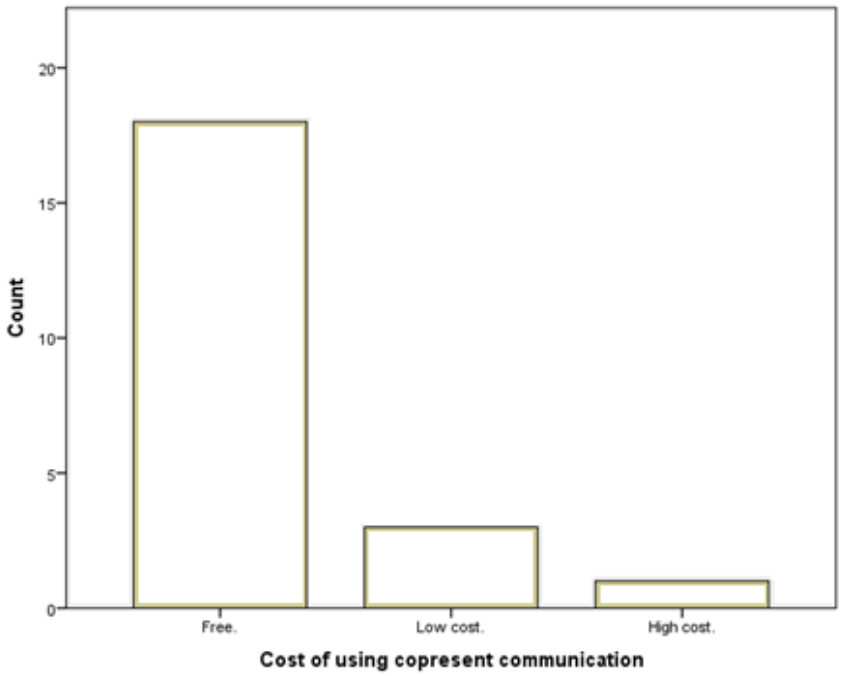


Figure 7.37: Frequency distribution of responses

Question 17: what participants spend their time doing on Facebook

This question takes 12 of the most popular activities that members can carry out on Facebook and asks how frequently they carry out the activities. The activities fall into 3 major groups, originating content, consuming content and sharing content.

Table width requires landscape paging – see next page for statistics.

Statistics for question 17

		Consuming status updates	Originating pictures and videos	Originating status updates	Originating pictures and videos	Originating work	Sharing friends' videos	Communicating with friends	Playing Facebook mini games	Consuming friends' videos	Consuming friends' music	Sharing gossip	Sharing friends' pictures
N	Valid	22	22	22	22	22	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.9091	3.6364	2.7273	3.0455	2.0000	2.4545	3.6818	1.9091	3.3182	2.2273	1.9545	2.3636
Median		4.0000	4.0000	3.0000	3.0000	2.0000	2.5000	4.0000	1.0000	3.0000	2.0000	1.0000	2.5000
Mode		4.00	4.00	3.00	3.00	1.00	3.00	4.00	1.00	3.00	2.00	1.00	3.00
Skewness		-.414	-1.551	.269	.432	.612	.440	-1.046	.933	.372	.473	1.333	-.303
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491	.491	.491	.491	.491	.491
Kurtosis		.001	4.025	-.463	-.241	.513	.570	1.198	-.730	-.090	-.077	.540	-.687
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953	.953	.953	.953	.953	.953
Range		3.00	5.00	2.00	3.00	5.00	4.00	4.00	3.00	3.00	3.00	4.00	3.00
Minimum		2.00	.00	2.00	2.00	.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00
Maximum		5.00	5.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	4.00	5.00	4.00

Table 7.52: Statistics for question 17

Consuming status updates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	1	4.5	4.5	4.5
	Sometimes.	5	22.7	22.7	27.3
	Most times.	11	50.0	50.0	77.3
	Always.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.53: Frequency data for question 17a

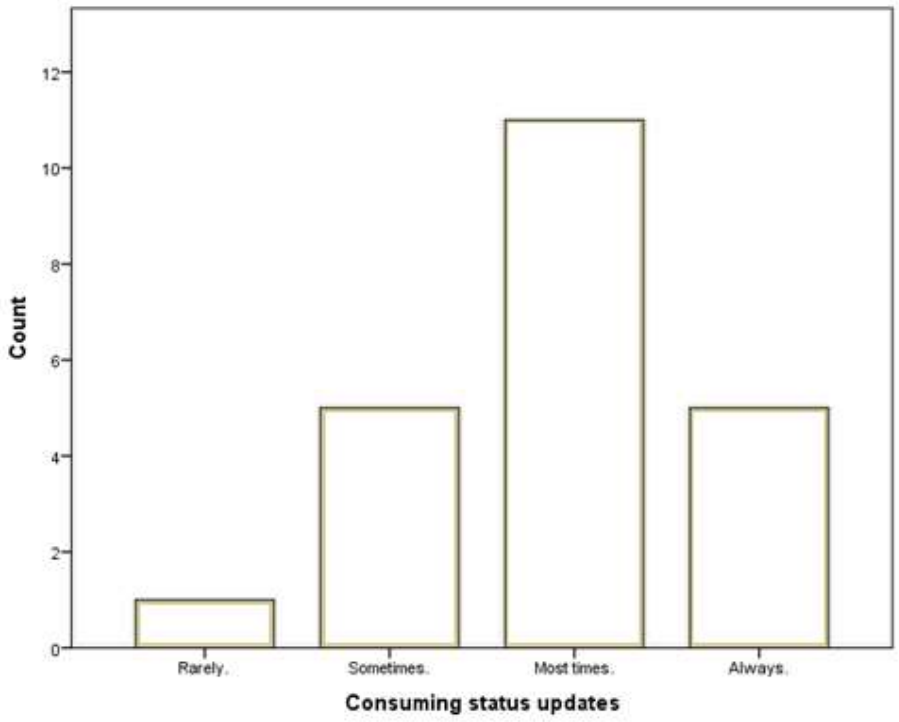


Figure 7.38: Frequency distribution of responses

Originating pictures and videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	Rarely.	1	4.5	4.5	9.1
	Sometimes.	6	27.3	27.3	36.4
	Most times.	10	45.5	45.5	81.8
	Always.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.54: Frequency data for question 17b

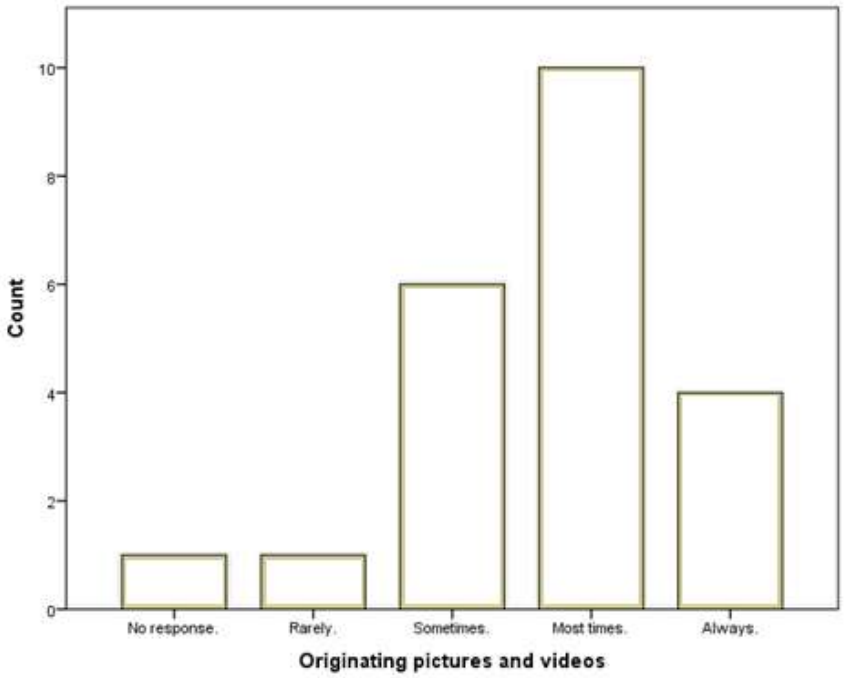


Figure 7.39: Frequency distribution of responses

Originating status updates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	8	36.4	36.4	36.4
	Sometimes.	12	54.5	54.5	90.9
	Most times.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.55: Frequency data for question 17c

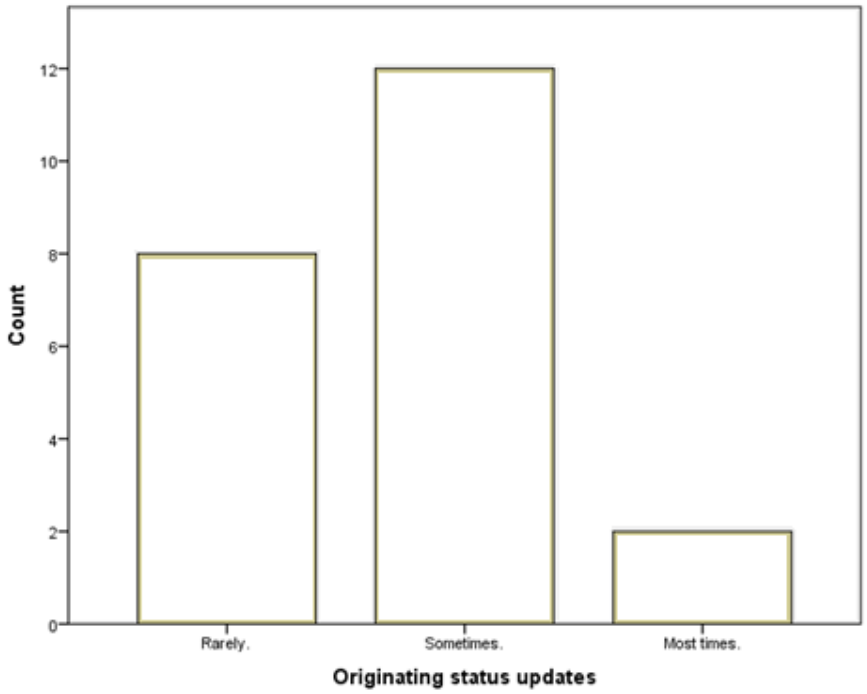


Figure 7.40: Frequency distribution of responses

Originating pictures and videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	6	27.3	27.3	27.3
	Sometimes.	10	45.5	45.5	72.7
	Most times.	5	22.7	22.7	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.56: Frequency data for question 17d

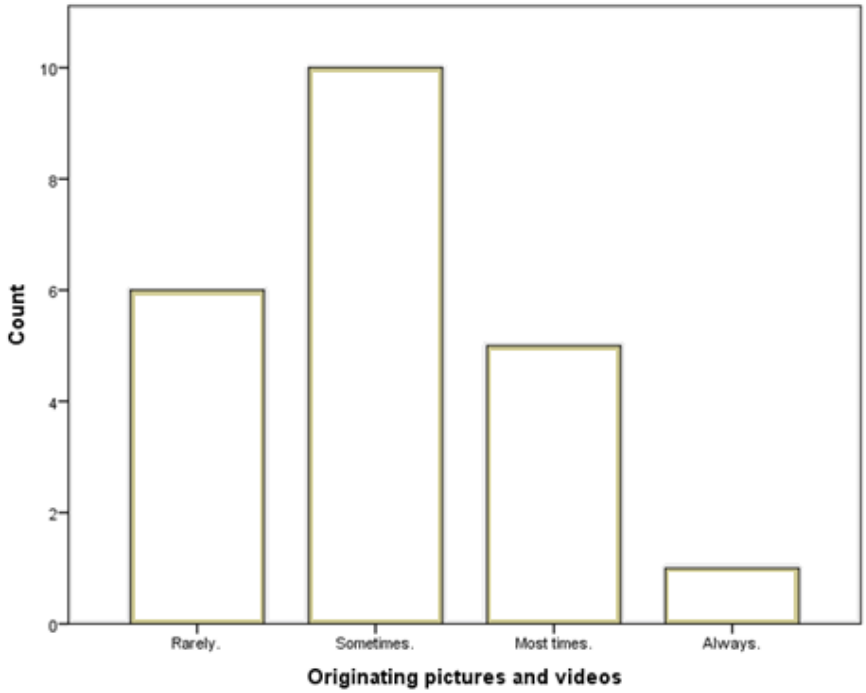


Figure 7.41: Frequency distribution of responses

Originating work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	Never.	8	36.4	36.4	40.9
	Rarely.	5	22.7	22.7	63.6
	Sometimes.	7	31.8	31.8	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.57: Frequency data for question 17e

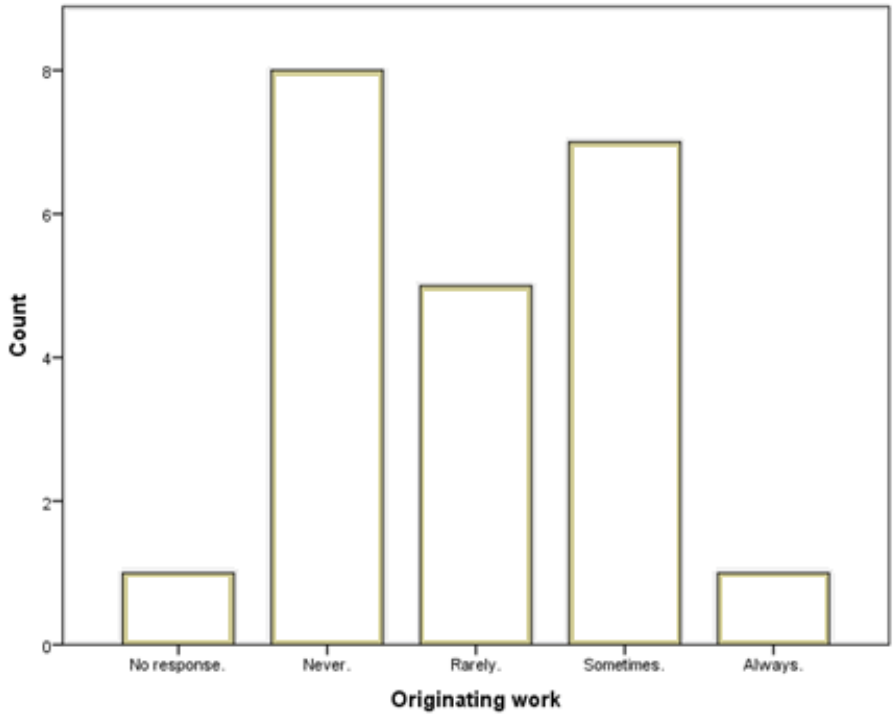


Figure 7.42: Frequency distribution of responses

Sharing friends' videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Rarely.	7	31.8	31.8	50.0
	Sometimes.	9	40.9	40.9	90.9
	Most times.	1	4.5	4.5	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.58: Frequency data for question 17f

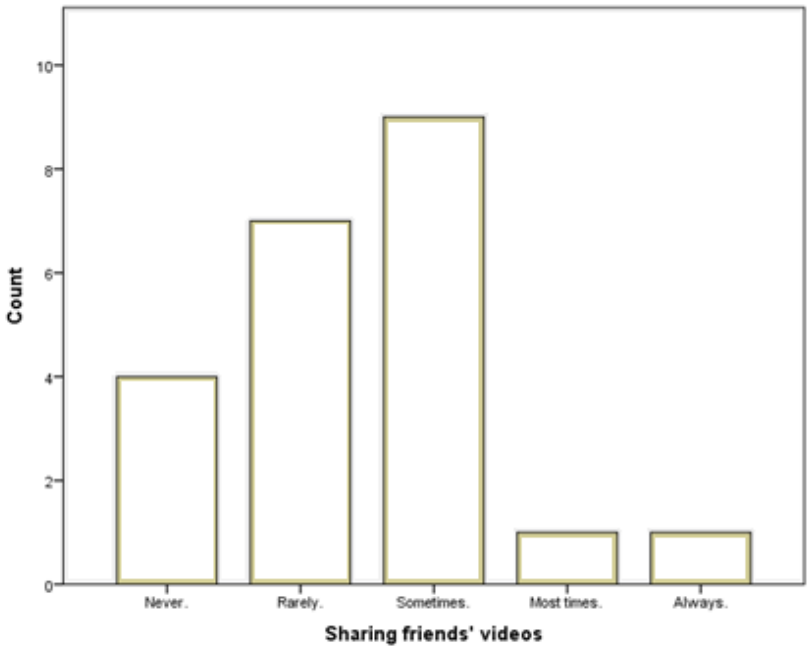


Figure 7.43: Frequency distribution of responses

Communicating with friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	2	9.1	9.1	9.1
	Sometimes.	6	27.3	27.3	36.4
	Most times.	9	40.9	40.9	77.3
	Always.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.59: Frequency data for question 17g

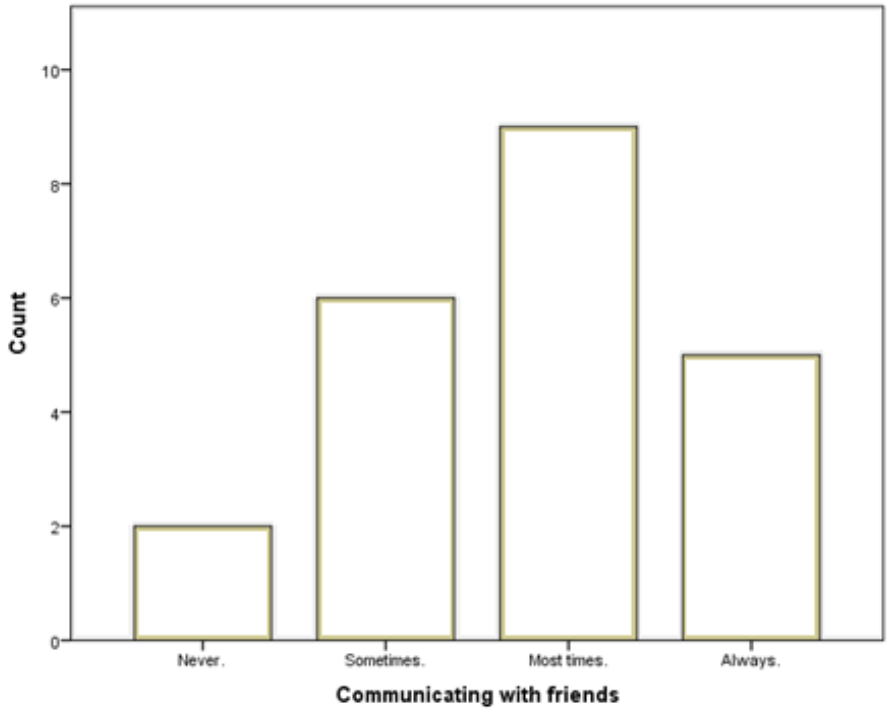


Figure 7.44: Frequency distribution of responses

Playing Facebook mini games

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	12	54.5	54.5	54.5
	Rarely.	4	18.2	18.2	72.7
	Sometimes.	2	9.1	9.1	81.8
	Most times.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.60: Frequency data for question 17h

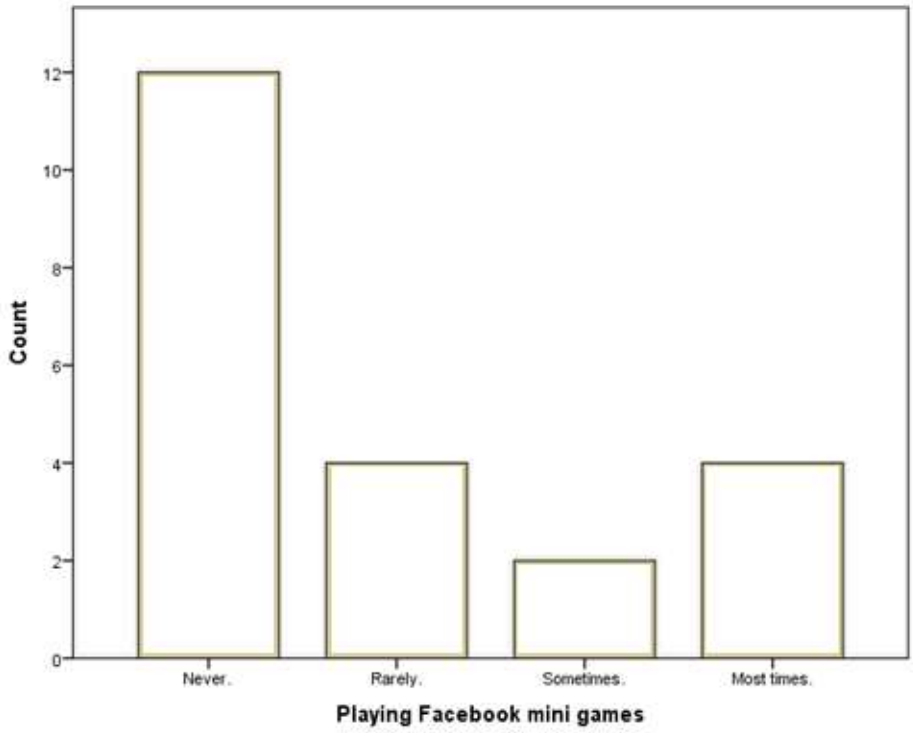


Figure 7.45: Frequency distribution of responses

Consuming friends' videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely.	3	13.6	13.6	13.6
	Sometimes.	11	50.0	50.0	63.6
	Most times.	6	27.3	27.3	90.9
	Always.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.61: Frequency data for question 17i

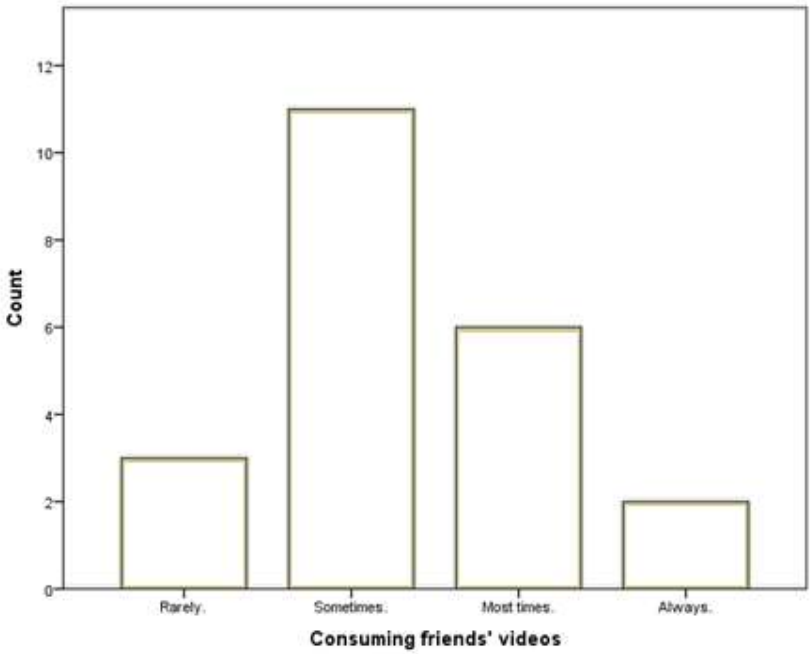


Figure 7.46: Frequency distribution of responses

Consuming friends' music

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Rarely.	11	50.0	50.0	68.2
	Sometimes.	5	22.7	22.7	90.9
	Most times.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.62: Frequency data for question 17j

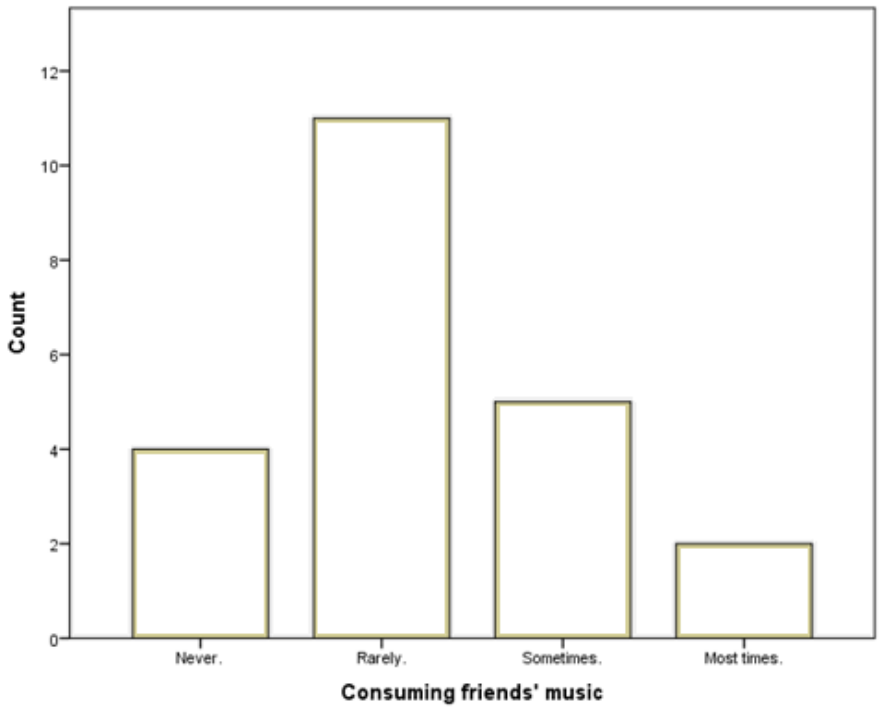


Figure 7.47: Frequency distribution of responses

Sharing gossip

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	12	54.5	54.5	54.5
	Rarely.	5	22.7	22.7	77.3
	Sometimes.	1	4.5	4.5	81.8
	Most times.	2	9.1	9.1	90.9
	Always.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.63: Frequency data for question 17k

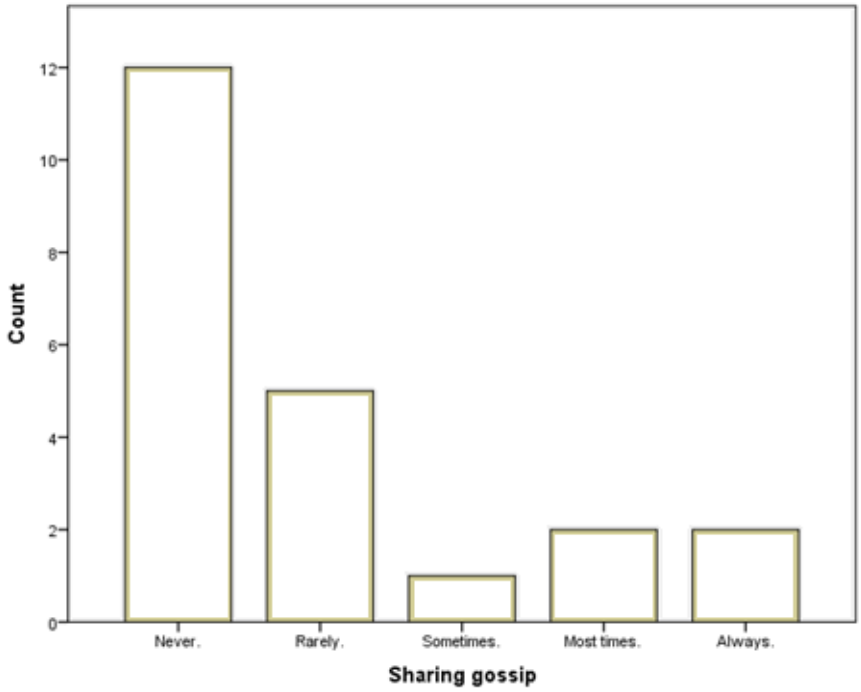


Figure 7.48: Frequency distribution of responses

Sharing friends' pictures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Rarely.	7	31.8	31.8	50.0
	Sometimes.	10	45.5	45.5	95.5
	Most times.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.64: Frequency data for question 17l

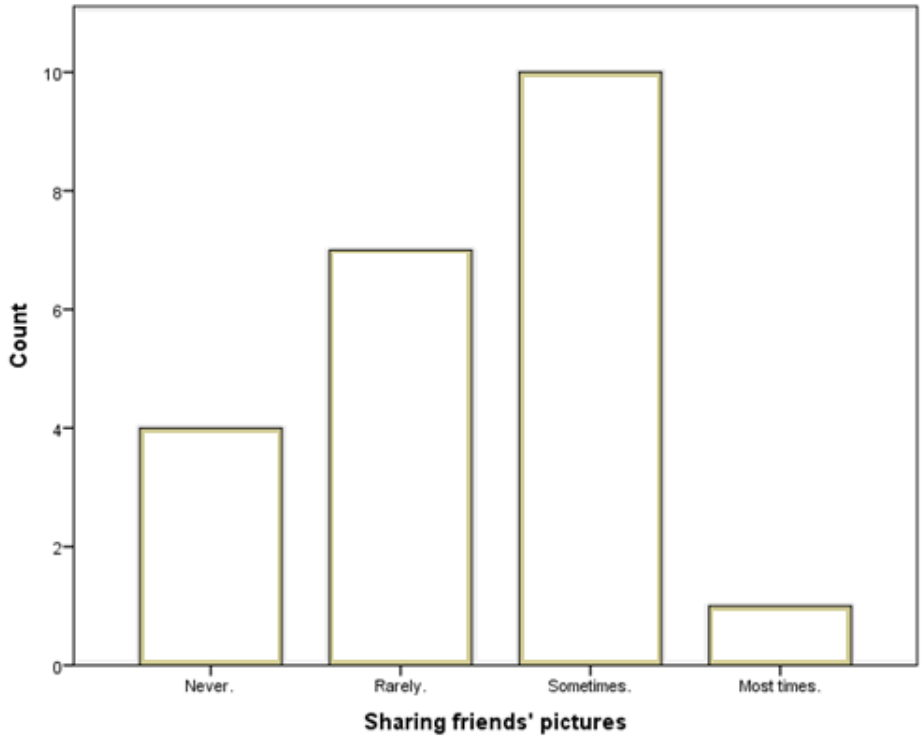


Figure 7.49: Frequency distribution of responses

Question 18: types of Facebook posts participants interact with

This question requests the level of response participants make with 8 different types of content available on Facebook. These are, amusing comments or jokes, photographs of people known to participants, informative videos, music, text without images, funny pictures, serious content and amusing videos.

Ordinal responses are never, occasionally, sometimes, frequently and always.

Statistics

		Amusing comments or jokes	Photographs of people known to participant	Informative videos	Music	Text without images	Funny pictures	Serious content	Amusing videos
N	Valid	22	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0	0
Mean		3.9091	3.6818	3.2727	2.1364	3.0000	3.5000	3.3636	3.3636
Median		4.0000	4.0000	3.0000	2.0000	3.0000	3.5000	3.0000	3.5000
Mode		4.00	4.00	4.00	3.00	3.00	3.00[a]	3.00[a]	4.00
Skewness		.034	-.953	-.607	.084	-.577	.000	-.142	-.218
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491	.491
Kurtosis		.025	.874	.334	-1.201	.228	-.617	-.352	-.891
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953	.953
Range		2.00	4.00	4.00	3.00	3.00	3.00	3.00	4.00
Minimum		3.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00
Maximum		5.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00

a. Multiple modes exist. The smallest value is shown

Table 7.65: Statistics for question 18

Amusing comments or jokes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes.	5	22.7	22.7	22.7
	Frequently.	14	63.6	63.6	86.4
	Always.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.66: Frequency data for question 18a

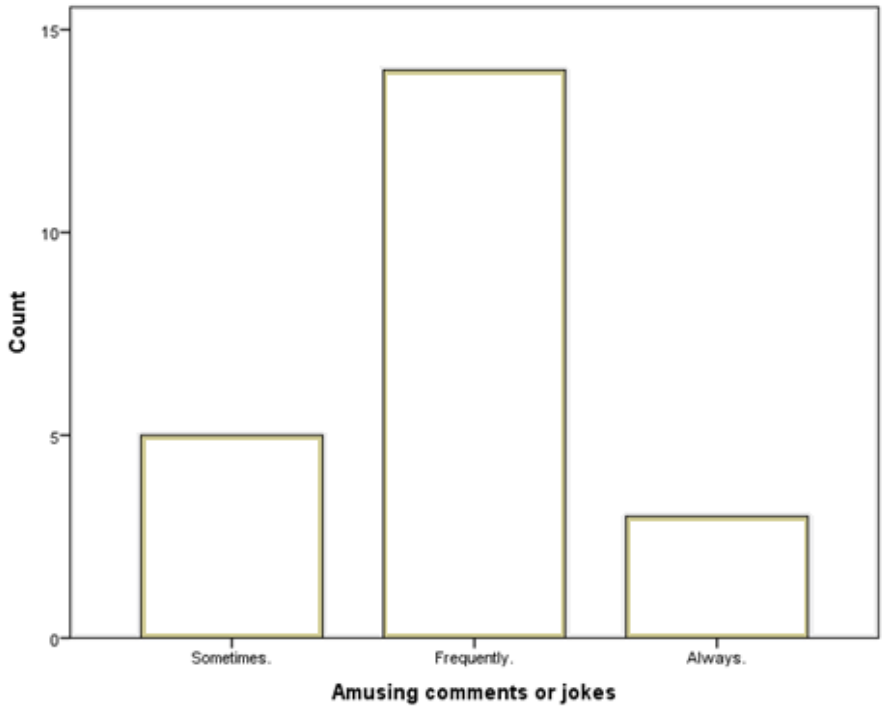


Figure 7.50: Frequency distribution of responses

Photographs of people known to participant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	2	9.1	9.1	13.6
	Sometimes.	4	18.2	18.2	31.8
	Frequently.	11	50.0	50.0	81.8
	Always.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.67: Frequency data for question 18b

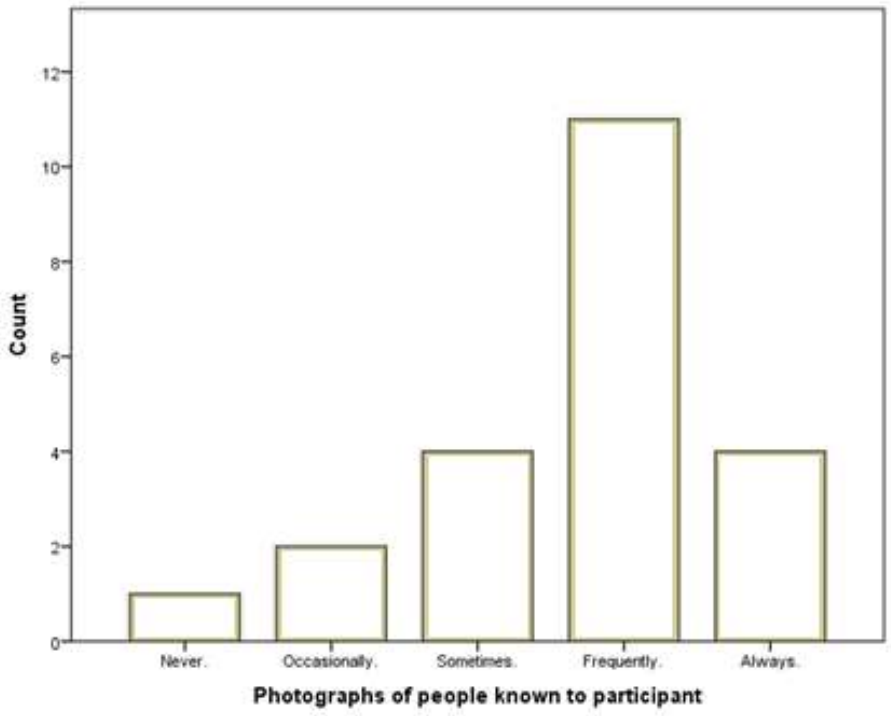


Figure 7.51: Frequency distribution of responses

Informative videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	3	13.6	13.6	18.2
	Sometimes.	8	36.4	36.4	54.5
	Frequently.	9	40.9	40.9	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.68: Frequency data for question 18c

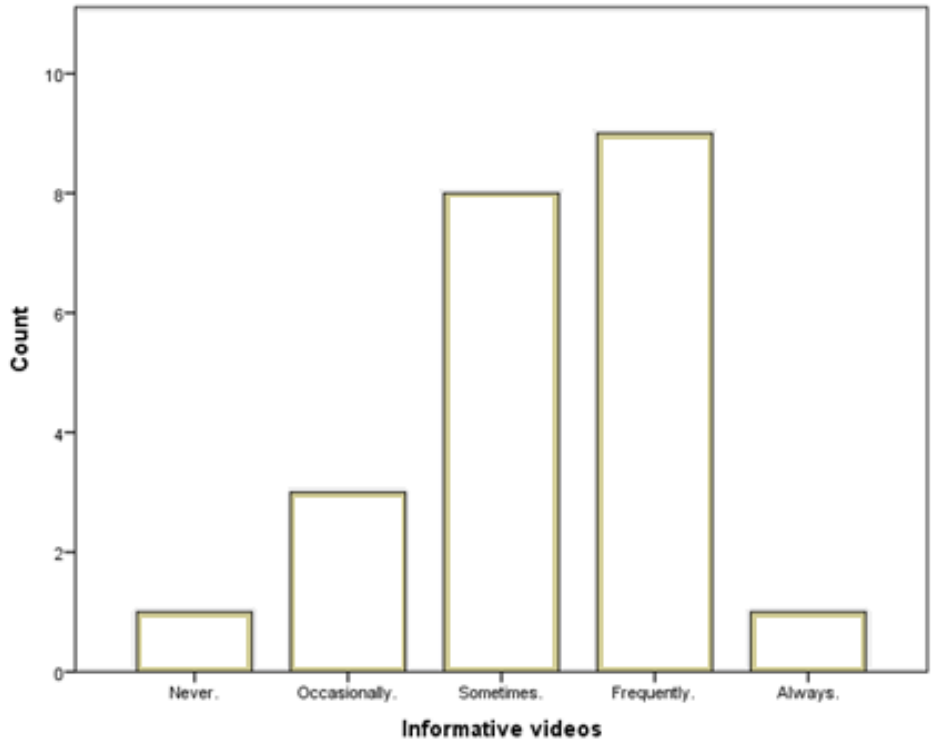


Figure 7.52: Frequency distribution of responses

Music

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	7	31.8	31.8	31.8
	Occasionally.	6	27.3	27.3	59.1
	Sometimes.	8	36.4	36.4	95.5
	Frequently.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.69: Frequency data for question 18d

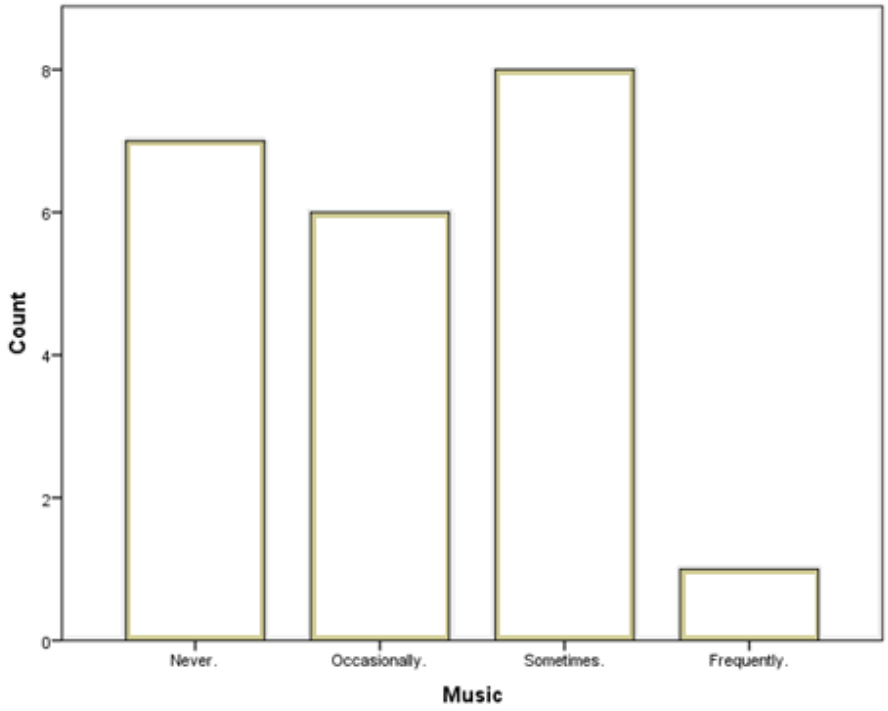


Figure 7.53: Frequency distribution of responses

Text without images

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	4	18.2	18.2	22.7
	Sometimes.	11	50.0	50.0	72.7
	Frequently.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.70: Frequency data for question 18e

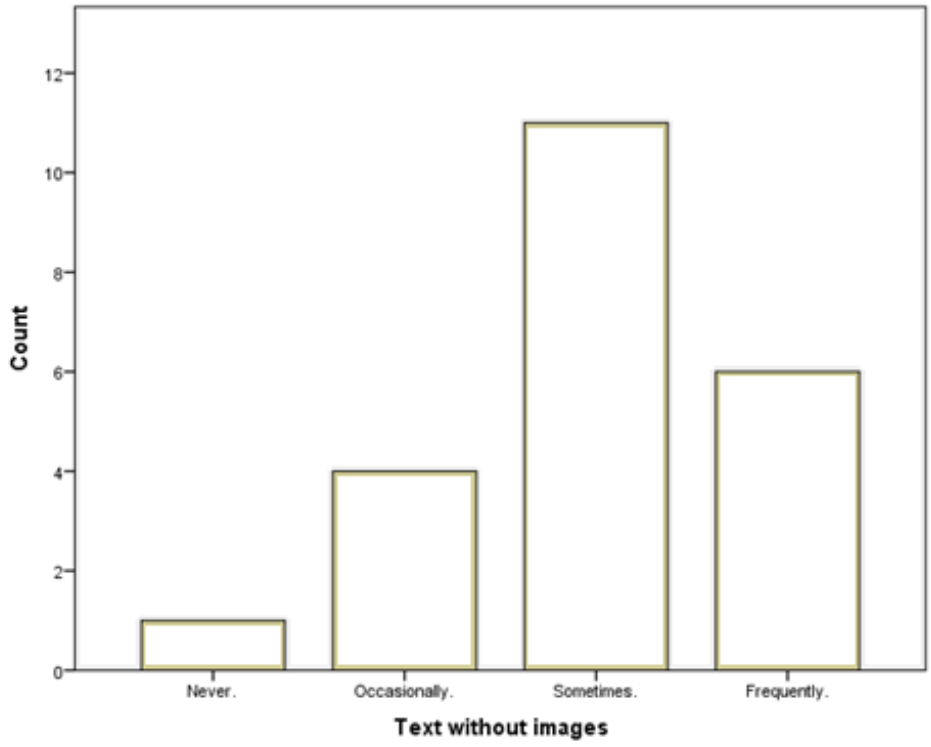


Figure 7.54: Frequency distribution of responses

Funny pictures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Occasionally.	3	13.6	13.6	13.6
	Sometimes.	8	36.4	36.4	50.0
	Frequently.	8	36.4	36.4	86.4
	Always.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.71: Frequency data for question 18f

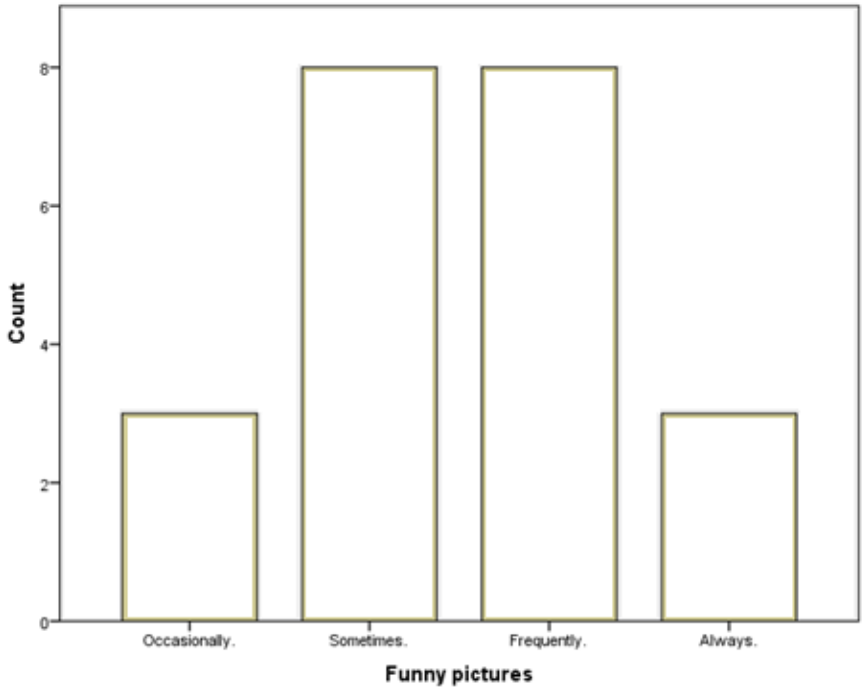


Figure 7.55: Frequency distribution of responses

Serious content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Occasionally.	3	13.6	13.6	13.6
	Sometimes.	9	40.9	40.9	54.5
	Frequently.	9	40.9	40.9	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.72: Frequency data for question 18g

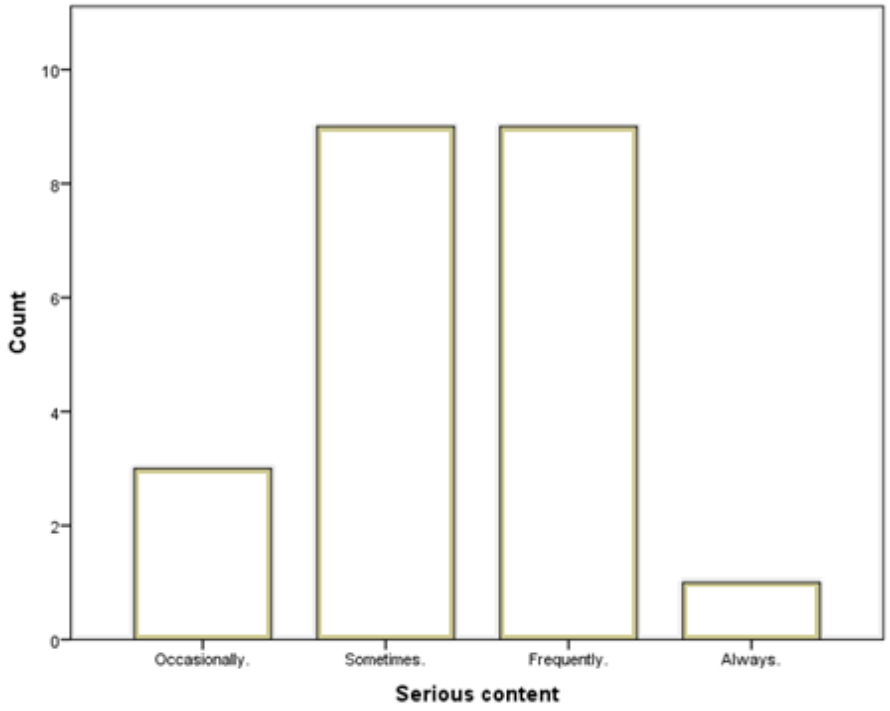


Figure 7.56: Frequency distribution of responses

Amusing videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	5	22.7	22.7	27.3
	Sometimes.	5	22.7	22.7	50.0
	Frequently.	7	31.8	31.8	81.8
	Always.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.73: Frequency data for question 18h

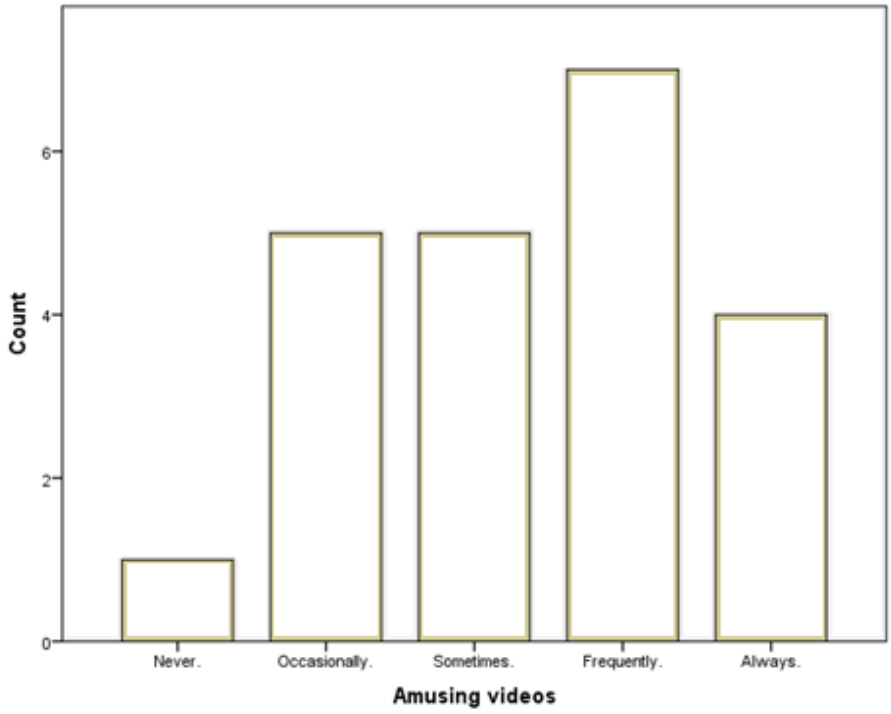


Figure 7.57: Frequency distribution of responses

Question 19: participants preferred ways of learning

This question seeks participants preferred methods of learning while at university, based on current learning resources, attending lectures, group work , reading a book , reading on screen, attending seminars, one-to-one or small group tutorials, practical work, informative videos and audio books and informative mp3s. Response options are, not applicable on my course, least preferred, no preference and most preferred.

Statistics

		Attending lectures	Group work	Reading books	Reading online content	Attending seminars	One to one or small tutorial groups	Practical work	Watching informative videos	Listening to audio books and mp3s
N	Valid	22	22	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0	0	0
Mean		2.7273	2.0909	2.0909	1.8636	2.3636	2.7273	2.6364	2.2727	1.4545
Median		3.0000	2.0000	2.0000	2.0000	3.0000	3.0000	3.0000	2.5000	2.0000
Mode		3.00	3.00	3.00	1.00	3.00	3.00	3.00	3.00	2.00
Skewness		-1.993	-.538	-.538	.287	-1.263	-2.950	-2.412	-1.054	-.267
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491	.491	.491
Kurtosis		3.502	-1.029	-1.029	-1.730	.712	8.338	5.700	.452	-.686
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953	.953	.953
Range		2.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00
Minimum		1.00	.00	.00	1.00	.00	.00	.00	.00	.00
Maximum		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table 7.74: Statistics for question 19

Attending lectures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least preferred.	1	4.5	4.5	4.5
	No preference.	4	18.2	18.2	22.7
	Most preferred.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.75: Frequency data for question 19a

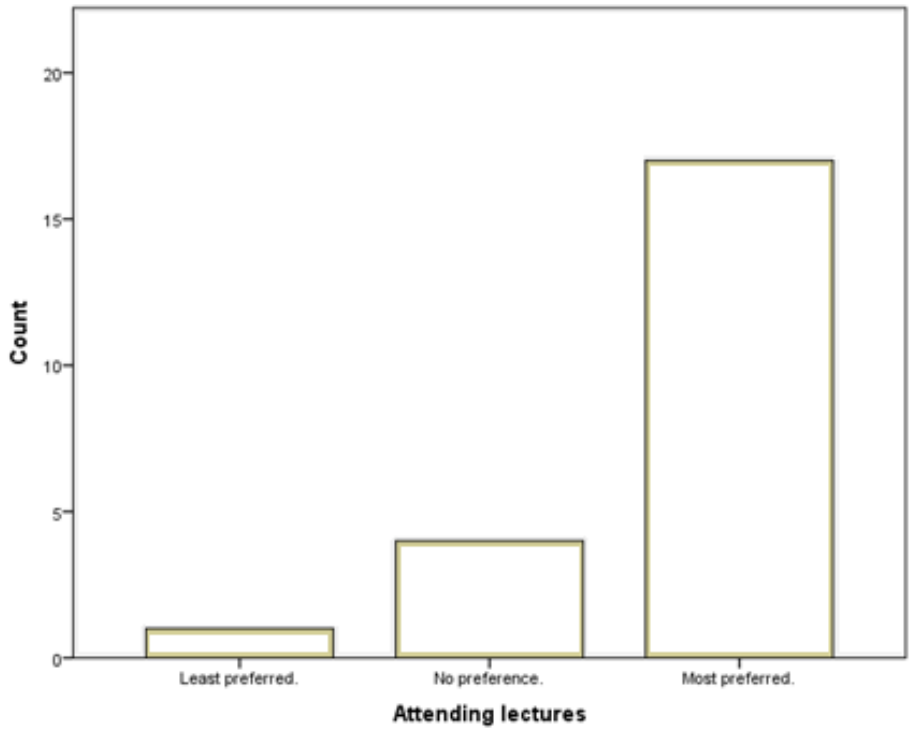


Figure 7.58: Frequency distribution of responses

Group work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	6	27.3	27.3	31.8
	No preference.	5	22.7	22.7	54.5
	Most preferred.	10	45.5	45.5	100.0
	Total	22	100.0	100.0	

Table 7.76: Frequency data for question 19b

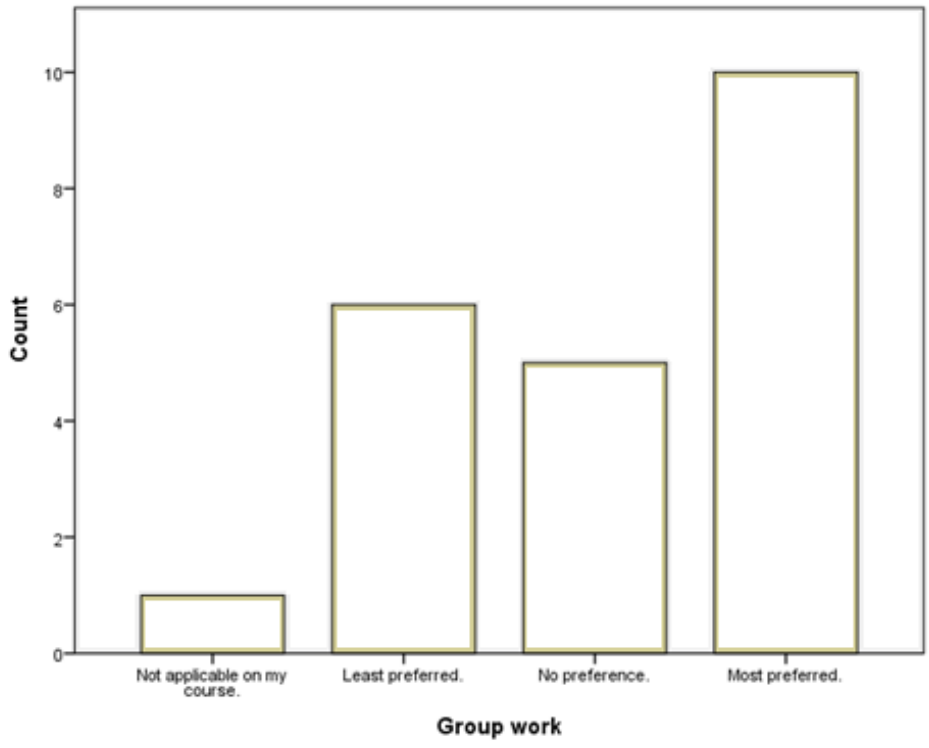


Figure 7.59: Frequency distribution of responses

Reading books

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	6	27.3	27.3	31.8
	No preference.	5	22.7	22.7	54.5
	Most preferred.	10	45.5	45.5	100.0
	Total	22	100.0	100.0	

Table 7.77: Frequency data for question 19c

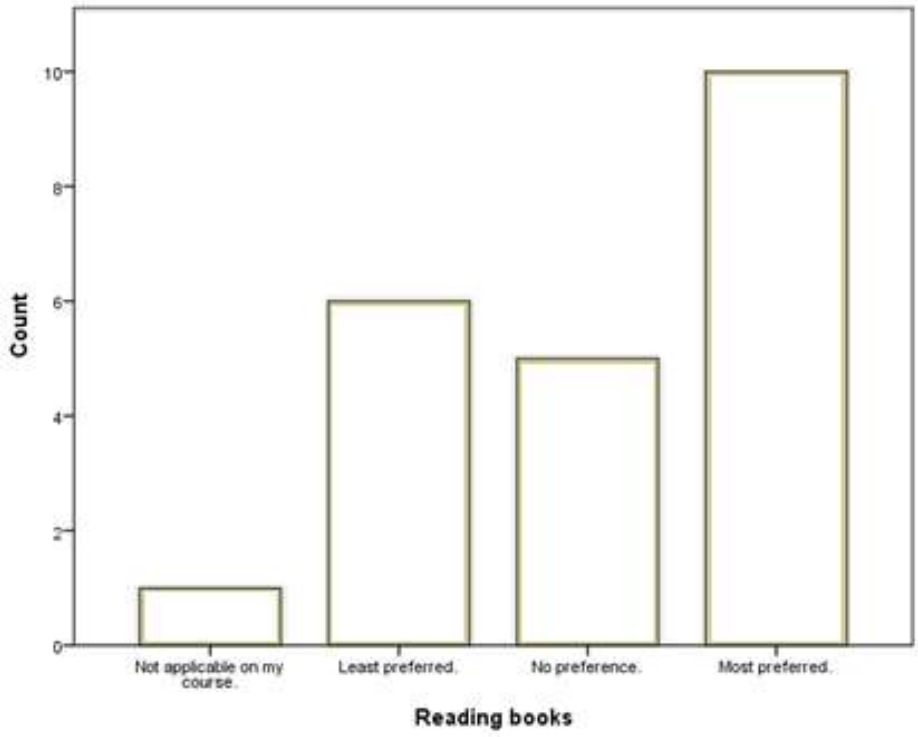


Figure 7.60: Frequency distribution of responses

Reading online content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least preferred.	10	45.5	45.5	45.5
	No preference.	5	22.7	22.7	68.2
	Most preferred.	7	31.8	31.8	100.0
	Total	22	100.0	100.0	

Table 7.78: Frequency data for question 19d

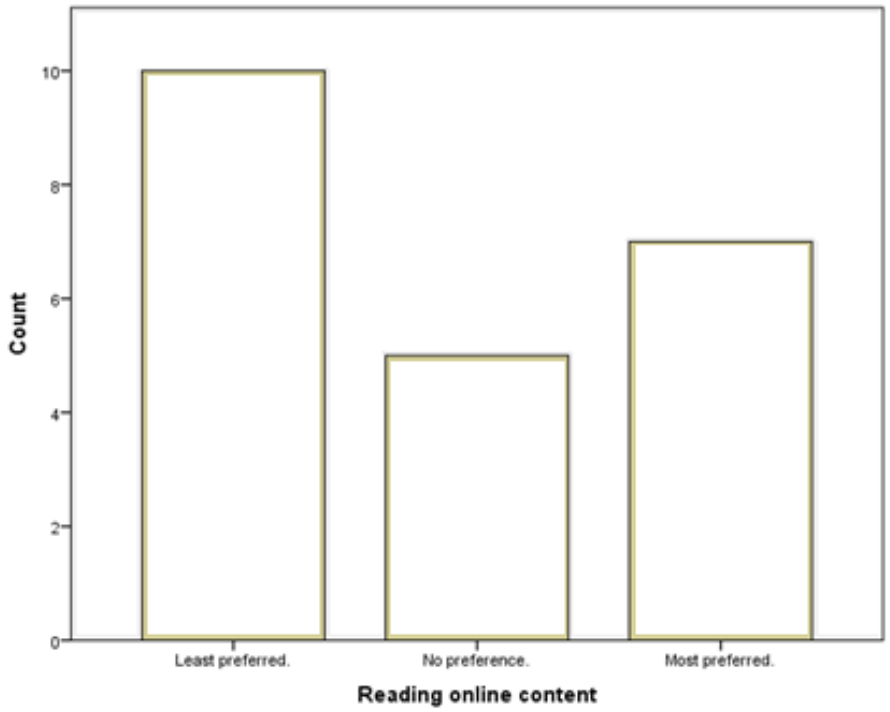


Figure 7.61: Frequency distribution of responses

Attending seminars

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	3	13.6	13.6	18.2
	No preference.	5	22.7	22.7	40.9
	Most preferred.	13	59.1	59.1	100.0
	Total	22	100.0	100.0	

Table 7.79: Frequency data for question 19e

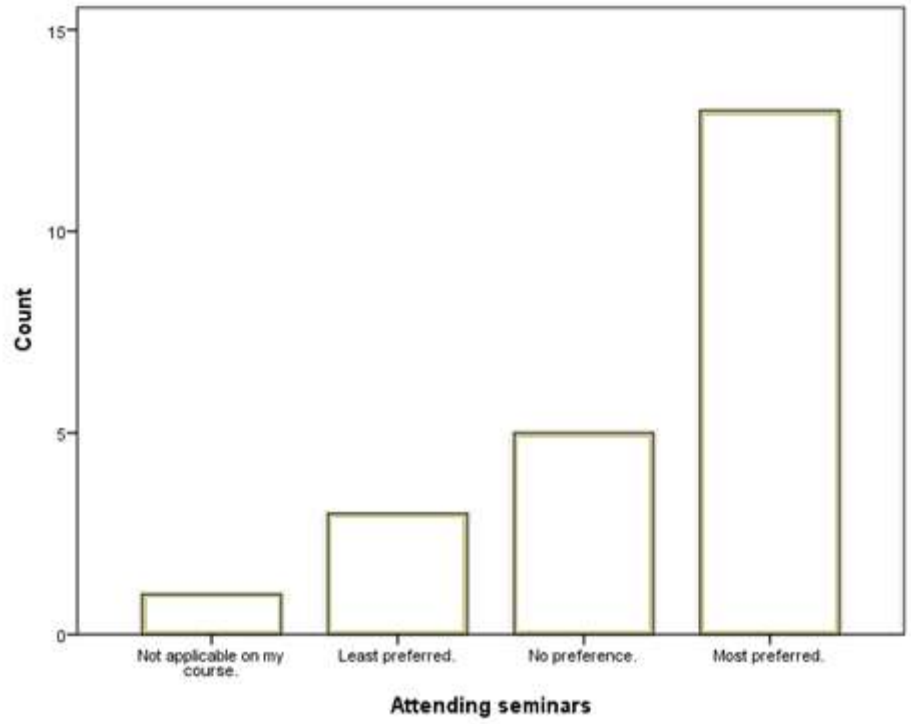


Figure 7.62: Frequency distribution of responses

One to one or small tutorial groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	1	4.5	4.5	9.1
	No preference.	1	4.5	4.5	13.6
	Most preferred.	19	86.4	86.4	100.0
	Total	22	100.0	100.0	

Table 7.80: Frequency data for question 19f

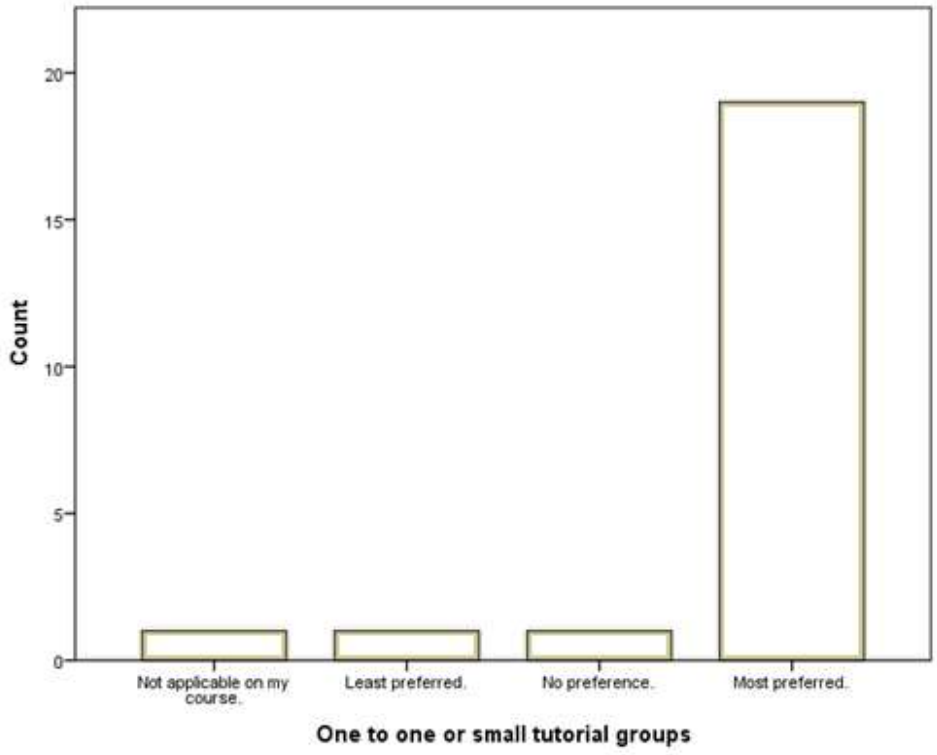


Figure 7.63: Frequency distribution of responses

Practical work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	1	4.5	4.5	9.1
	No preference.	3	13.6	13.6	22.7
	Most preferred.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.81: Frequency data for question 19g

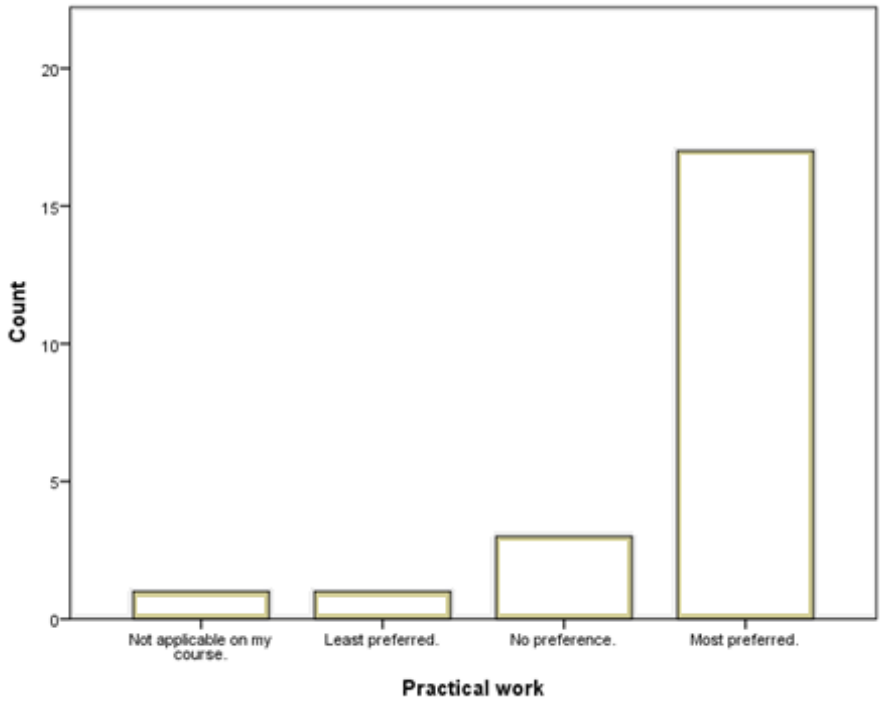


Figure 7.64: Frequency distribution of responses

Watching informative videos

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	1	4.5	4.5	4.5
	Least preferred.	3	13.6	13.6	18.2
	No preference.	7	31.8	31.8	50.0
	Most preferred.	11	50.0	50.0	100.0
	Total	22	100.0	100.0	

Table 7.82: Frequency data for question 19h

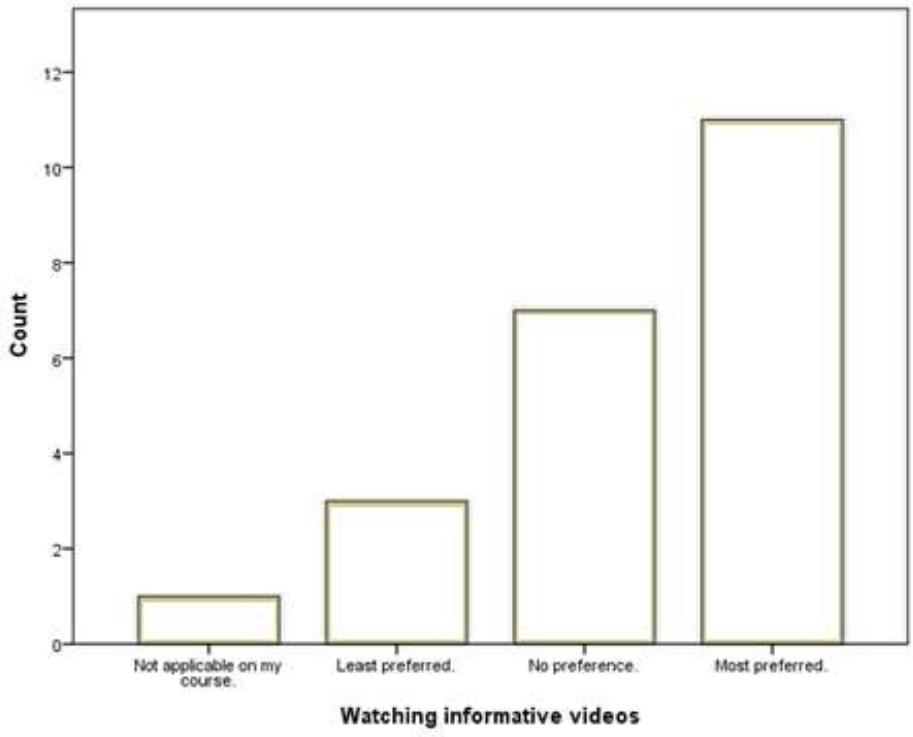


Figure 7.65: Frequency distribution of responses

Listening to audio books and mp3s

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable on my course.	4	18.2	18.2	18.2
	Least preferred.	6	27.3	27.3	45.5
	No preference.	10	45.5	45.5	90.9
	Most preferred.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.83: Frequency data for question 19i

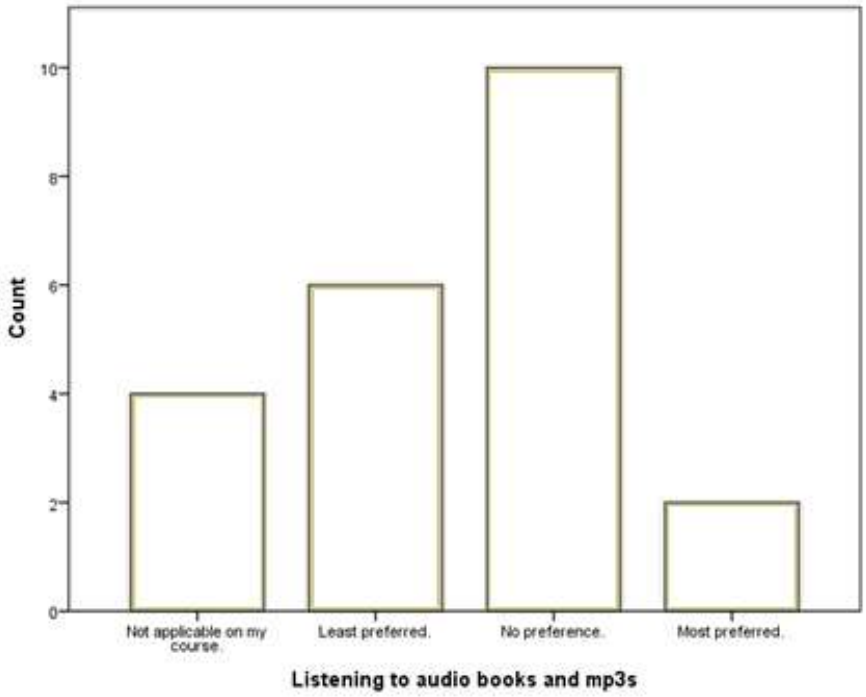


Figure 7.66: Frequency distribution of responses

Question 20: the groups participants would not wish to see posts, timeline etc.

This question seeks the groups that participants would not want to see all of their posts, Timeline and other information on Facebook. The groups are, friends outside of university, university staff and lecturers, management at your place of work, family or significant carers, intimate friend or partner and fellow students. Responses are, *I would prefer not to allow this group to see all of the Facebook postings and information on my account* and *this group can see all of the Facebook postings and information on my account*.

Statistics

		Whether friends may see all Facebook activity	Whether uni staff may see all Facebook activity	Whether work may see all Facebook activity	Whether family may see all Facebook activity	Whether partner may see all Facebook activity	Whether students may see all Facebook activity
N	Valid	22	22	22	22	22	22
	Missing	0	0	0	0	0	0
Mean		1.8636	.7273	.7273	1.5000	1.9545	1.9091
Median		2.0000	1.0000	1.0000	1.5000	2.0000	2.0000
Mode		2.00	1.00	1.00	1.00[a]	2.00	2.00
Skewness		-2.278	.442	.442	.000	-4.690	-3.059
Std. Error of Skewness		.491	.491	.491	.491	.491	.491
Kurtosis		3.498	-.762	-.762	-2.211	22.000	8.085
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953
Range		1.00	2.00	2.00	1.00	1.00	1.00
Minimum		1.00	.00	.00	1.00	1.00	1.00
Maximum		2.00	2.00	2.00	2.00	2.00	2.00

a. Multiple modes exist. The smallest value is shown

Table 7.84: Statistics for question 20

Whether friends may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prefer this group not to see all Facebook activity.	3	13.6	13.6	13.6
	This group may see all Facebook activity.	19	86.4	86.4	100.0
	Total	22	100.0	100.0	

Table 7.85: Frequency data for question 20a

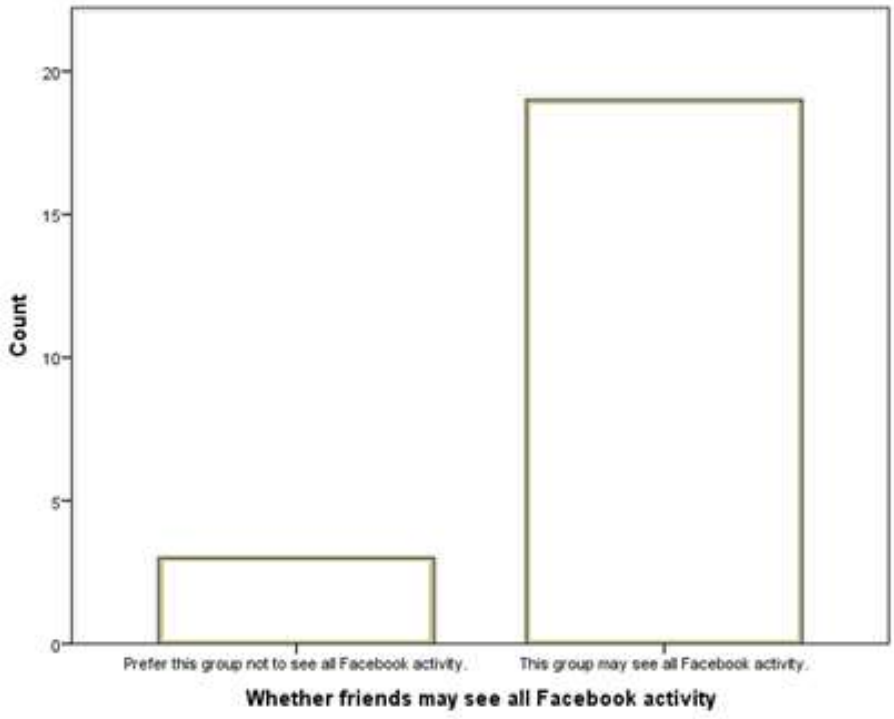


Figure 7.67: Frequency distribution of responses

Whether university staff may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	9	40.9	40.9	40.9
	Prefer this group not to see all Facebook activity.	10	45.5	45.5	86.4
	This group may see all Facebook activity.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.86: Frequency data for question 20b

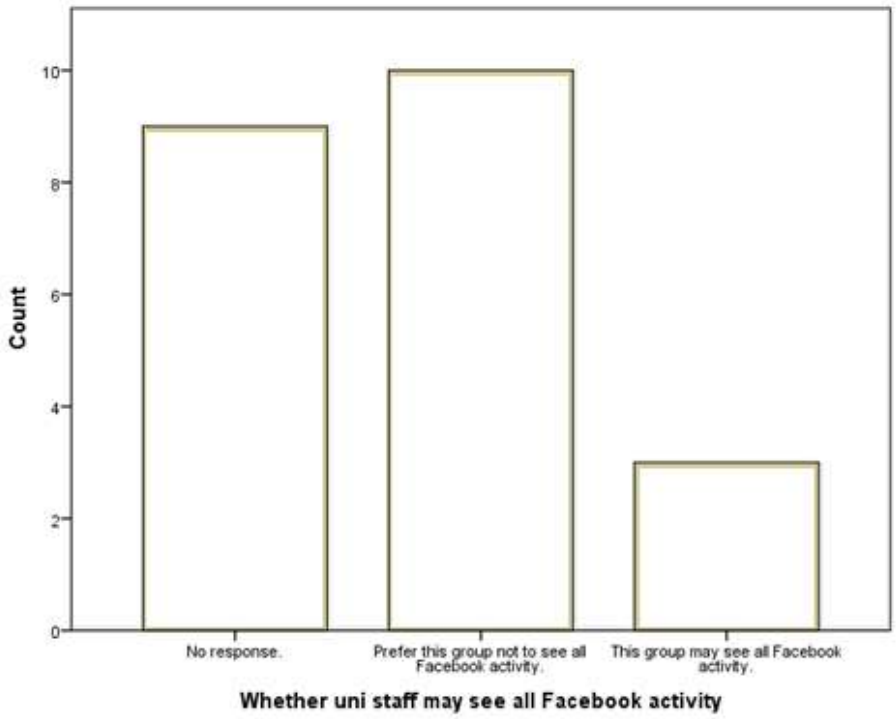


Figure 7.68: Frequency distribution of responses

Whether work may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	9	40.9	40.9	40.9
	Prefer this group not to see all Facebook activity.	10	45.5	45.5	86.4
	This group may see all Facebook activity.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.87: Frequency data for question 20c

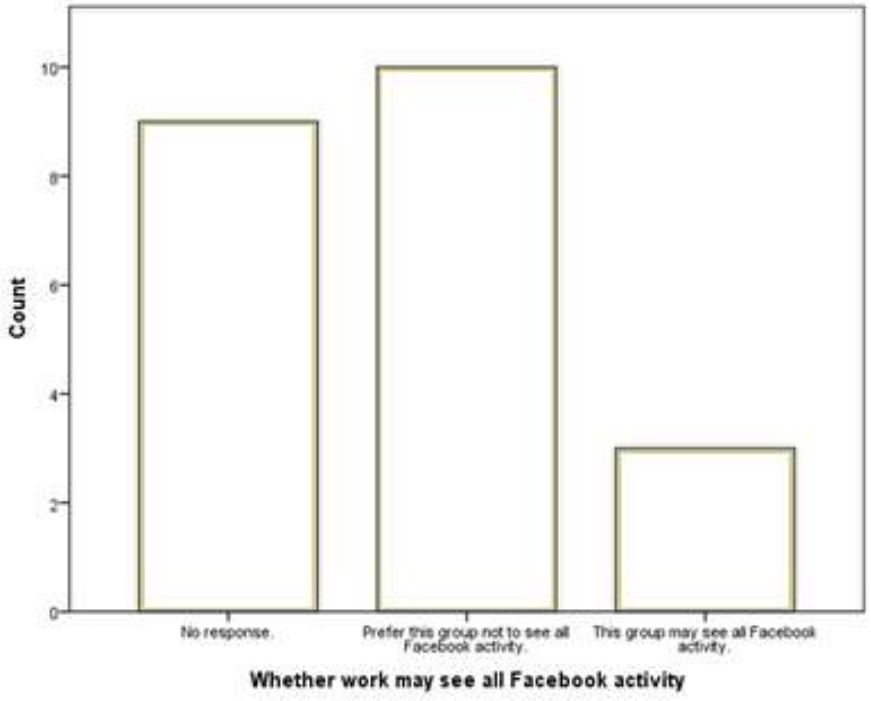


Figure 7.69: Frequency distribution of responses

Whether family may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prefer this group not to see all Facebook activity.	11	50.0	50.0	50.0
	This group may see all Facebook activity.	11	50.0	50.0	100.0
	Total	22	100.0	100.0	

Table 7.88: Frequency data for question 20d

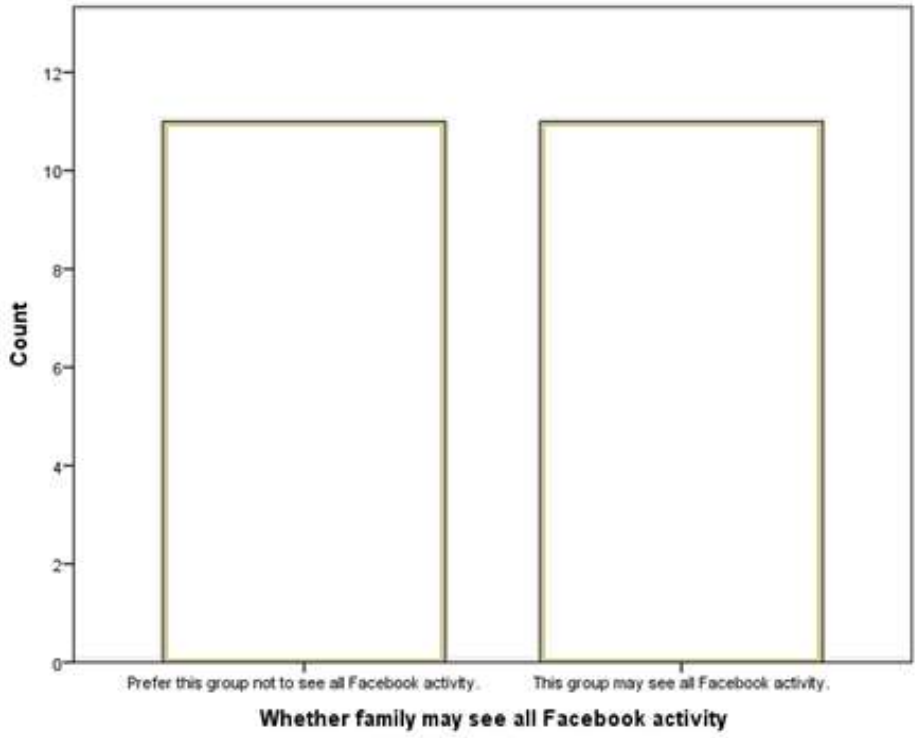


Figure 7.70: Frequency distribution of responses

Whether partner may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prefer this group not to see all Facebook activity.	1	4.5	4.5	4.5
	This group may see all Facebook activity.	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

Table 7.89: Frequency data for question 20e

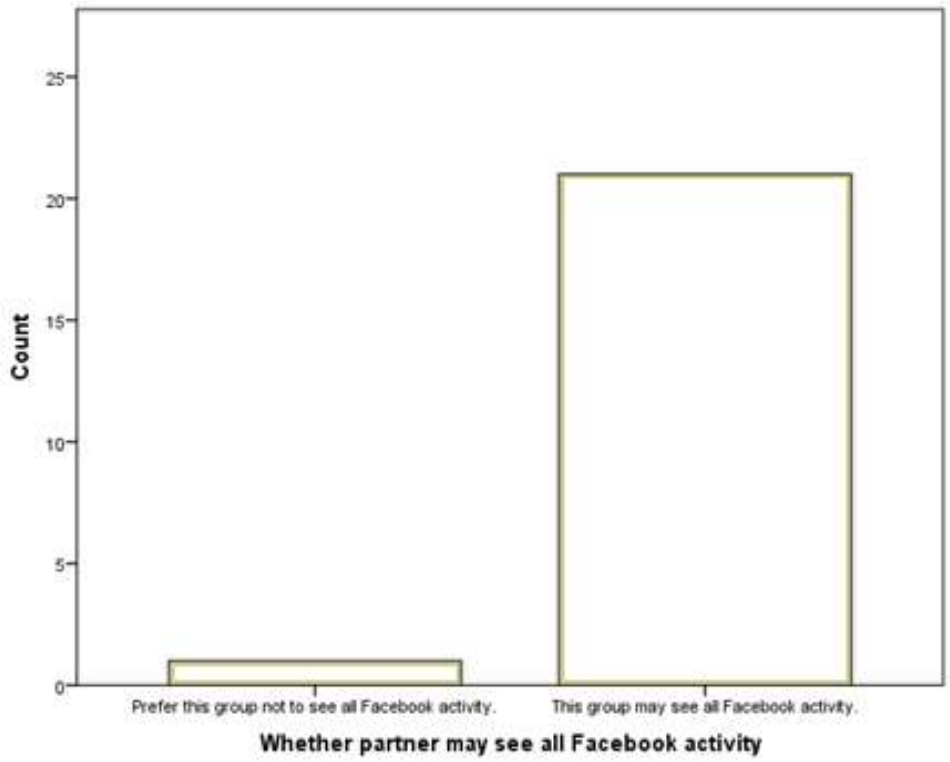


Figure 7.71: Frequency distribution of responses

Whether students may see all Facebook activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prefer this group not to see all Facebook activity.	2	9.1	9.1	9.1
	This group may see all Facebook activity.	20	90.9	90.9	100.0
	Total	22	100.0	100.0	

Table 7.90: Frequency data for question 20f

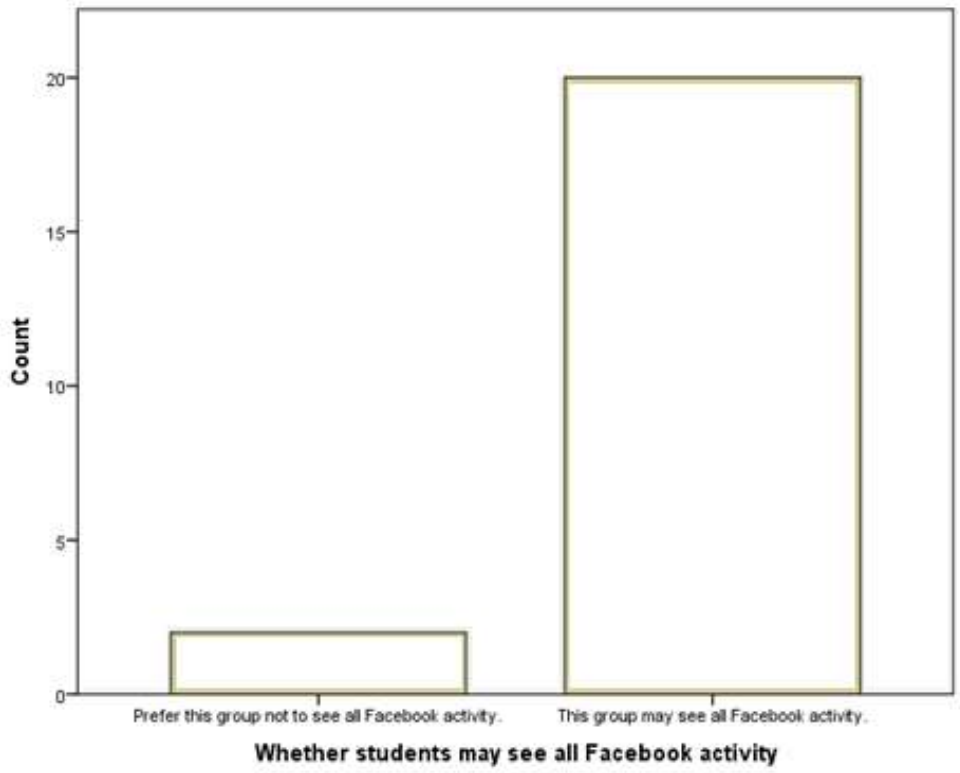


Figure 7.72: Distribution of responses

Question 21: whether participants need to choose conversation topics carefully

This question seeks whether participants have to carefully choose their topics of conversation in a range of social groups, At a family occasion, such as a wedding, on Facebook, in front of fellow university students or classmates, with non-university friends in a busy café or bar, at work, in the company of university staff and lecturers, when alone with your partner. Available responses are *I have to be careful what I say* and *it does not matter what I say*.

Statistics

		Need to choose conversation topics with family	Need to choose conversation topics on Facebook	Need to choose conversation topics with students	Need to choose conversation topics with friends	Need to choose conversation topics with work	Need to choose conversation topics with university staff	Need to choose conversation topics with partner
N	Valid	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0
Mean		.2727	.1818	.4091	.7727	.0455	.1818	.8636
Median		.0000	.0000	.0000	1.0000	.0000	.0000	1.0000
Mode		.00	.00	.00	1.00	.00	.00	1.00
Skewness		1.097	1.773	.397	-1.399	4.690	1.773	-2.278
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491
Kurtosis		-.887	1.250	-2.037	-.057	22.000	1.250	3.498
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953
Range		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minimum		.00	.00	.00	.00	.00	.00	.00
Maximum		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 7.91: Statistics for question 21

Need to choose conversation topics with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	16	72.7	72.7	72.7
	Freedom of conversation.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.92: Frequency data for question 21a

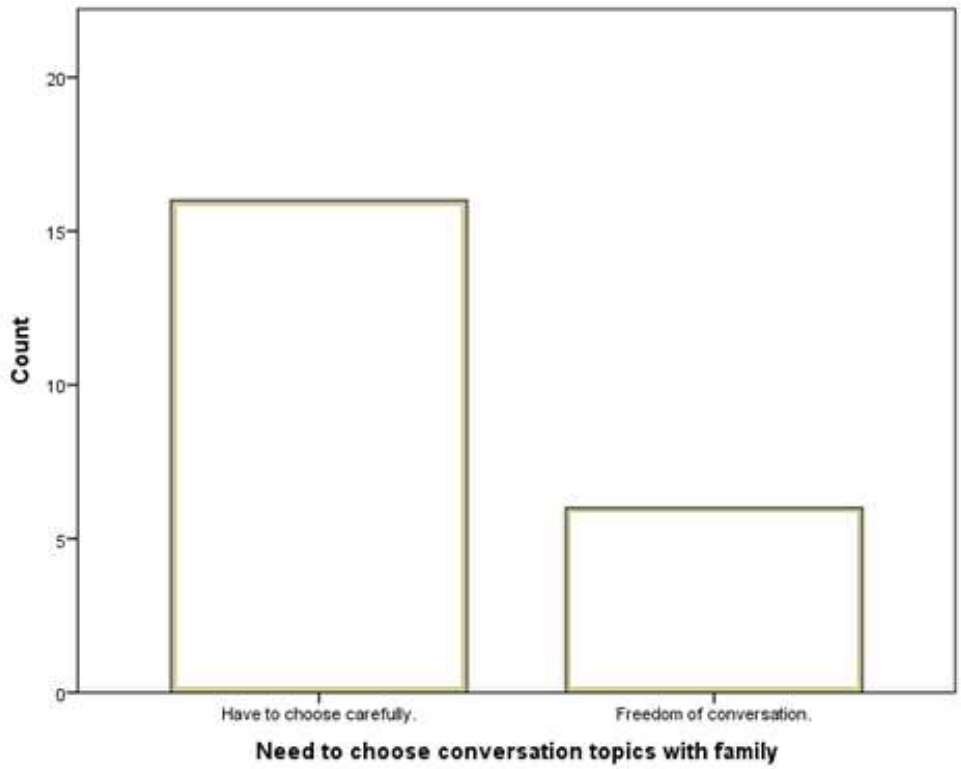


Figure 7.73: Distribution of responses

Need to choose conversation topics on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	18	81.8	81.8	81.8
	Freedom of conversation.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.93: Frequency data for question 21b

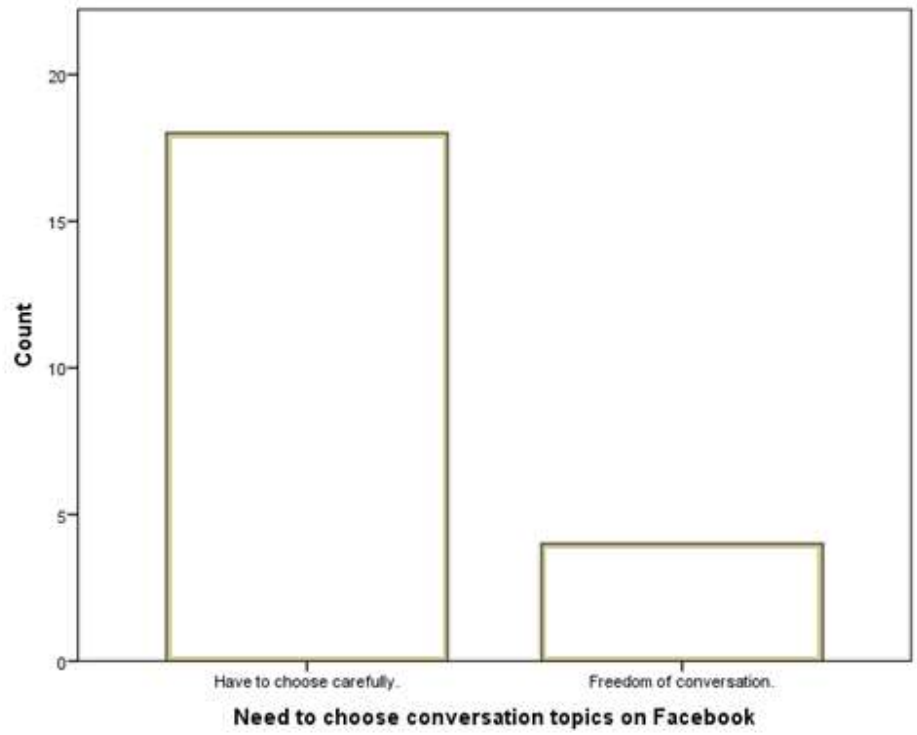


Figure 7.74: Distribution of responses

Need to choose conversation topics with students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	13	59.1	59.1	59.1
	Freedom of conversation.	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

Table 7.94: Frequency data for question 21c

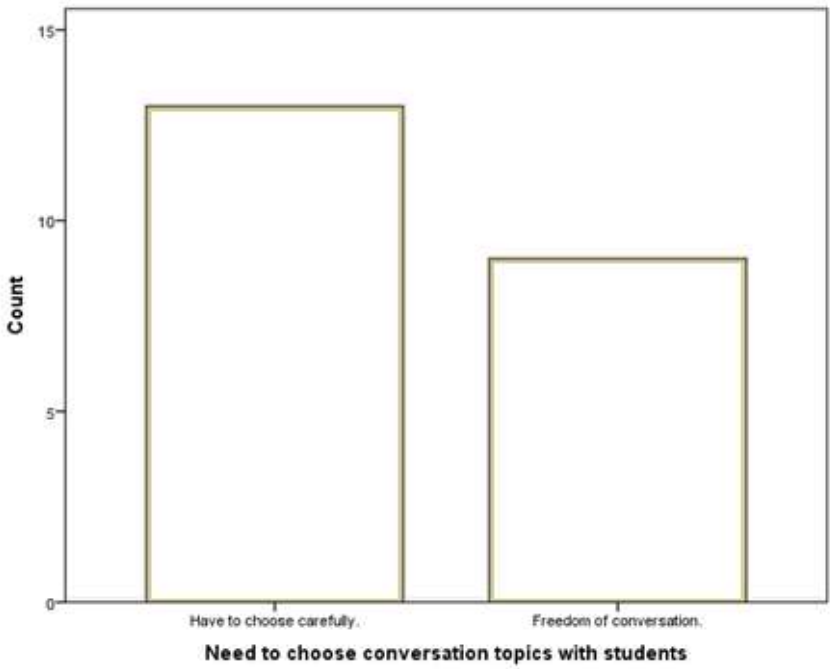


Figure 7.75: Distribution of responses

Need to choose conversation topics with friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	5	22.7	22.7	22.7
	Freedom of conversation.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.95: Frequency data for question 21d

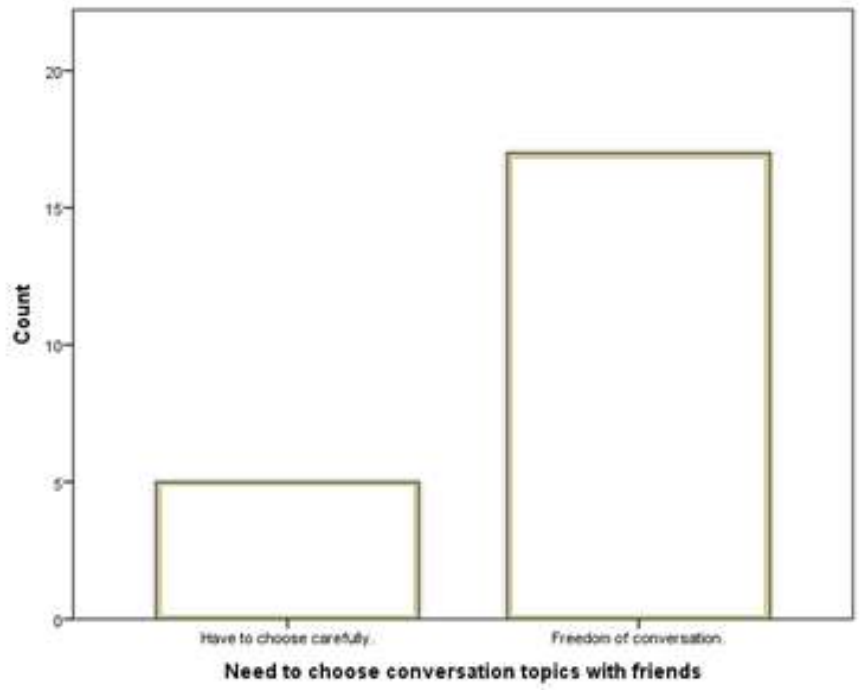


Figure 7.76: Distribution of responses

Need to choose conversation topics with work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	21	95.5	95.5	95.5
	Freedom of conversation.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.96: Frequency data for question 21e

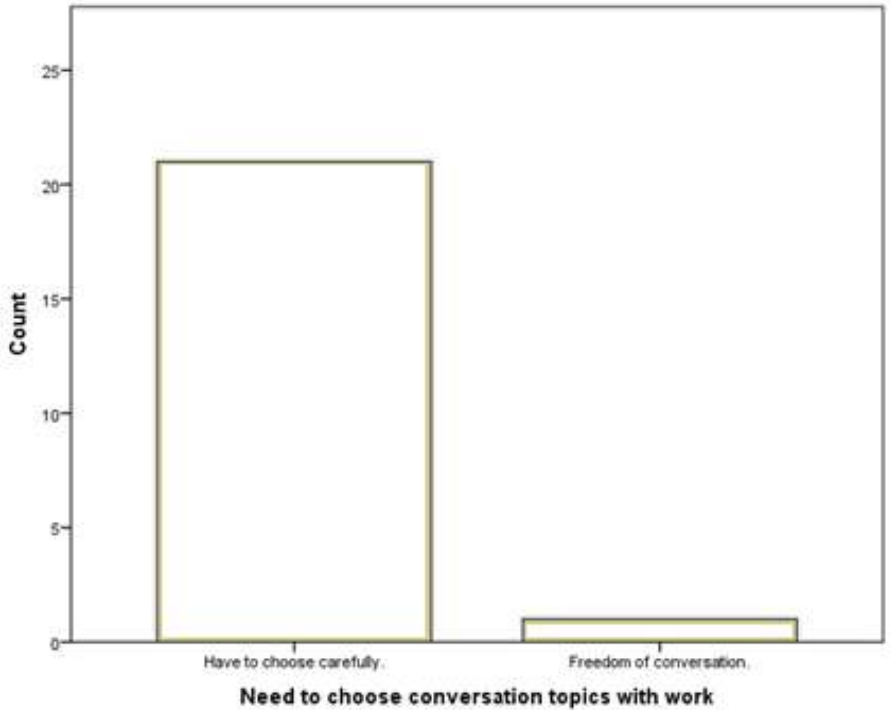


Figure 7.77: Distribution of responses

Need to choose conversation topics with university staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	18	81.8	81.8	81.8
	Freedom of conversation.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.97: Frequency data for question 21f

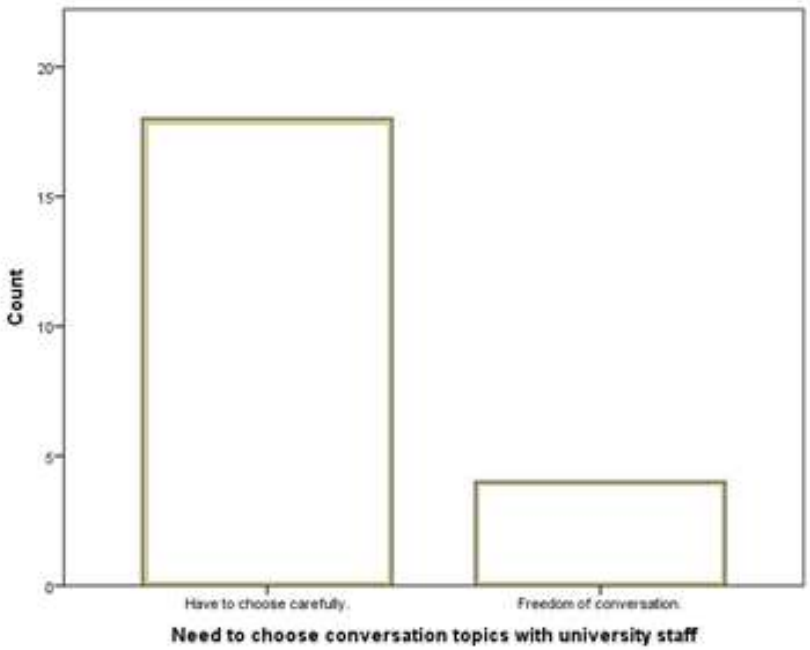


Figure 7.78: Distribution of responses

Need to choose conversation topics with partner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have to choose carefully.	3	13.6	13.6	13.6
	Freedom of conversation.	19	86.4	86.4	100.0
	Total	22	100.0	100.0	

Table 7.98: Frequency data for question 21g

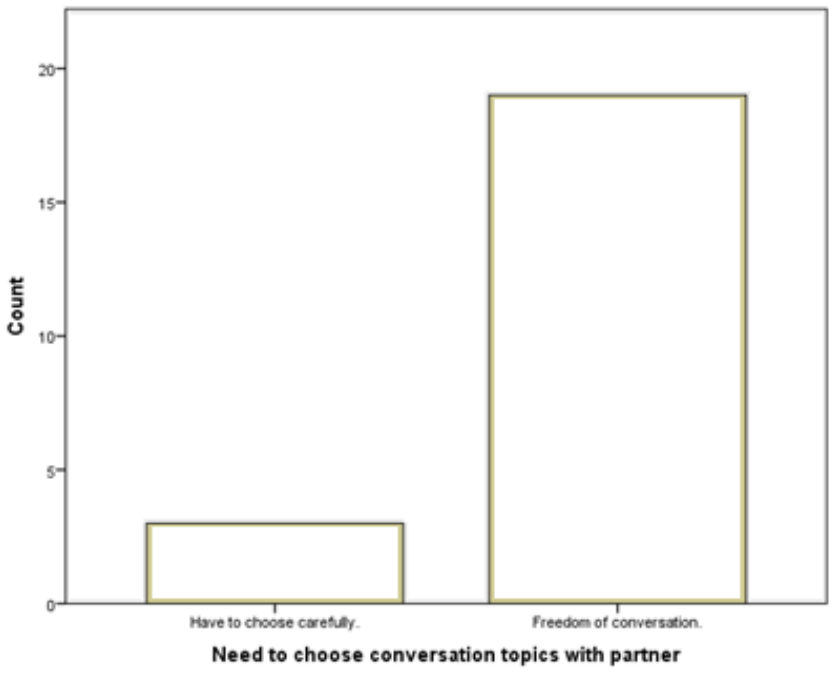


Figure 7.79: Distribution of responses

Question 23: whether participants have to hide their musical tastes

This question asks whether participants ever feel reluctant to share their musical tastes in several social groups; in the manager's office at work, when with an intimate friend or partner, at a family occasion such as a wedding, in front of fellow university students or classmates, with non-university friends in a busy café or bar, in the company of university staff and lecturers and on Facebook. Responses are, *sometimes I keep my true musical taste to myself* and, *I can always freely express my taste in music with this group of people*.

Statistics

		The need to hide musical taste at work	The need to hide musical taste from partner	The need to hide musical taste from family	The need to hide musical taste from fellow students	The need to hide musical taste from friends	The need to hide musical taste from university staff	The need to hide musical taste from others on Facebook
N	Valid	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0
Mean		.7727	.9545	.9091	.8182	.8636	.7727	.7727
Median		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Mode		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Skewness		-1.399	-4.690	-3.059	-1.773	-2.278	-1.399	-1.399
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491
Kurtosis		-.057	22.000	8.085	1.250	3.498	-.057	-.057
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953
Range		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minimum		.00	.00	.00	.00	.00	.00	.00
Maximum		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 7.99: Statistics for question 23

The need to hide musical taste at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	5	22.7	22.7	22.7
	No need to hide musical taste with this group.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.100: Frequency data for question 23a

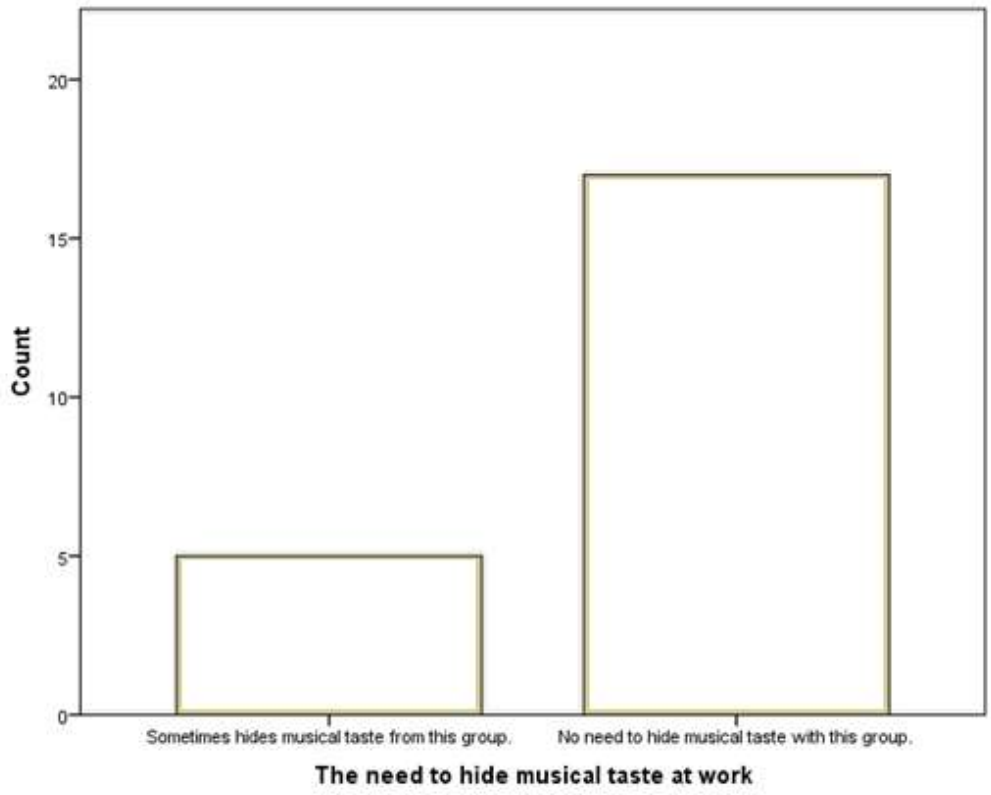


Figure 7.80: Distribution of responses

The need to hide musical taste from partner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	1	4.5	4.5	4.5
	No need to hide musical taste with this group.	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

Table 7.101: Frequency data for question 23b

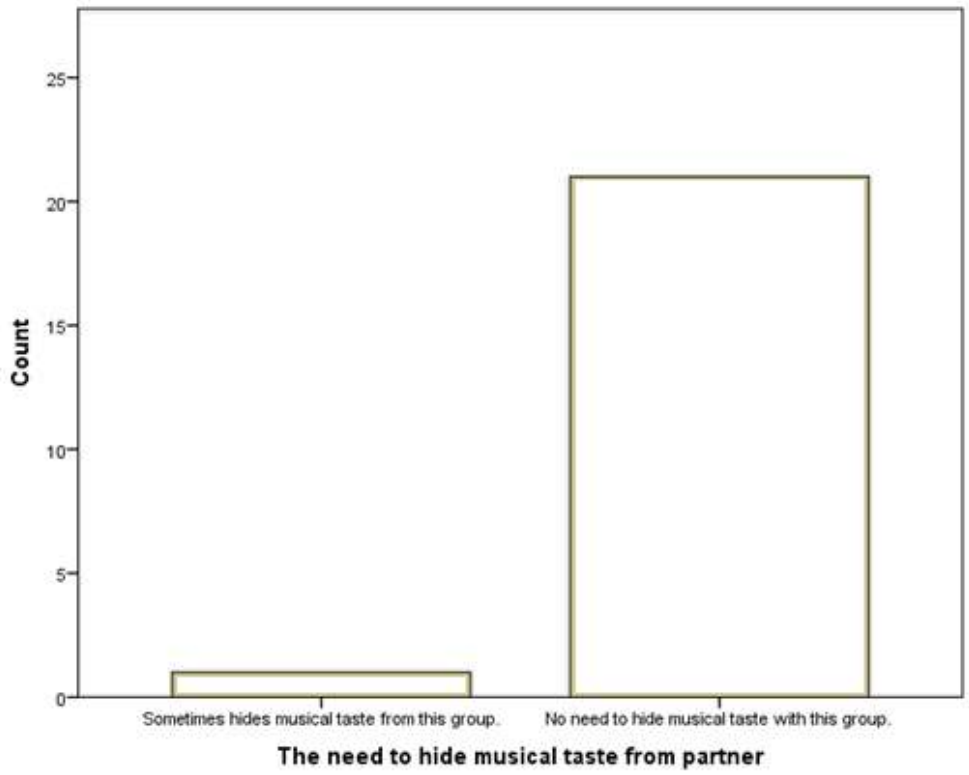


Figure 7.81: Distribution of responses

The need to hide musical taste from family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	2	9.1	9.1	9.1
	No need to hide musical taste with this group.	20	90.9	90.9	100.0
	Total	22	100.0	100.0	

Table 7.102: Frequency data for question 23c

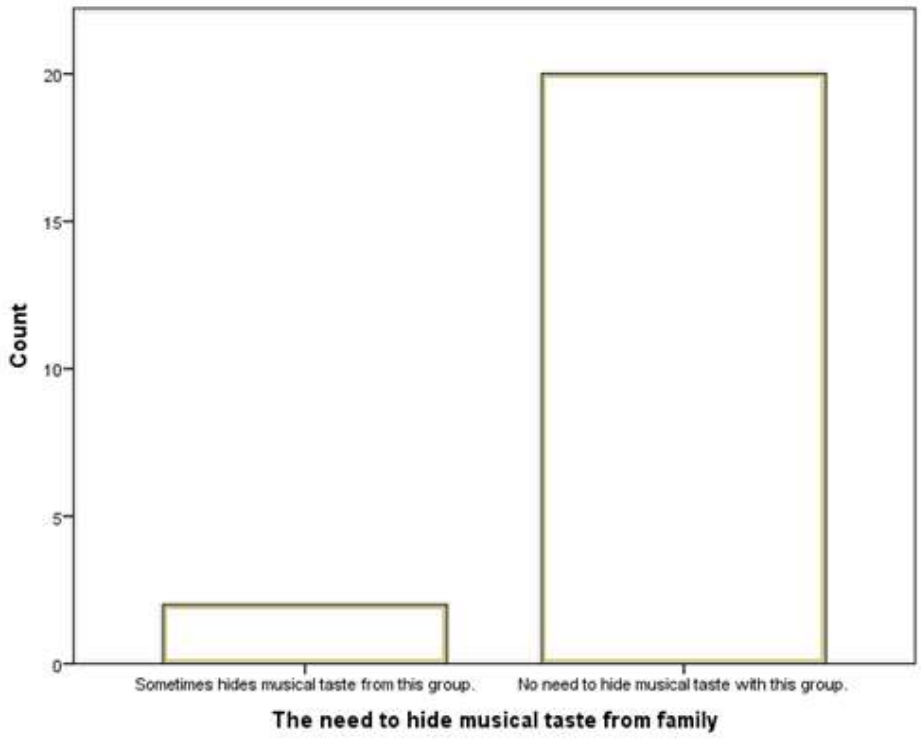


Figure 7.82: Distribution of responses

The need to hide musical taste from fellow students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	4	18.2	18.2	18.2
	No need to hide musical taste with this group.	18	81.8	81.8	100.0
	Total	22	100.0	100.0	

Table 7.103: Frequency data for question 23d

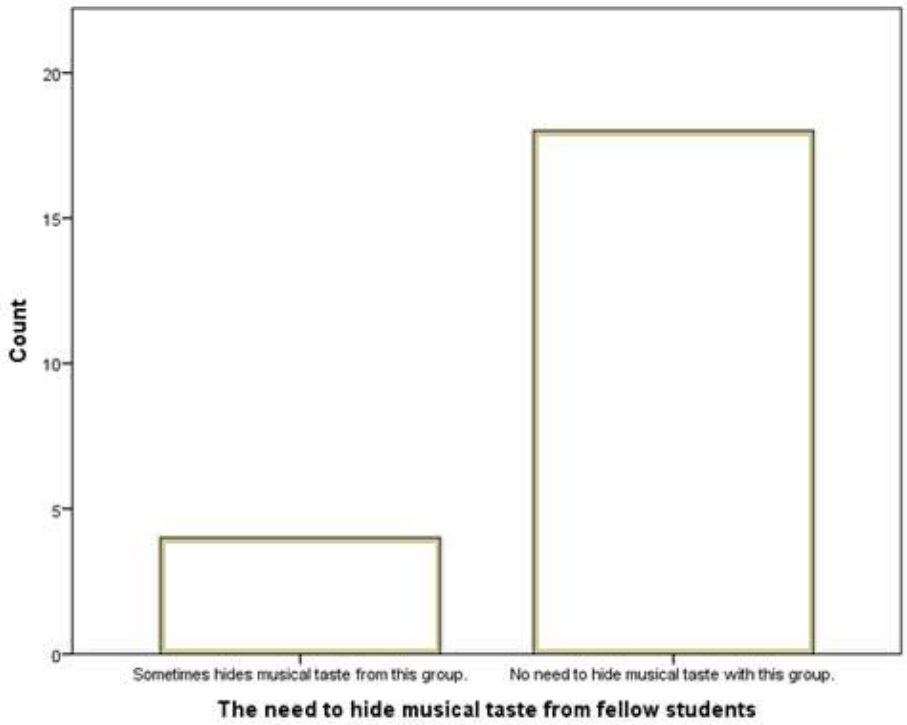


Figure 7.83: Distribution of responses

The need to hide musical taste from friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	3	13.6	13.6	13.6
	No need to hide musical taste with this group.	19	86.4	86.4	100.0
	Total	22	100.0	100.0	

Table 7.104: Frequency data for question 23e

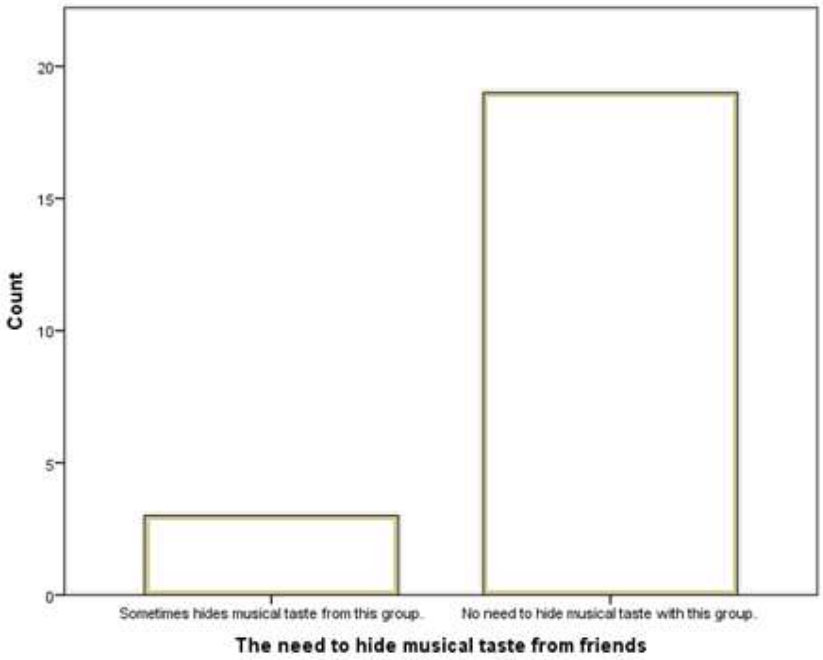


Figure 7.84: Distribution of responses

The need to hide musical taste from university staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	5	22.7	22.7	22.7
	No need to hide musical taste with this group.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.105: Frequency data for question 23f

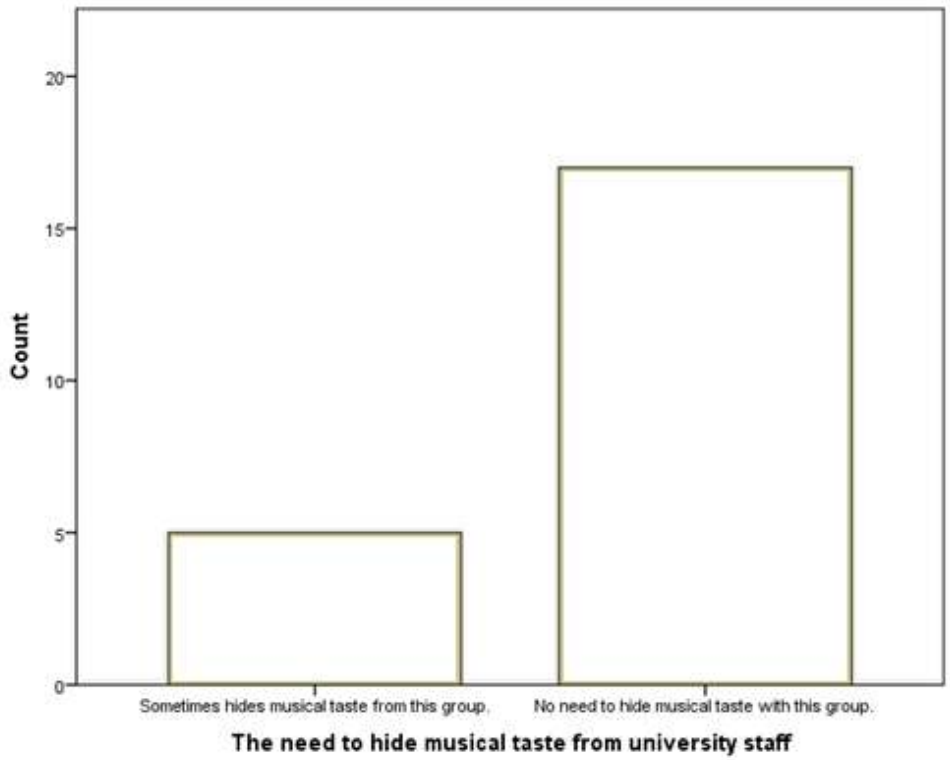


Figure 7.85: Distribution of responses

The need to hide musical taste from others on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes hides musical taste from this group.	5	22.7	22.7	22.7
	No need to hide musical taste with this group.	17	77.3	77.3	100.0
	Total	22	100.0	100.0	

Table 7.106: Frequency data for question 23g

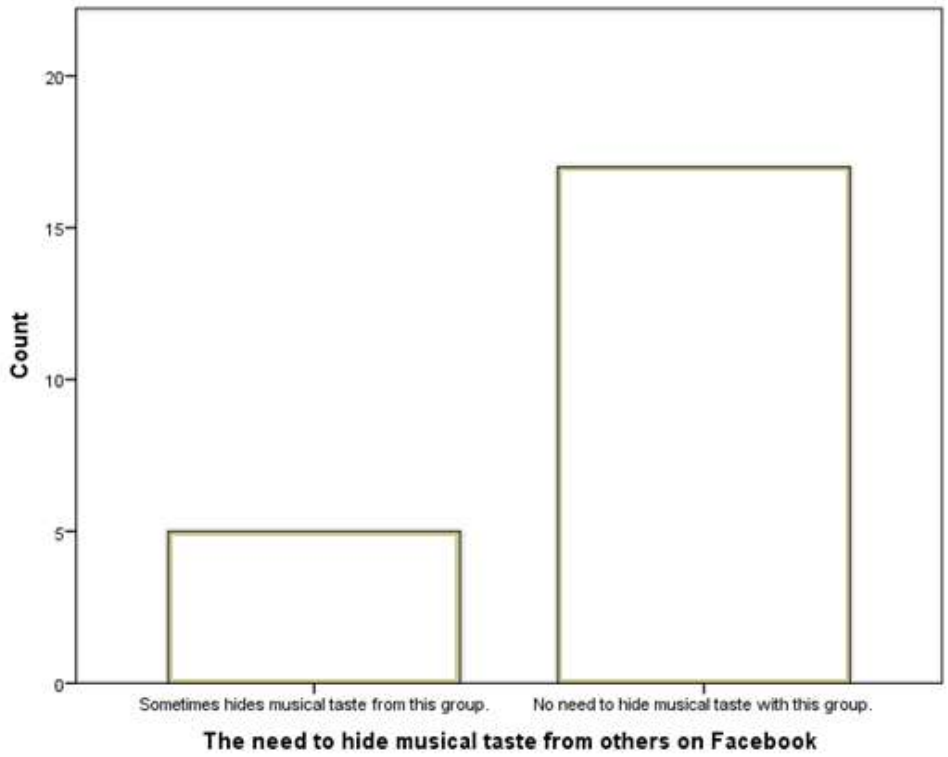


Figure 7.86: Distribution of responses

Question 24: social boundaries for jokes and stories

This question asks whether participants sense differing boundaries for jokes and stories when in different company, fellow university students or classmates, adult members of your family, management at your place of work, your friends outside of university, on Facebook, university staff and lecturers and an intimate friend or partner. Responses are, *No. This group does not like jokes or stories*, *No. I might embarrass myself or the group* or, *Yes. I can speak freely with this group*.

Statistics

		Freedom to tell any joke or story to other students	Freedom to tell any joke or story to family	Freedom to tell any joke or story at work	Freedom to tell any joke or story to friends	Freedom to tell any joke or story on Facebook	Freedom to tell any joke or story to university staff	Freedom to tell any joke or story to partner
N	Valid	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0
Mean		1.6364	1.4091	1.0000	1.9091	1.2727	1.0000	1.9091
Median		2.0000	1.5000	1.0000	2.0000	1.0000	1.0000	2.0000
Mode		2.00	2.00	1.00	2.00	1.00	1.00	2.00
Skewness		-.609	-.699	.000	-4.690	1.097	.000	-3.059
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491
Kurtosis		-1.802	-.429	.014	22.000	-.887	1.179	8.085
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953
Range		1.00	2.00	2.00	2.00	1.00	2.00	1.00
Minimum		1.00	.00	.00	.00	1.00	.00	1.00
Maximum		2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table 7.107: Statistics for question 24

Freedom to tell any joke or story to other students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, it might be embarrassing.	8	36.4	36.4	36.4
	Yes, I can tell any joke or story to this group.	14	63.6	63.6	100.0
	Total	22	100.0	100.0	

Table 7.108: Frequency data for question 24a

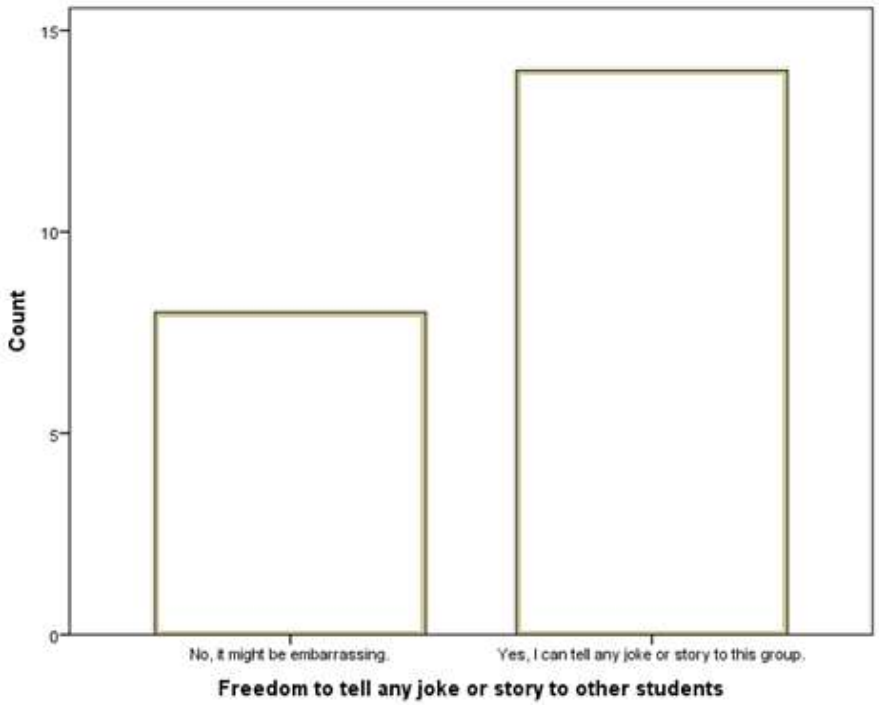


Figure 7.87: Distribution of responses

Freedom to tell any joke or story to family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, this group does not like jokes or stories.	2	9.1	9.1	9.1
	No, it might be embarrassing.	9	40.9	40.9	50.0
	Yes, I can tell any joke or story to this group.	11	50.0	50.0	100.0
	Total	22	100.0	100.0	

Table 7.109: Frequency data for question 24b

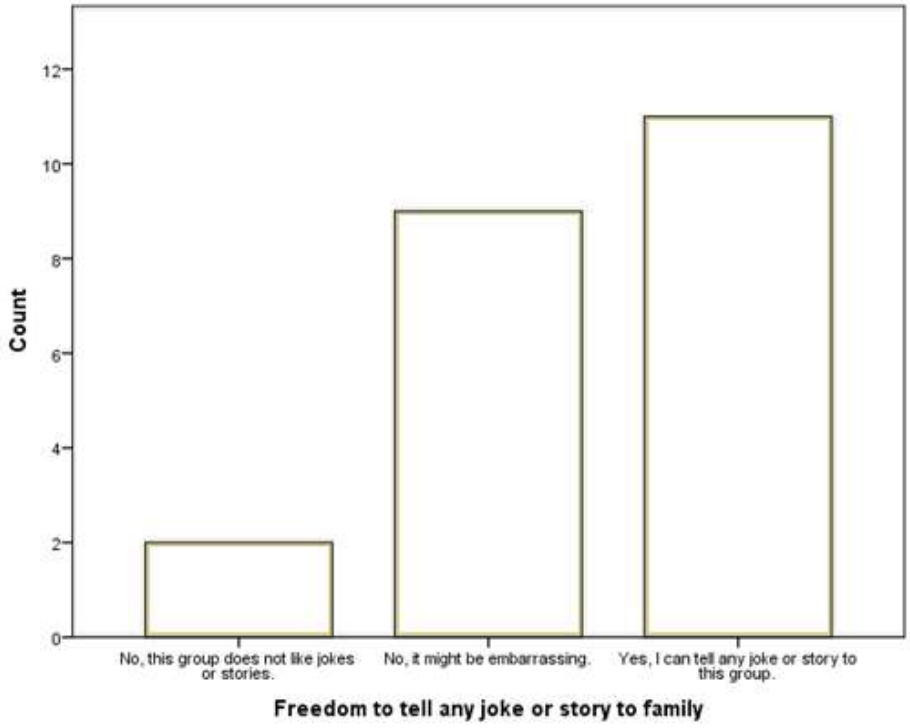


Figure 7.88: Distribution of responses

Freedom to tell any joke or story at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, this group does not like jokes or stories.	4	18.2	18.2	18.2
	No, it might be embarrassing.	14	63.6	63.6	81.8
	Yes, I can tell any joke or story to this group.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.110: Frequency data for question 24c

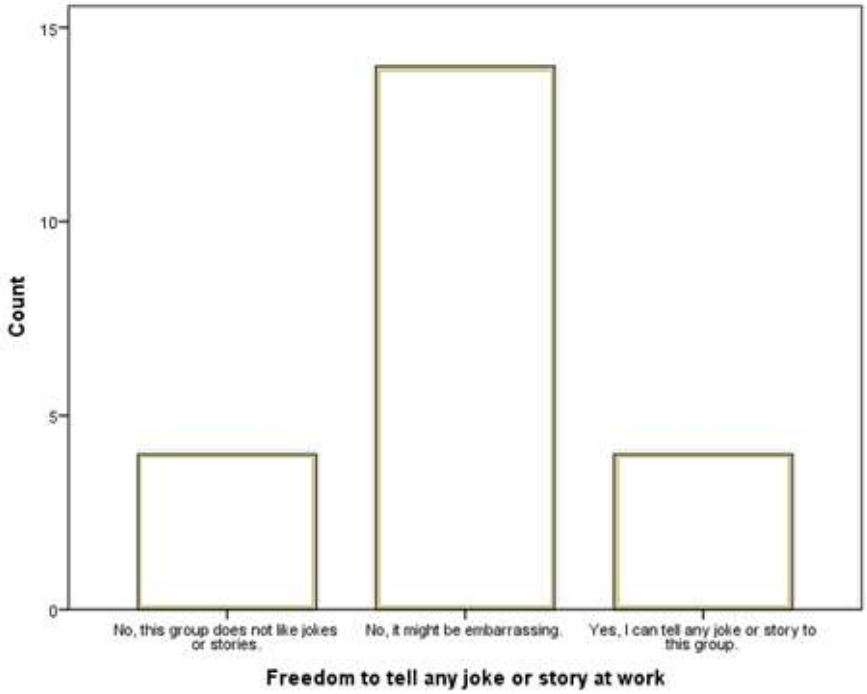


Figure 7.89: Distribution of responses

Freedom to tell any joke or story to friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, this group does not like jokes or stories.	1	4.5	4.5	4.5
	Yes, I can tell any joke or story to this group.	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

Table 7.111: Frequency data for question 24d

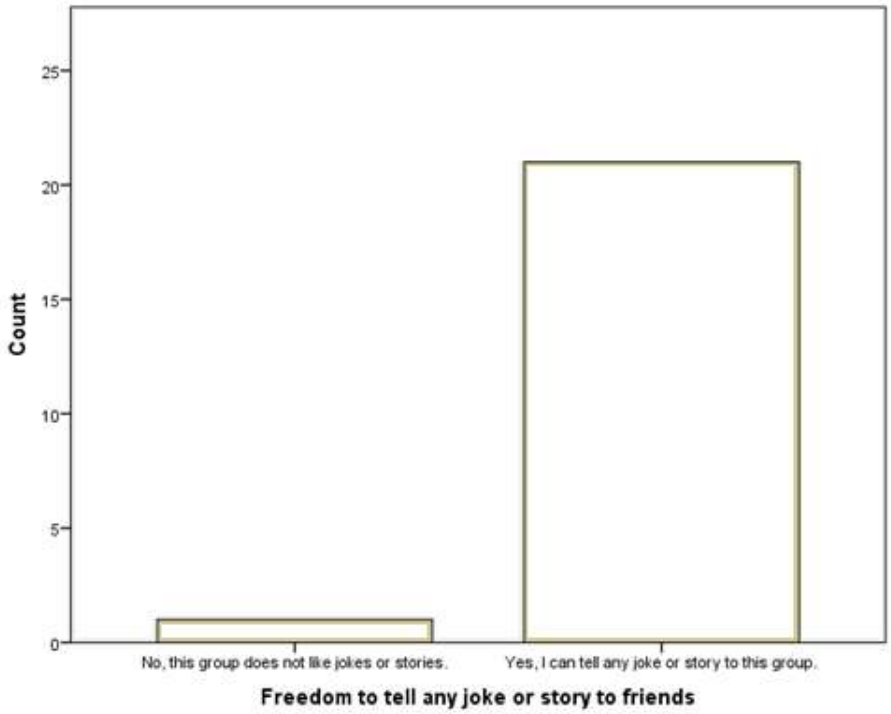


Figure 7.90: Distribution of responses

Freedom to tell any joke or story on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, it might be embarrassing.	16	72.7	72.7	72.7
	Yes, I can tell any joke or story to this group.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.112: Frequency data for question 24e

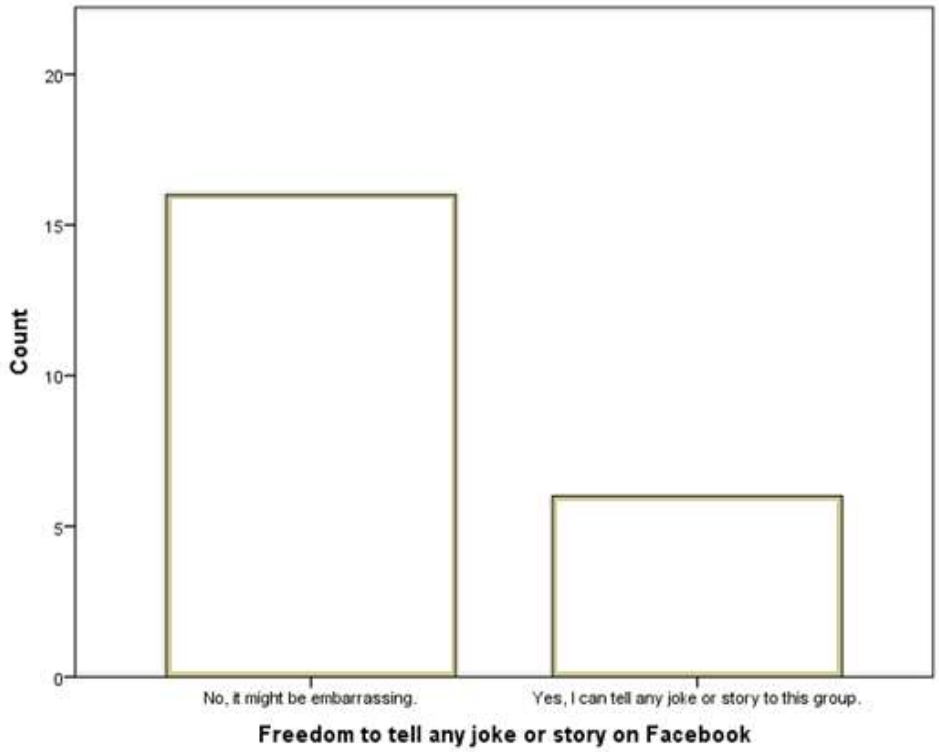


Figure 7.91: Distribution of responses

Freedom to tell any joke or story to university staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, this group does not like jokes or stories.	3	13.6	13.6	13.6
	No, it might be embarrassing.	16	72.7	72.7	86.4
	Yes, I can tell any joke or story to this group.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.113: Frequency data for question 24f

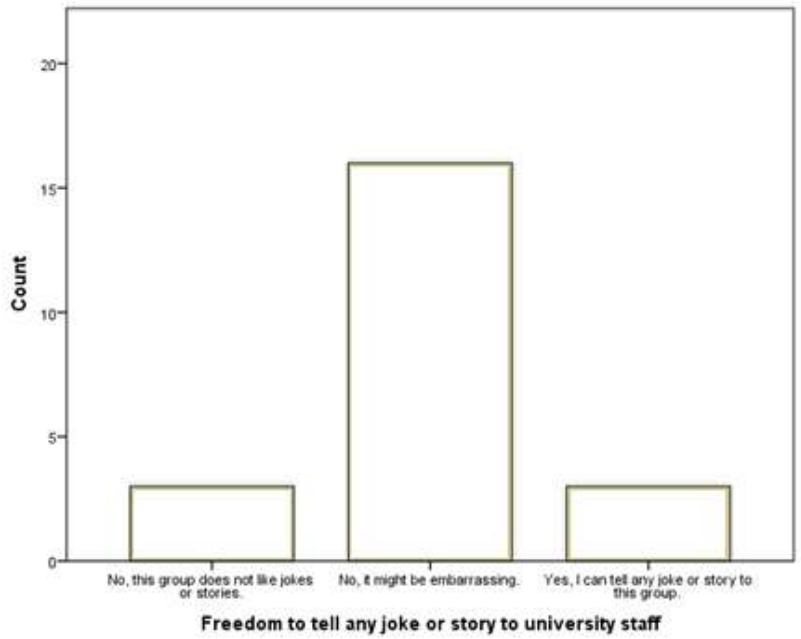


Figure 7.92: Frequency distribution of responses

Freedom to tell any joke or story to partner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, it might be embarrassing.	2	9.1	9.1	9.1
	Yes, I can tell any joke or story to this group.	20	90.9	90.9	100.0
	Total	22	100.0	100.0	

Table 7.114: Frequency data for question 24g

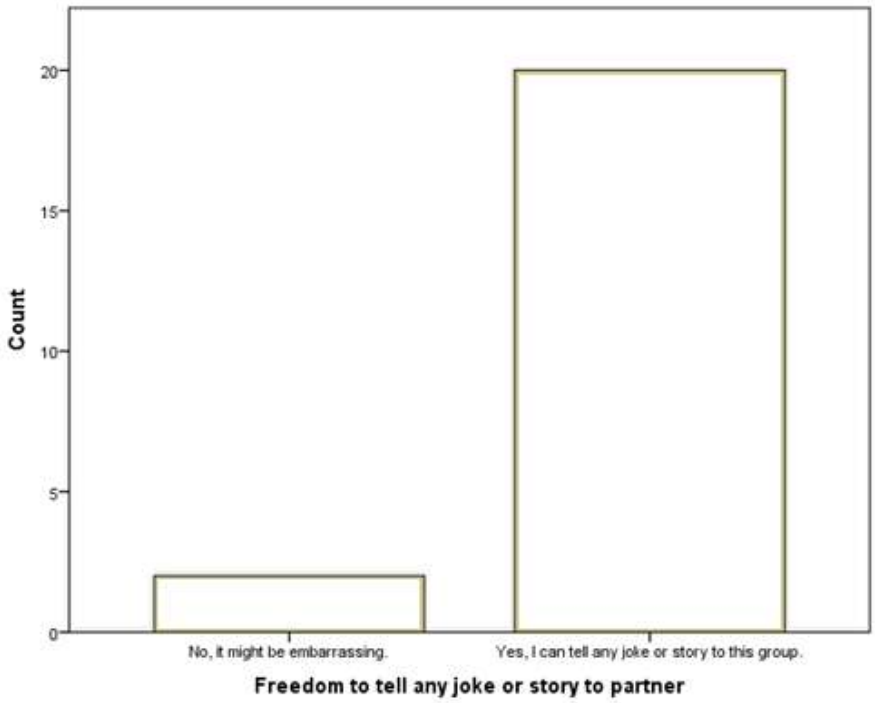


Figure 7.93: Distribution of responses

Question 25: social boundaries for films and videos

This question seeks whether participants sense differing boundaries for films and videos when in different company, specifically whether they felt that there were some films or videos that could not be shown to the following groups; fellow university students or classmates, with friends outside of university, with adult members of your family, with an intimate friend or partner, on Facebook, with management at work and with university staff and lecturers. Responses are *No, Yes, it could cause embarrassment* and *Yes, some other reason*.

Statistics

		Existence of boundaries for videos with fellow students.	Existence of boundaries for videos with friends.	Existence of boundaries for videos with family.	Existence of boundaries for videos with a partner.	Existence of boundaries for videos on Facebook.	Existence of boundaries for videos at work.	Existence of boundaries for videos with university staff.
N	Valid	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0
Mean		.7273	.5455	.8182	.4545	1.0455	1.0455	1.0909
Median		.5000	.0000	1.0000	.0000	1.0000	1.0000	1.0000
Mode		.00	.00	.00	.00	2.00	1.00	1.00[a]
Skewness		.574	1.064	.377	1.341	-.091	-.083	-.175
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491
Kurtosis		-1.282	-.498	-1.540	.378	-1.606	-1.319	-1.437
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953
Range		2.00	2.00	2.00	2.00	2.00	2.00	2.00
Minimum		.00	.00	.00	.00	.00	.00	.00
Maximum		2.00	2.00	2.00	2.00	2.00	2.00	2.00

a. Multiple modes exist. The smallest value is shown

Table 7.115: Statistics for question 25

Existence of boundaries for videos with fellow students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	11	50.0	50.0	50.0
	Yes, it may cause embarrassment.	6	27.3	27.3	77.3
	There is another reason why not to show this.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.116: Frequency data for question 25a

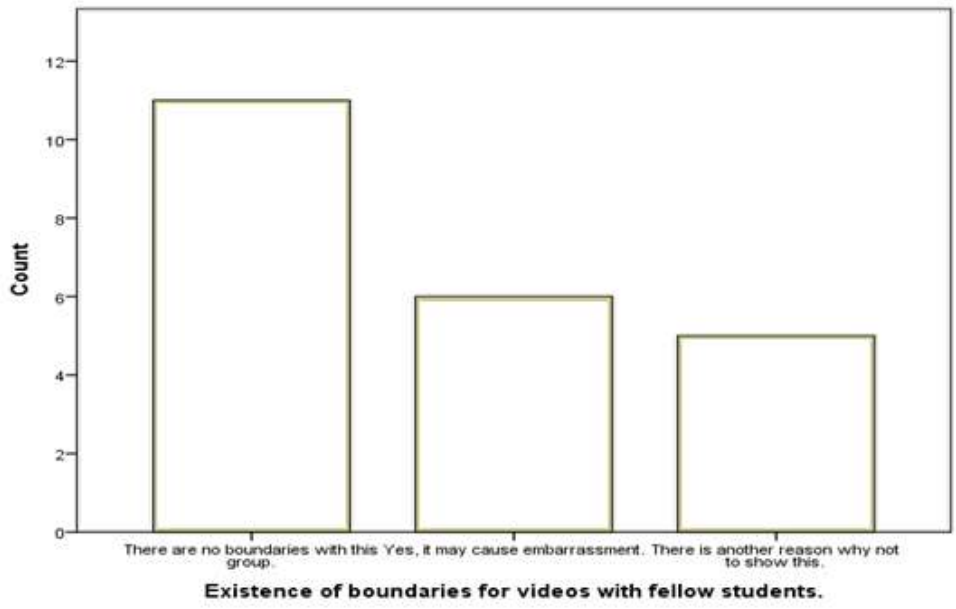


Figure 7.94: Frequency distribution of responses

Existence of boundaries for videos with friends.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	14	63.6	63.6	63.6
	Yes, it may cause embarrassment.	4	18.2	18.2	81.8
	There is another reason why not to show this.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.117: Frequency data for question 25b

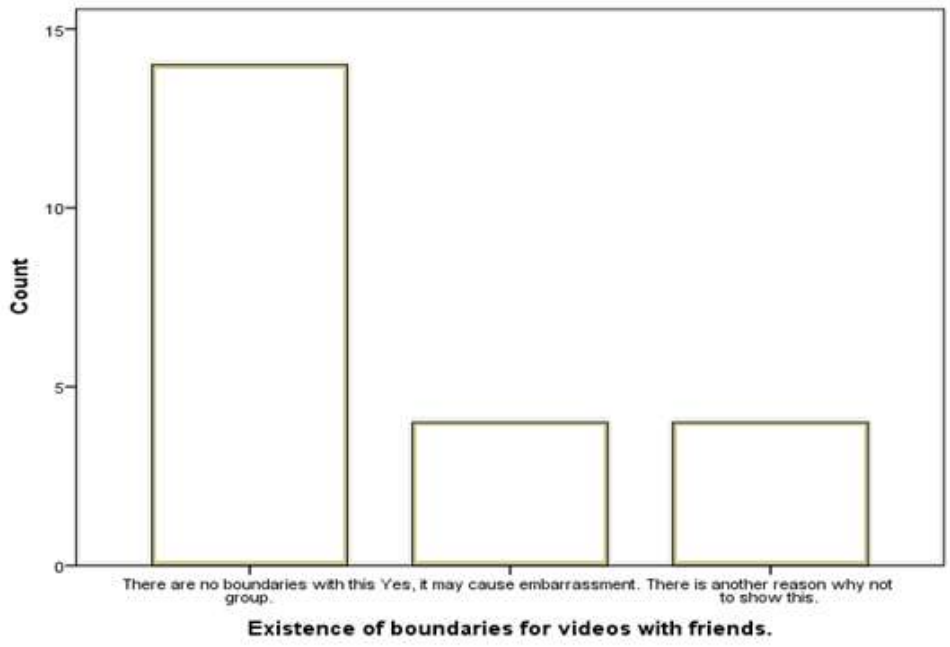


Figure 7.95: Frequency distribution of responses

Existence of boundaries for videos with family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	10	45.5	45.5	45.5
	Yes, it may cause embarrassment.	6	27.3	27.3	72.7
	There is another reason why not to show this.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.118: Frequency data for question 25c

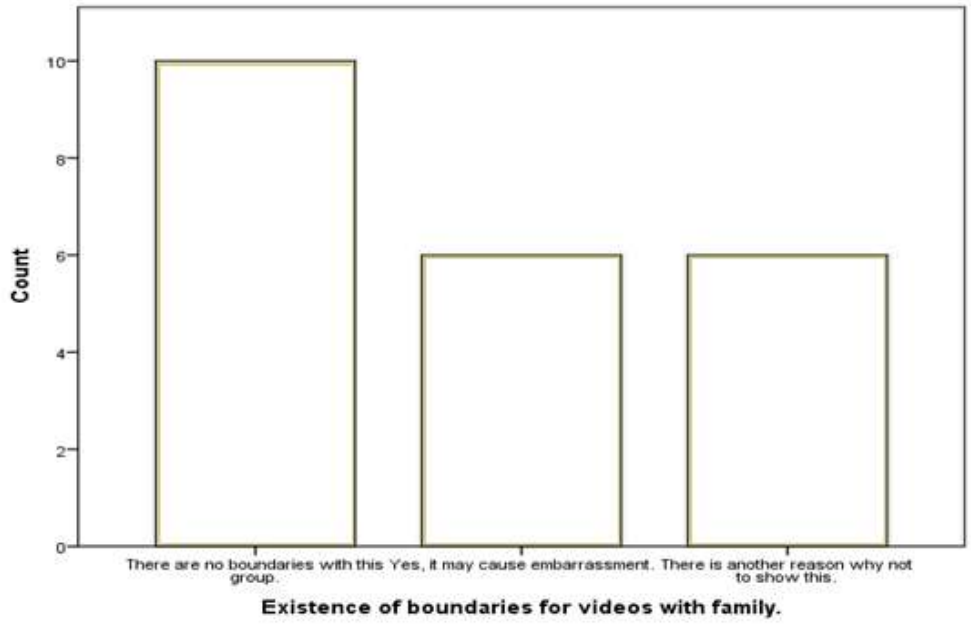


Figure 7.96: Frequency distribution of responses

Existence of boundaries for videos with a partner.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	15	68.2	68.2	68.2
	Yes, it may cause embarrassment.	4	18.2	18.2	86.4
	There is another reason why not to show this.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.119: Frequency data for question 25d

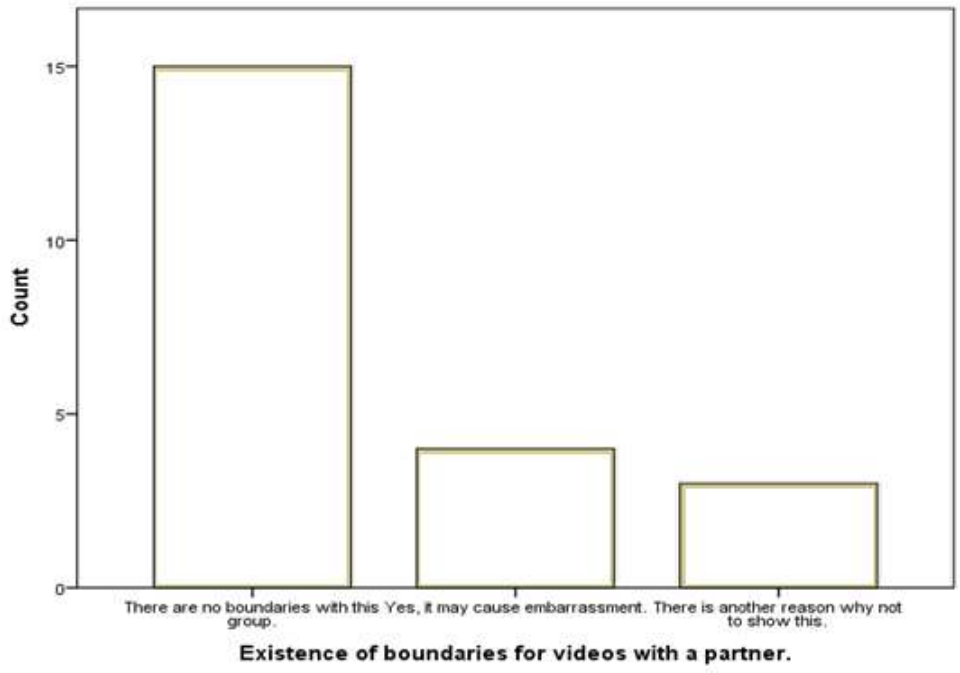


Figure 7.97: Frequency distribution of responses

Existence of boundaries for videos on Facebook.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	7	31.8	31.8	31.8
	Yes, it may cause embarrassment.	7	31.8	31.8	63.6
	There is another reason why not to show this.	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 7.120: Frequency data for question 25e

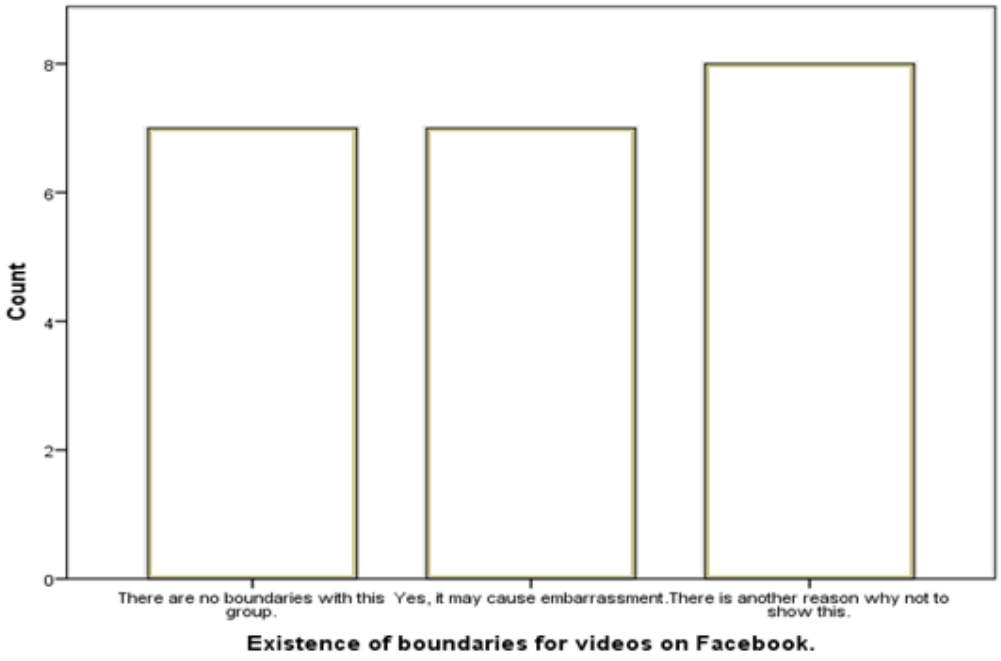


Figure 7.98: Frequency distribution of responses

Existence of boundaries for videos at work.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	6	27.3	27.3	27.3
	Yes, it may cause embarrassment.	9	40.9	40.9	68.2
	There is another reason why not to show this.	7	31.8	31.8	100.0
	Total	22	100.0	100.0	

Table 7.121: Frequency data for question 25f

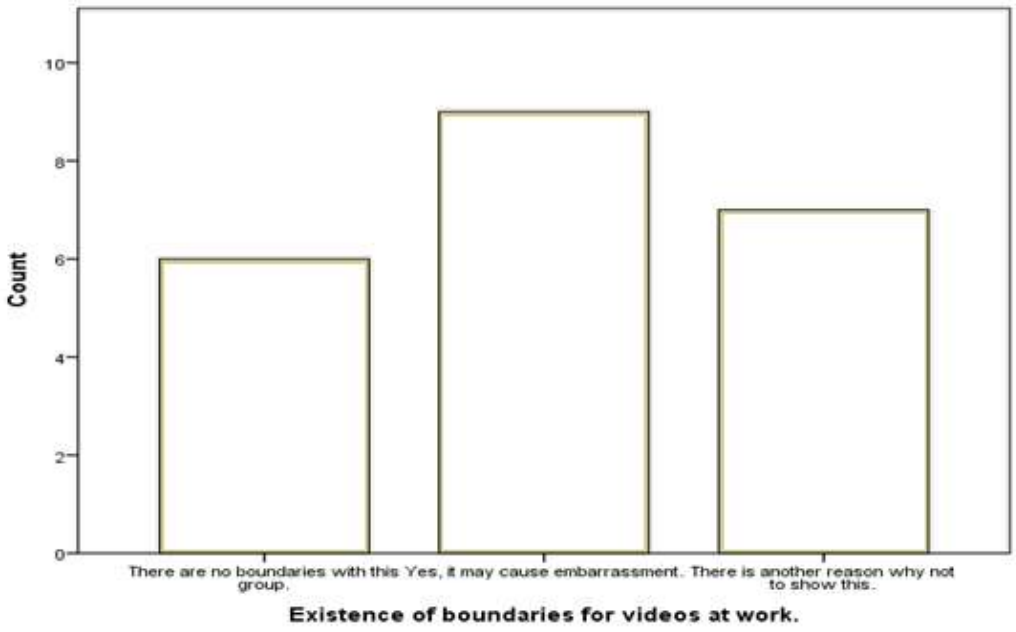


Figure 7.99: Frequency distribution of responses

Existence of boundaries for videos with university staff.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	There are no boundaries with this group.	6	27.3	27.3	27.3
	Yes, it may cause embarrassment.	8	36.4	36.4	63.6
	There is another reason why not to show this.	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 7.122: Frequency data for question 25g

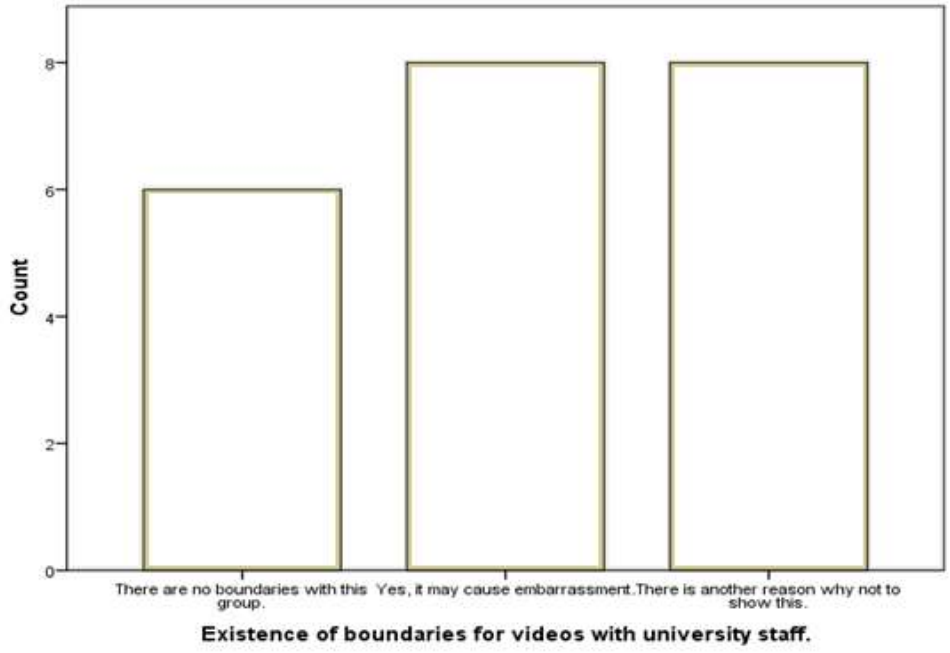


Figure 7.100: Frequency distribution of responses

Question 26: social boundaries for pictures and photographs

This question asks whether participants sense differing boundaries for pictures and photographs when in different company, specifically if there were pictures or photographs that they could not share with the following groups; with adult family members, with fellow university students or classmates, On Facebook, with friends outside of university, with an intimate friend or partner, with university staff and lecturers and with management at your place of work. Responses are; *No, Yes, it could cause embarrassment, Yes, some other reason.*

Statistics

		Social boundary for pictures and photos with family	Social boundary for pictures and photos with fellow students	Social boundary for pictures and photos on Facebook	Social boundary for pictures and photos with friends	Social boundary for pictures and photos with a partner	Social boundary for pictures and photos with university staff	Social boundary for pictures and photos at work
N	Valid	22	22	22	22	22	22	22
	Missing	0	0	0	0	0	0	0
Mean		1.8636	1.9545	2.0455	1.9545	1.6818	2.2727	2.2273
Median		2.0000	2.0000	2.0000	2.0000	1.5000	2.0000	2.0000
Mode		2.00	2.00	2.00	2.00	1.00	2.00	2.00
Skewness		.203	.069	-.732	.069	.652	.109	.264
Std. Error of Skewness		.491	.491	.491	.491	.491	.491	.491
Kurtosis		-.847	-.929	.862	-.929	-.992	-.264	.136
Std. Error of Kurtosis		.953	.953	.953	.953	.953	.953	.953
Range		2.00	2.00	3.00	2.00	2.00	2.00	2.00
Minimum		1.00	1.00	.00	1.00	1.00	1.00	1.00
Maximum		3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table 7.123: Statistics for question 26

Social boundary for pictures and photos with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	7	31.8	31.8	31.8
	An embarrassment boundary exists for this group.	11	50.0	50.0	81.8
	Another reason exists why I can't share with this group.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.124: Frequency data for question 26a

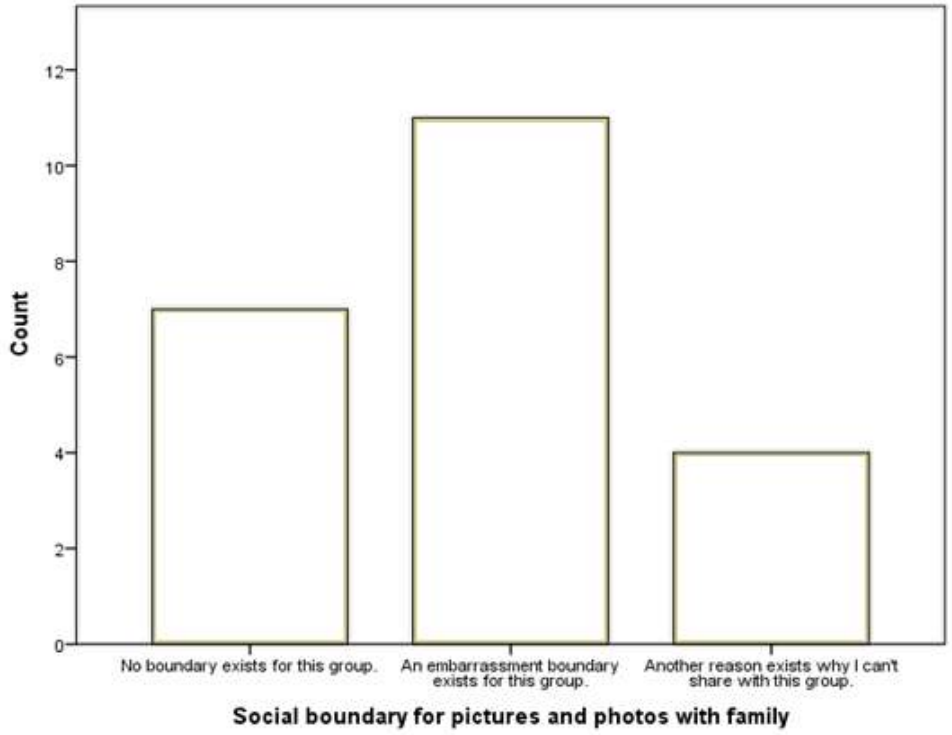


Figure 7.101: Frequency distribution of responses

Social boundary for pictures and photos with fellow students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	6	27.3	27.3	27.3
	An embarrassment boundary exists for this group.	11	50.0	50.0	77.3
	Another reason exists why I can't share with this group.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.125: Frequency data for question 26b

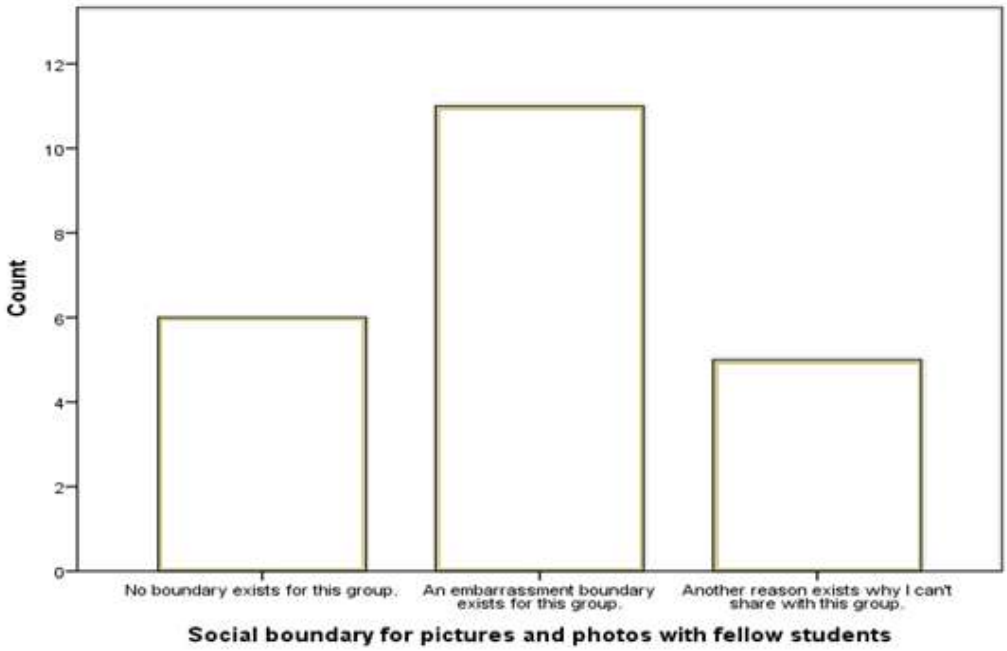


Figure 7.102: Frequency distribution of responses

Social boundary for pictures and photos on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	No boundary exists for this group.	3	13.6	13.6	18.2
	An embarrassment boundary exists for this group.	12	54.5	54.5	72.7
	Another reason exists why I can't share with this group.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.126: Frequency data for question 26c

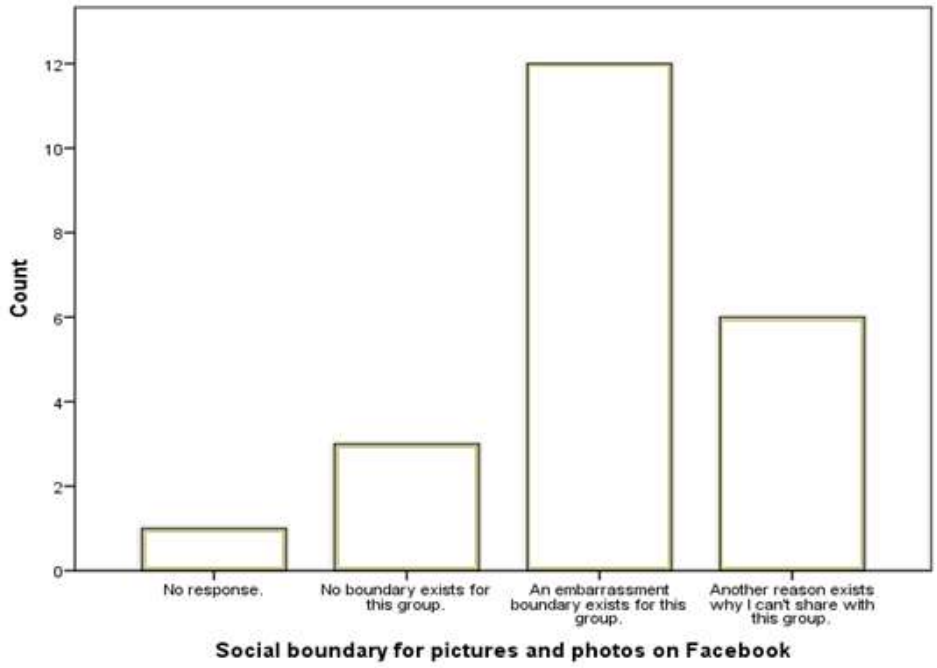


Figure 7.103: Frequency distribution of responses

Social boundary for pictures and photos with friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	6	27.3	27.3	27.3
	An embarrassment boundary exists for this group.	11	50.0	50.0	77.3
	Another reason exists why I can't share with this group.	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table 7.127: Frequency data for question 26d

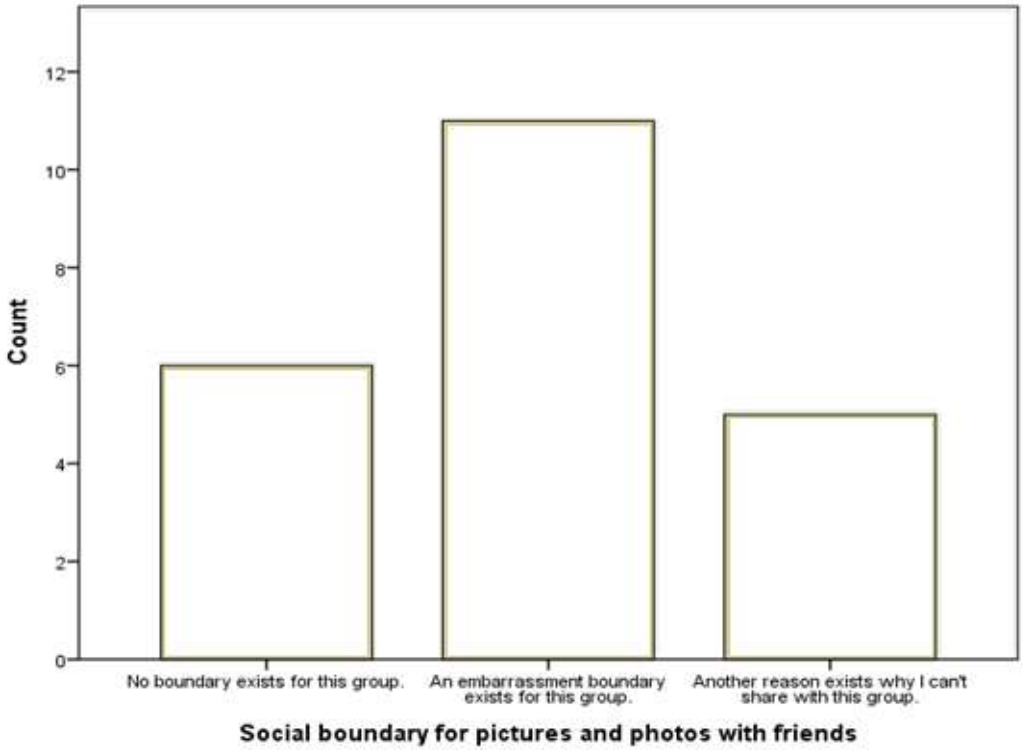


Figure 7.104: Frequency distribution of responses

Social boundary for pictures and photos with a partner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	11	50.0	50.0	50.0
	An embarrassment boundary exists for this group.	7	31.8	31.8	81.8
	Another reason exists why I can't share with this group.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.128: Frequency data for question 26e

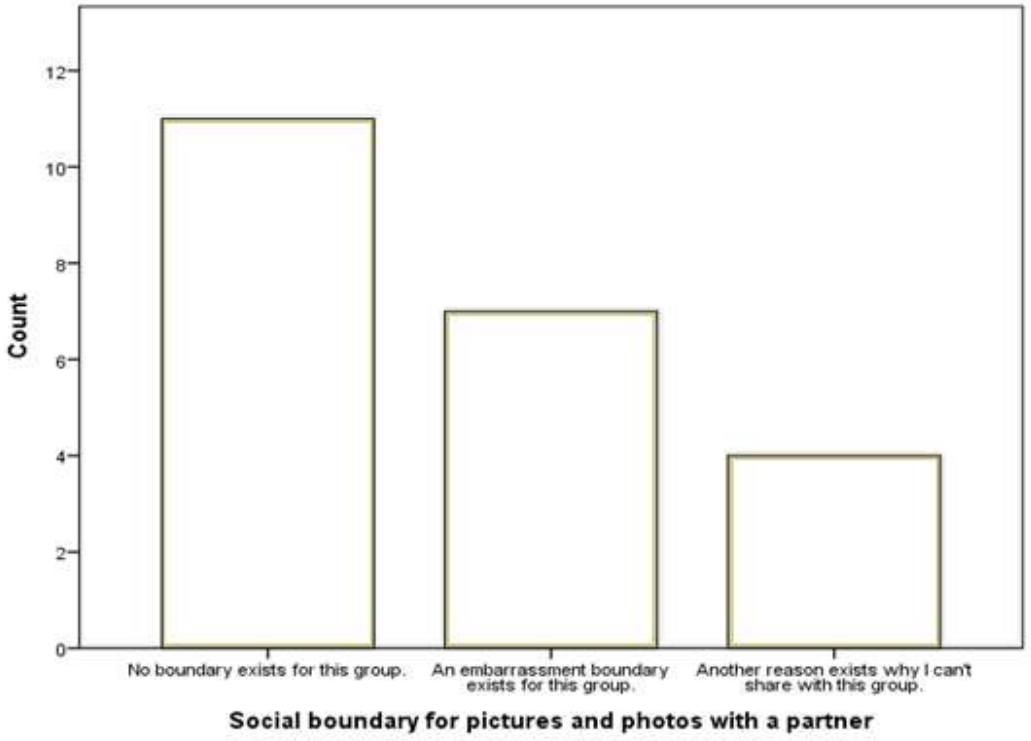


Figure 7.105: Frequency distribution of responses

Social boundary for pictures and photos with university staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	1	4.5	4.5	4.5
	An embarrassment boundary exists for this group.	14	63.6	63.6	68.2
	Another reason exists why I can't share with this group.	7	31.8	31.8	100.0
	Total	22	100.0	100.0	

Table 7.129: Frequency data for question 26f

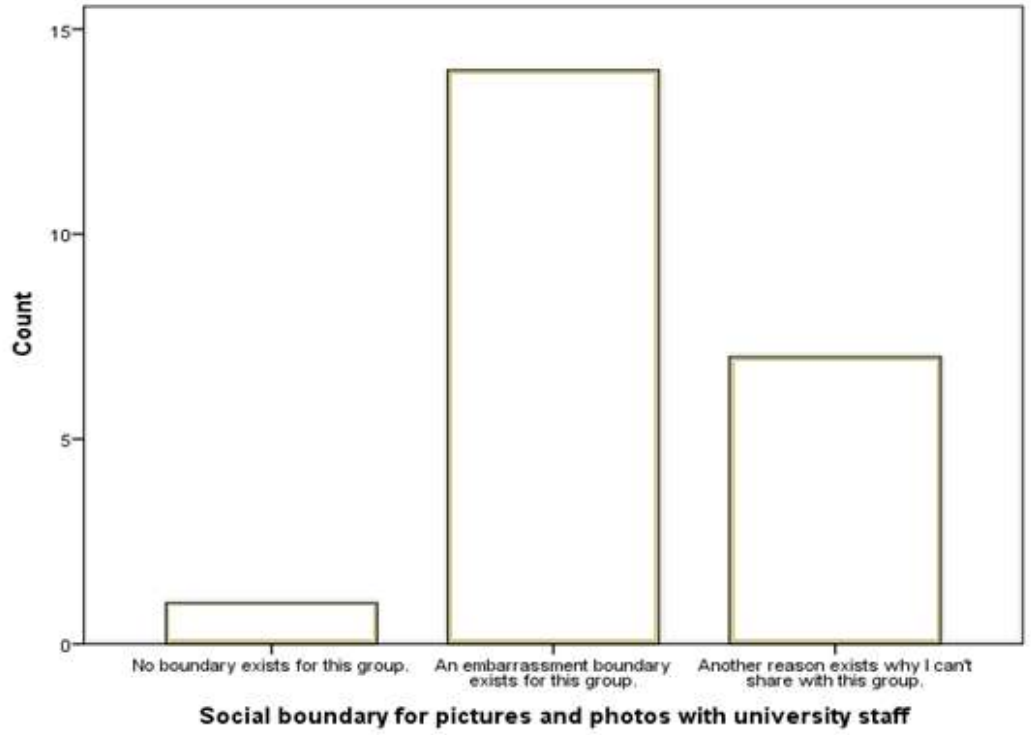


Figure 7.106: Frequency distribution of responses

Social boundary for pictures and photos at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No boundary exists for this group.	1	4.5	4.5	4.5
	An embarrassment boundary exists for this group.	15	68.2	68.2	72.7
	Another reason exists why I can't share with this group.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.130: Frequency data for question 26g

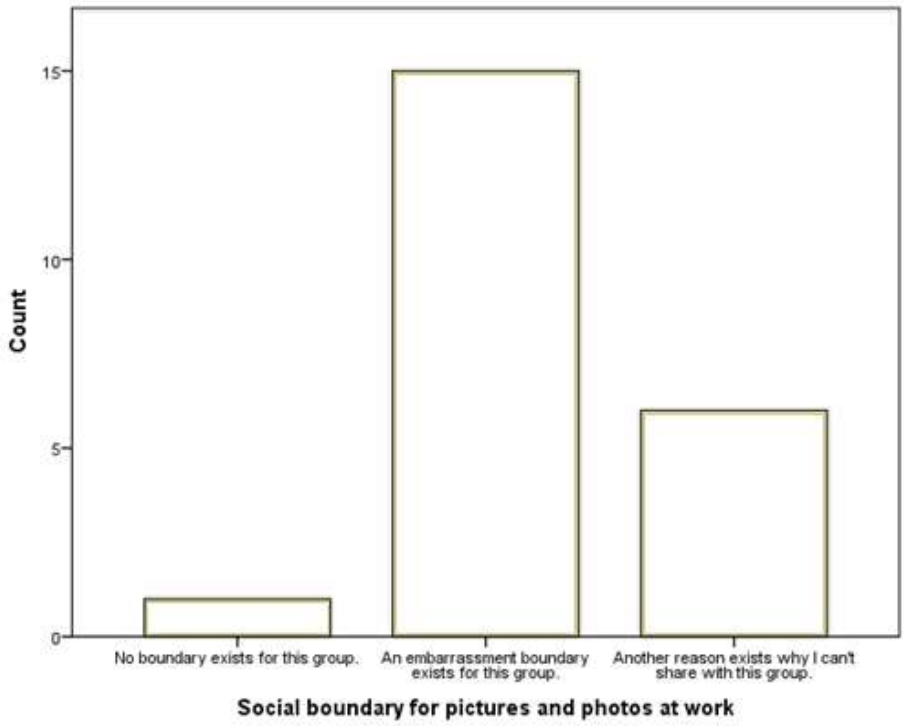


Figure 7.107: Frequency distribution of responses

Question 28: self embarrassment in social settings

This question asks whether participants have embarrassed themselves in the following social settings; in a busy café or bar with friends outside of university, at a family occasion such as a wedding, on Facebook, in a setting such as a busy café or bar with friends outside of university. A transcription error[1] resulted in two identical social categories being made available in this question. Responses are; *Never, Occasionally, Sometimes, Frequently, Always.*

Statistics

		Has embarrassed themselves with friends (1)	Has embarrassed themselves with family	Has embarrassed themselves on Facebook	Has embarrassed themselves with friends (2)
N	Valid	22	22	22	22
	Missing	0	0	0	0
Mean		1.4545	1.0909	1.1364	1.4545
Median		1.0000	1.0000	1.0000	1.5000
Mode		1.00	.00	.00[a]	2.00
Skewness		.136	.553	.352	-.035
Std. Error of Skewness		.491	.491	.491	.491
Kurtosis		-.955	-1.279	-.900	-.820
Std. Error of Kurtosis		.953	.953	.953	.953
Range		3.00	3.00	3.00	3.00
Minimum		.00	.00	.00	.00
Maximum		3.00	3.00	3.00	3.00

a. Multiple modes exist. The smallest value is shown

Table 7.131: Statistics for question 28

[1] This error also occurs in Q29
[2] This error also occurs in Q28
[3] Manual methods here are unproductive as the volume of data received from his point is limited by Facebook epolicy and therefore , at this point, an invalid avenue of exploration, however later automated Facebook page crawling may mean that the entire Facebook archive allowable could be farmed.

Has embarrassed themselves with friends (1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Occasionally.	8	36.4	36.4	54.5
	Sometimes.	6	27.3	27.3	81.8
	Frequently.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.132: Frequency data for question 28a

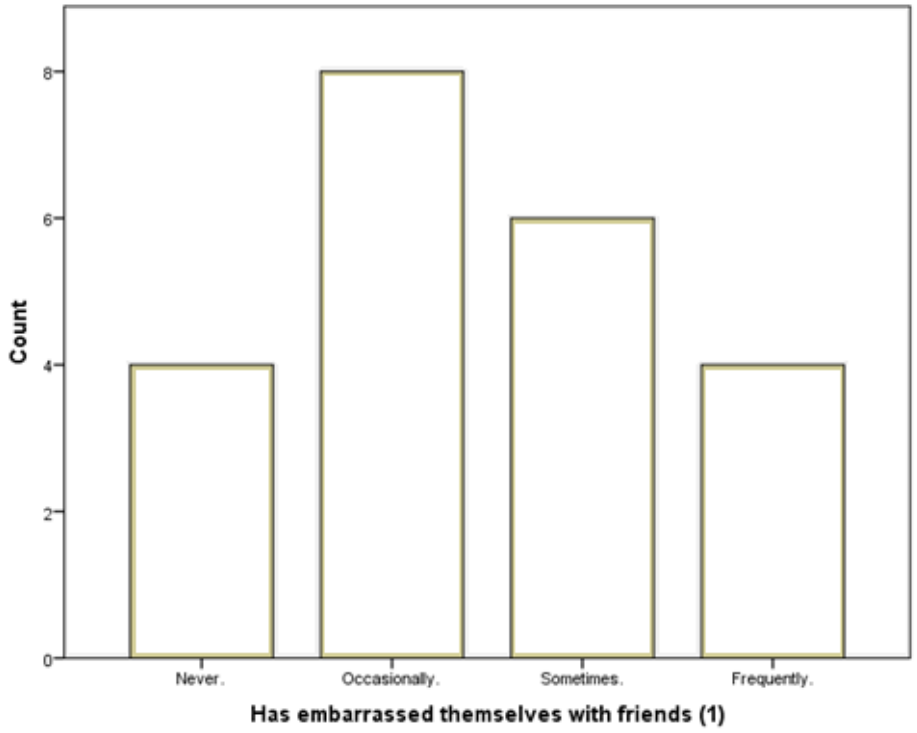


Figure 7.108: Frequency distribution of responses

Has embarrassed themselves with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	10	45.5	45.5	45.5
	Occasionally.	4	18.2	18.2	63.6
	Sometimes.	4	18.2	18.2	81.8
	Frequently.	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

Table 7.133: Frequency data for question 28b

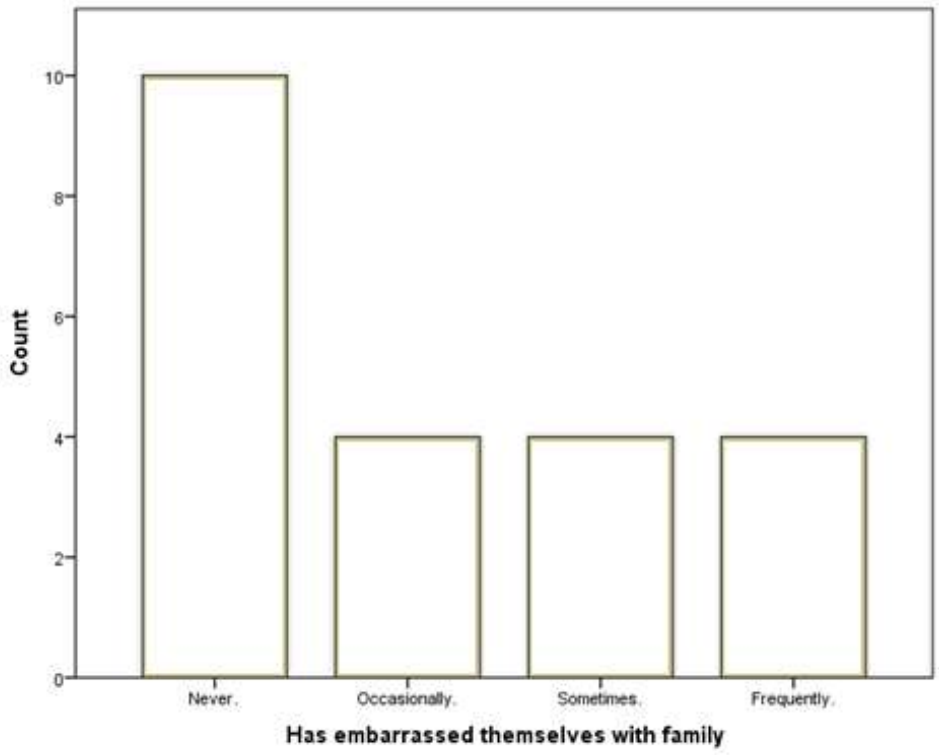


Figure 7.109: Frequency distribution of responses

Has embarrassed themselves on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	7	31.8	31.8	31.8
	Occasionally.	7	31.8	31.8	63.6
	Sometimes.	6	27.3	27.3	90.9
	Frequently.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.134: Frequency data for question 28c

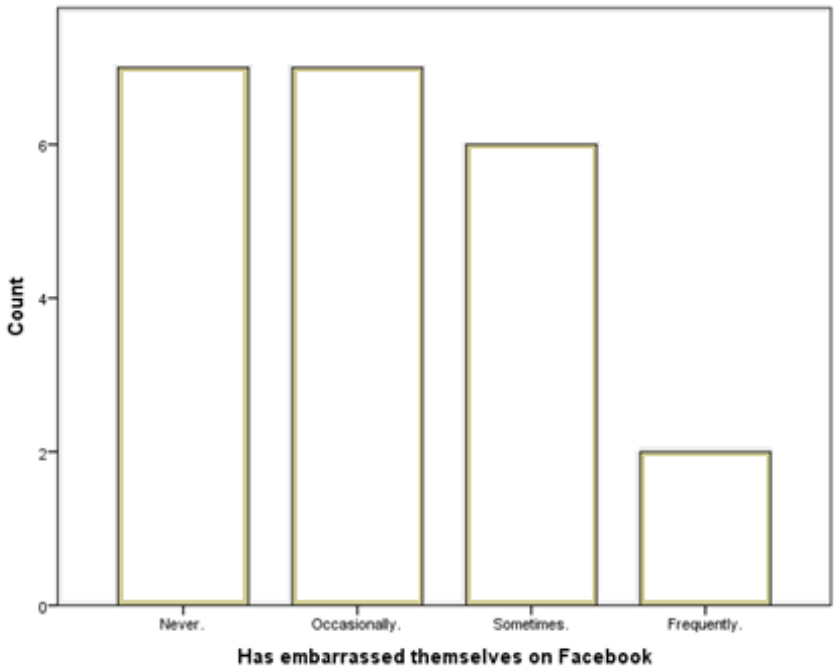


Figure 7.110: Frequency distribution of responses

Has embarrassed themselves with friends (2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Occasionally.	7	31.8	31.8	50.0
	Sometimes.	8	36.4	36.4	86.4
	Frequently.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.135: Frequency data for question 28d

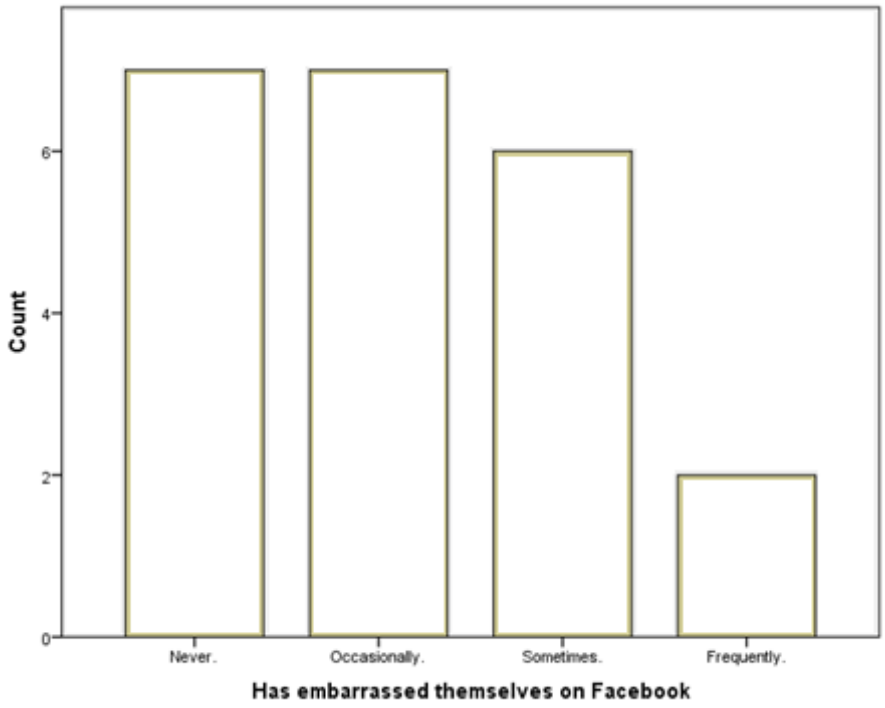


Figure 7.111: Frequency distribution of responses

Question 29: others causing embarrassment in social settings

This question asks whether participants have been embarrassed by others in the following social settings; in a busy café or bar with friends outside of university, at a family occasion such as a wedding, on Facebook, in a setting such as a busy café or bar with friends outside of university. A transcription error[2] resulted in two identical social categories being made available in this question. Responses are; *Never*, *Occasionally*, *Sometimes*, *Frequently*, *Always*.

Statistics

		Has been embarrassed by another with friends (1)	Has been embarrassed by another with family	Has been embarrassed by another on Facebook	Has been embarrassed by another with friends (2)
N	Valid	22	22	22	22
	Missing	0	0	0	0
Mean		1.5455	1.1364	1.7727	1.5455
Median		2.0000	1.0000	2.0000	2.0000
Mode		2.00	.00[a]	2.00[a]	2.00
Skewness		-.670	.352	-.074	-.440
Std. Error of Skewness		.491	.491	.491	.491
Kurtosis		-.659	-.900	-.988	-.888
Std. Error of Kurtosis		.953	.953	.953	.953
Range		3.00	3.00	4.00	3.00
Minimum		.00	.00	.00	.00
Maximum		3.00	3.00	4.00	3.00

a. Multiple modes exist. The smallest value is shown

Table 7.136: Statistics for question 29

[2] This error also occurs in Q28

Has been embarrassed by another with friends (1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	5	22.7	22.7	22.7
	Occasionally.	2	9.1	9.1	31.8
	Sometimes.	13	59.1	59.1	90.9
	Frequently.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.137: Frequency data for question 29a

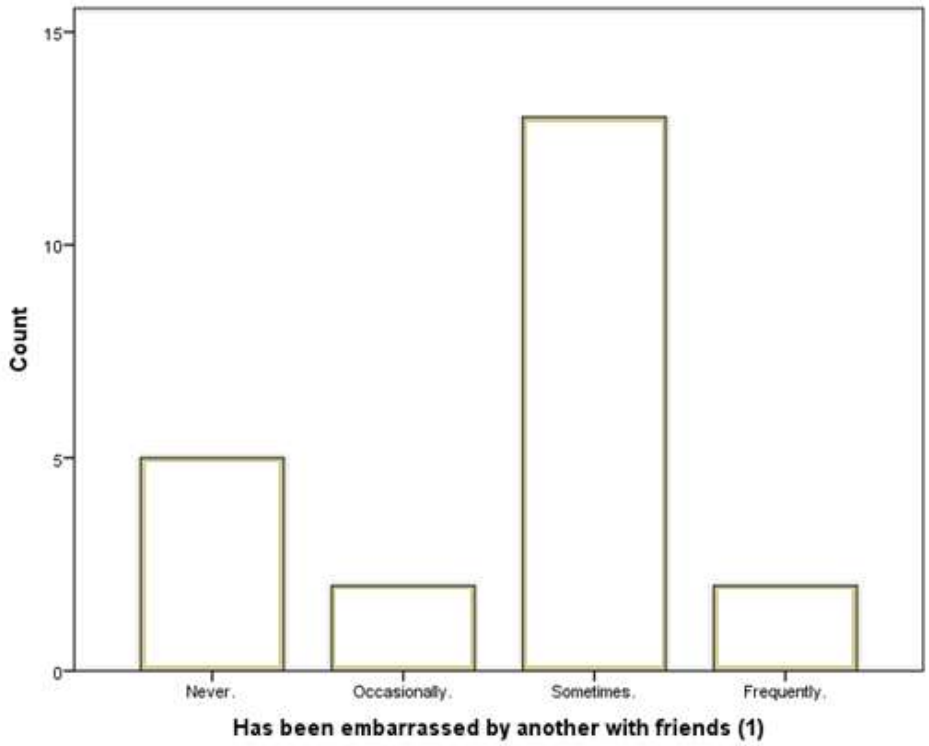


Figure 7.112: Frequency distribution of responses

Has been embarrassed by another with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	7	31.8	31.8	31.8
	Occasionally.	7	31.8	31.8	63.6
	Sometimes.	6	27.3	27.3	90.9
	Frequently.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.138: Frequency data for question 29b

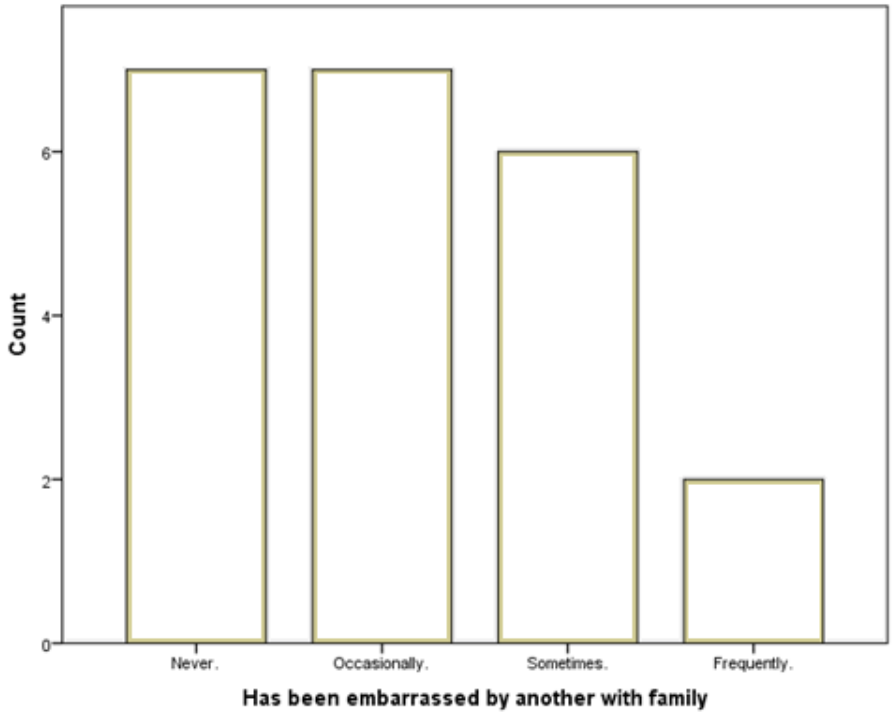


Figure 7.113: Frequency distribution of responses

Has been embarrassed by another on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	4	18.2	18.2	18.2
	Occasionally.	5	22.7	22.7	40.9
	Sometimes.	6	27.3	27.3	68.2
	Frequently.	6	27.3	27.3	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.139: Frequency data for question 29c

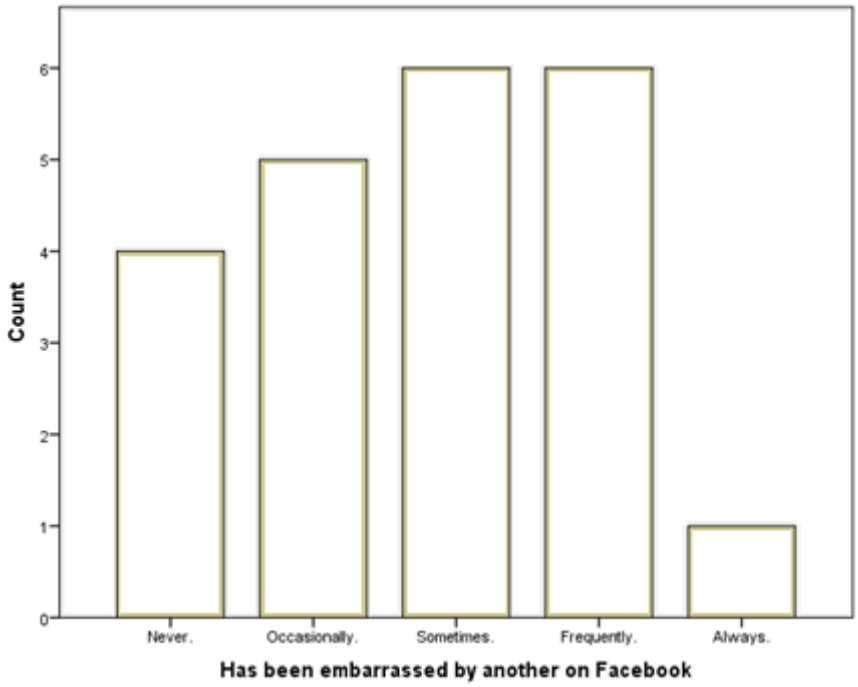


Figure 7.114: Frequency distribution of responses

Has been embarrassed by another with friends (2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	5	22.7	22.7	22.7
	Occasionally.	3	13.6	13.6	36.4
	Sometimes.	11	50.0	50.0	86.4
	Frequently.	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Table 7.140: Frequency data for question 29d

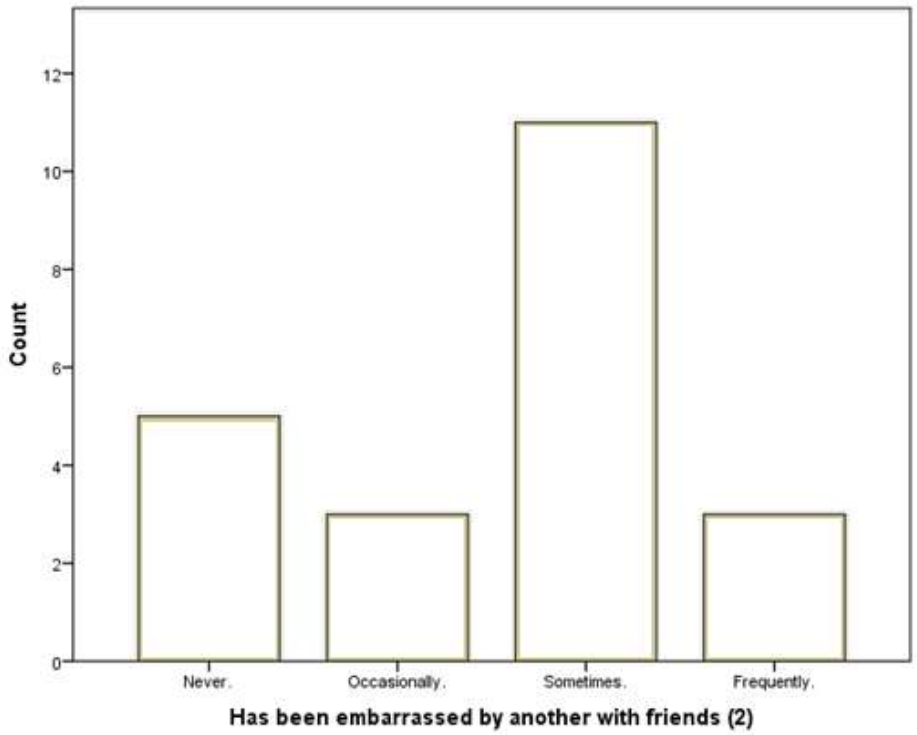


Figure 7.115: Frequency distribution of responses

Question 30: have participants posted embarrassing material on Facebook

This question seeks whether participants have ever posted content on Facebook which at the time seemed fine but later turned out to be embarrassing. Available responses, Yes, No.

Statistics

Has mistakenly posted embarrassing material on Facebook

N	Valid	22
	Missing	0
Mean		.3636
Median		.0000
Mode		.00
Skewness		.609
Std. Error of Skewness		.491
Kurtosis		-1.802
Std. Error of Kurtosis		.953
Range		1.00
Minimum		.00
Maximum		1.00

Table 7.141: Statistics for question 30

Has mistakenly posted embarrassing material on Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No.	14	63.6	63.6	63.6
	Yes.	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 7.142: Frequency data for question 30

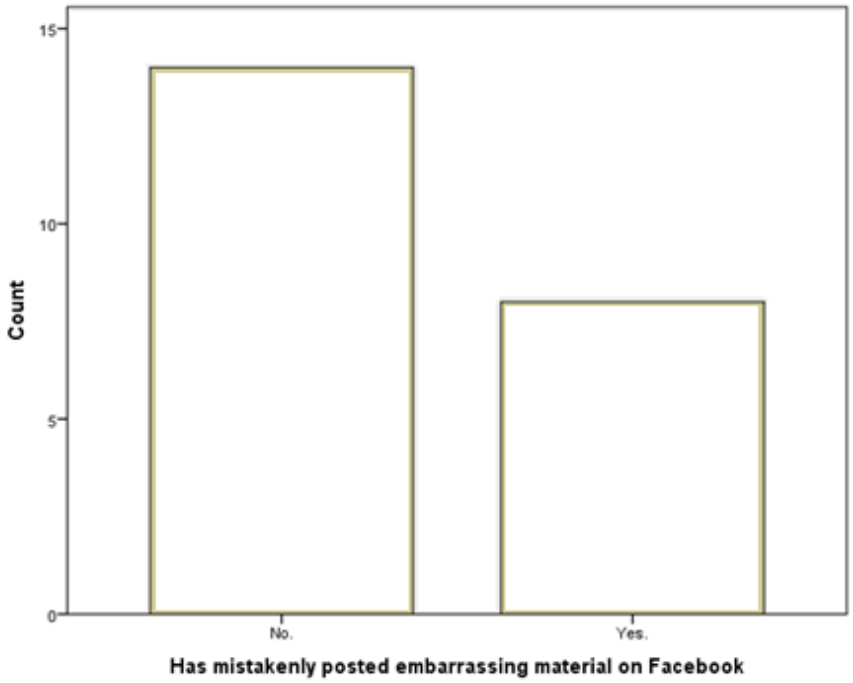


Figure 7.116: Frequency distribution of responses

Question 31: do participants get embarrassed easily, in general

This question seeks whether participants are easily embarrassed in any aspect of their lives. Available responses, Never, Occasionally, Sometimes, Frequently, Always.

Statistics

Frequency participant gets embarrassed in life

N	Valid	22
	Missing	0
Mean		1.5455
Median		1.0000
Mode		1.00
Skewness		1.097
Std. Error of Skewness		.491
Kurtosis		1.316
Std. Error of Kurtosis		.953
Range		4.00
Minimum		.00
Maximum		4.00

Table 7.143: Statistics for question 31

Frequency participant gets embarrassed in life

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never.	1	4.5	4.5	4.5
	Occasionally.	12	54.5	54.5	59.1
	Sometimes.	6	27.3	27.3	86.4
	Frequently.	2	9.1	9.1	95.5
	Always.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.144: Frequency data for question 31

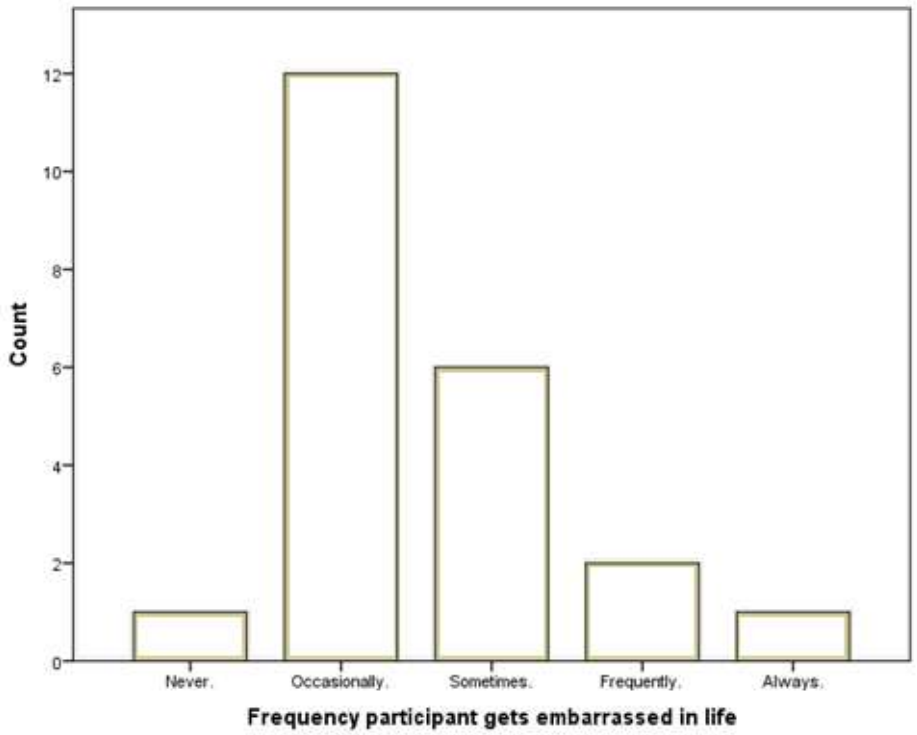


Figure 7.117: Frequency distribution of responses

Question 32: self perception of ease of embarrassment

This question seeks to discover how the participants rate whether they get embarrassed, easily or not. Available responses, Yes, No.

Statistics

Whether participant gets embarrassed easily

N	Valid	22
	Missing	0
Mean		.3636
Median		.0000
Mode		.00
Skewness		.609
Std. Error of Skewness		.491
Kurtosis		-1.802
Std. Error of Kurtosis		.953
Range		1.00
Minimum		.00
Maximum		1.00

Table 7.145: Statistics for question 32

Whether participant gets embarrassed easily

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No.	14	63.6	63.6	63.6
	Yes.	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 7.146: Frequency data for question 32

Figure 7.118: Distribution of responses

Question 33: trust of Facebook privacy settings

This question seeks to discover whether participants trust the security settings on Facebook to keep all of their personal or sensitive information that is already on Facebook, e.g. pictures, stories, from becoming public or otherwise available to those they do not trust.

Statistics

Does participant trust Facebook privacy settings?

N	Valid	22
	Missing	0
Mean		.2727
Median		.0000
Mode		.00
Skewness		1.097
Std. Error of Skewness		.491
Kurtosis		-.887
Std. Error of Kurtosis		.953
Range		1.00
Minimum		.00
Maximum		1.00

Table 7.147: Statistics for question 33

Does participant trust Facebook privacy settings?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No.	16	72.7	72.7	72.7
	Yes.	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Table 7.148: Frequency data for question 33

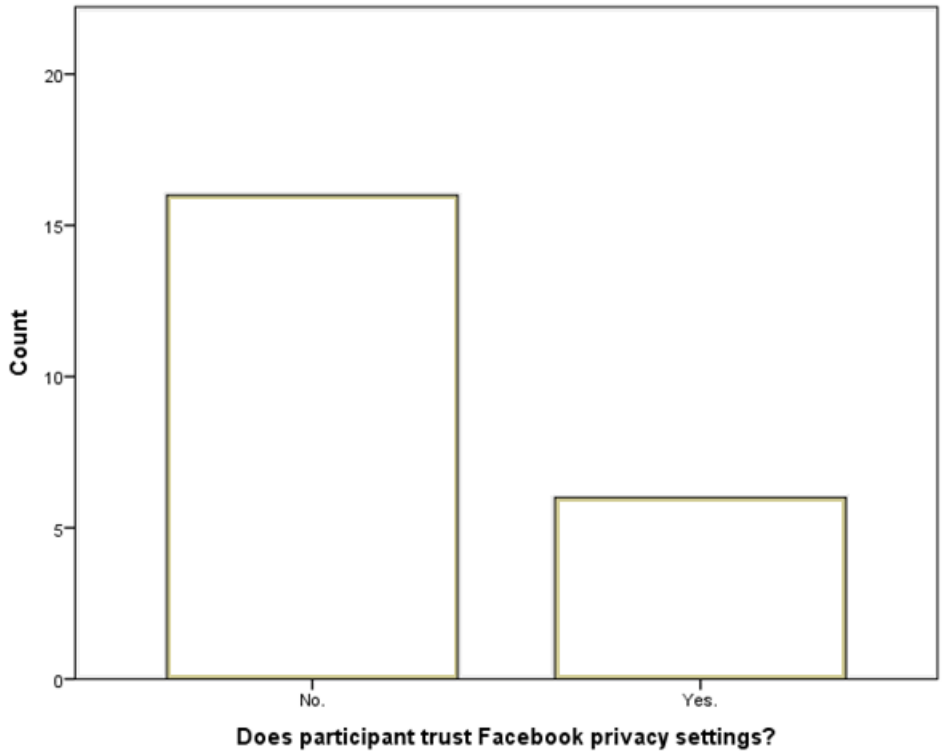


Figure 7.119: Distribution of responses

Question 34: does participant have significant disabilities?

This question asks if participants have any significant difficulties in vision, hearing, reading, writing, typing. Available response, Yes, No.

Statistics

		Participant has vision disability	Participant has hearing disability	Participant has reading disability	Participant has writing disability	Participant has typing disability
N	Valid	22	22	22	22	22
	Missing	0	0	0	0	0
Mean		1.0000	.9545	1.0455	1.0455	1.0000
Median		1.0000	1.0000	1.0000	1.0000	1.0000
Mode		1.00	1.00	1.00	1.00	1.00
Skewness		.000	-4.690	.591	.591	.000
Std. Error of Skewness		.491	.491	.491	.491	.491
Kurtosis		10.500	22.000	5.664	5.664	10.500
Std. Error of Kurtosis		.953	.953	.953	.953	.953
Range		2.00	1.00	2.00	2.00	2.00
Minimum		.00	.00	.00	.00	.00
Maximum		2.00	1.00	2.00	2.00	2.00

Table 7.149: Statistics for question 34

Participant has vision disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	no.	20	90.9	90.9	95.5
	Yes.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.150: Frequency data for question 34a

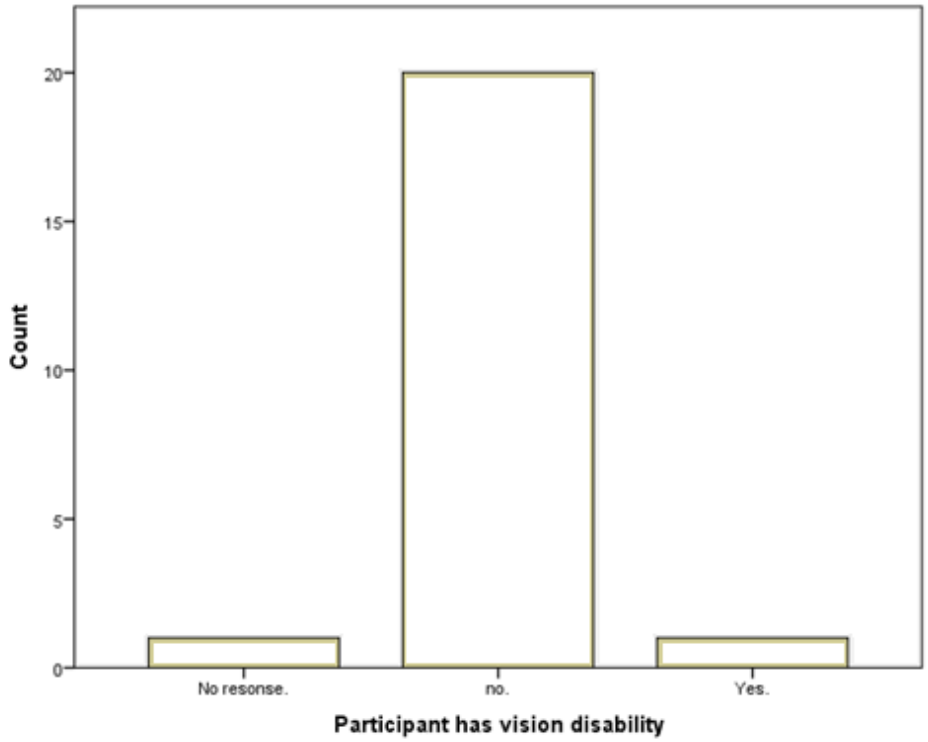


Figure 7.120: Frequency distribution of responses

Participant has hearing disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	no.	21	95.5	95.5	100.0
	Total	22	100.0	100.0	

Table 7.151: Frequency data for question 34b

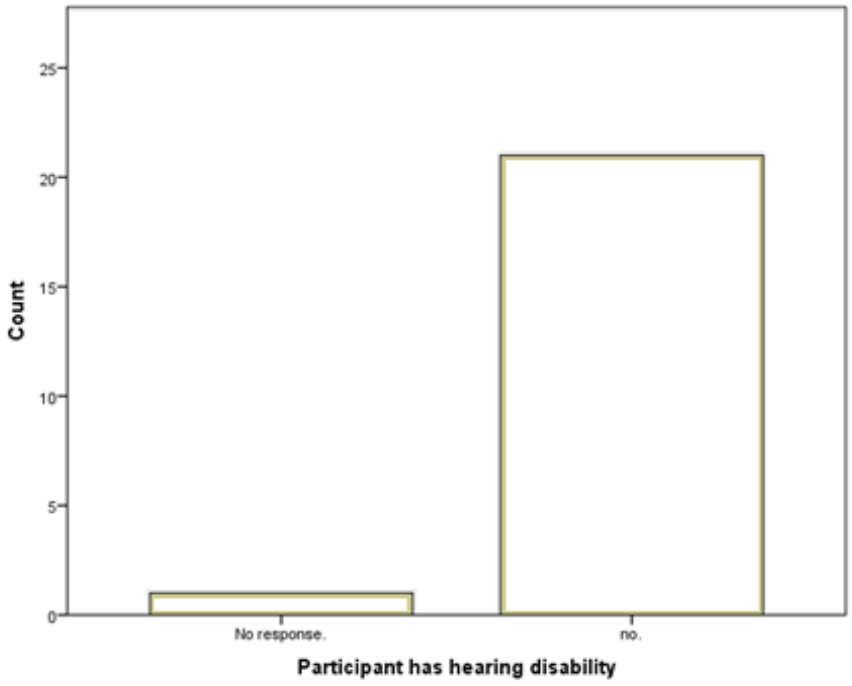


Figure 7.121: Distribution of responses

Participant has reading disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	no.	19	86.4	86.4	90.9
	Yes.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.152: Frequency data for question 34c

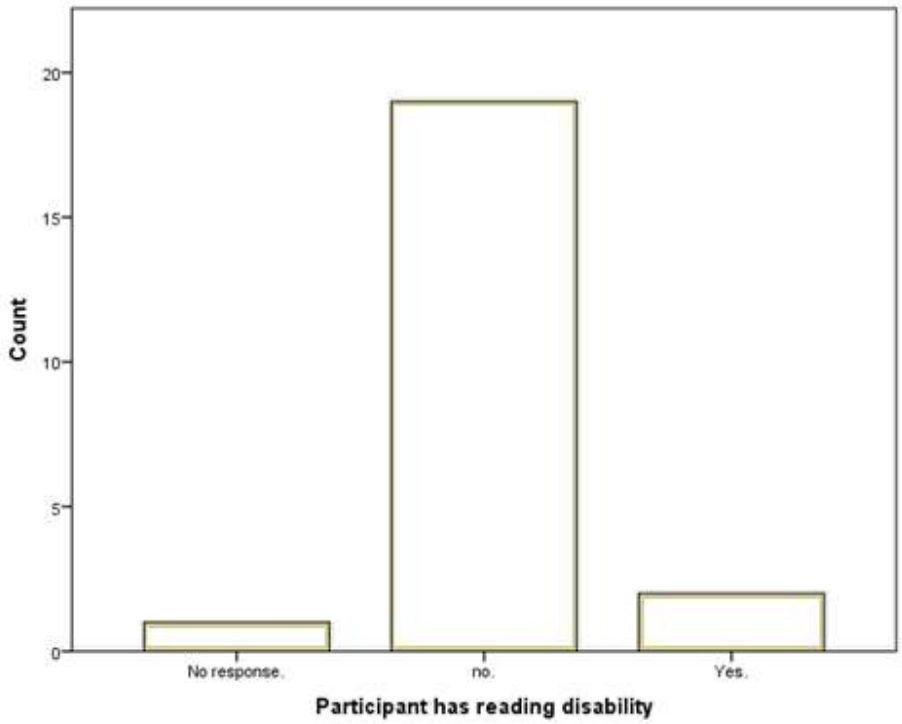


Figure 7.122: Frequency distribution of responses

Participant has writing disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	no.	19	86.4	86.4	90.9
	Yes.	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 7.153: Frequency data for question 34d

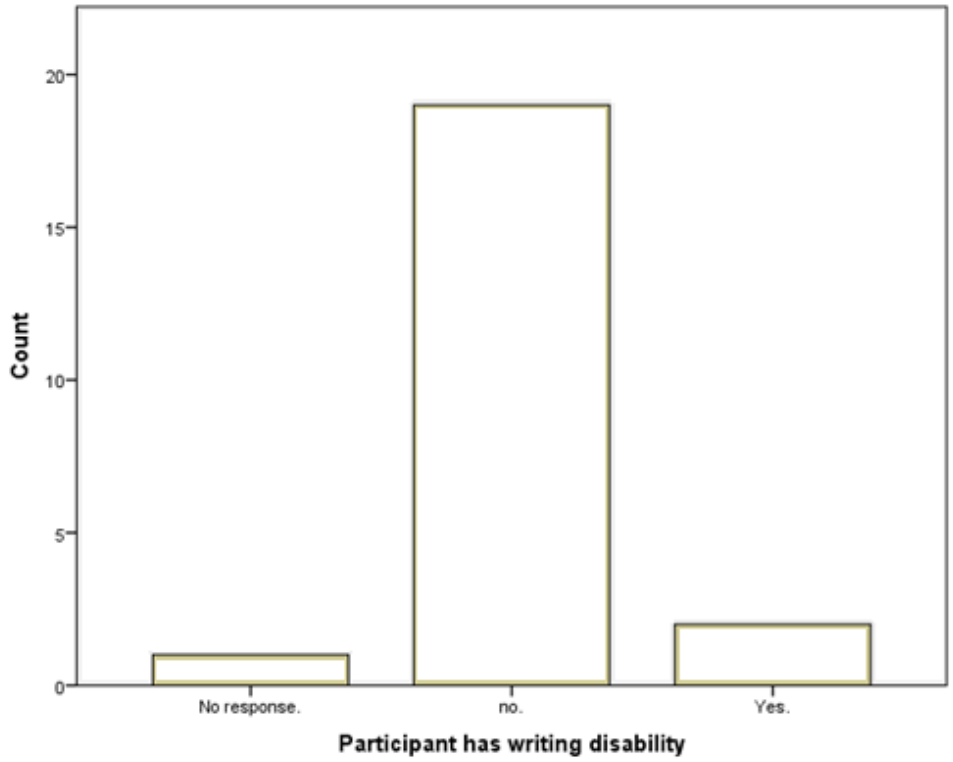


Figure 7.123: Frequency distribution of responses

Participant has typing disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No response.	1	4.5	4.5	4.5
	no.	20	90.9	90.9	95.5
	Yes.	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table 7.154: Frequency data for question 34d

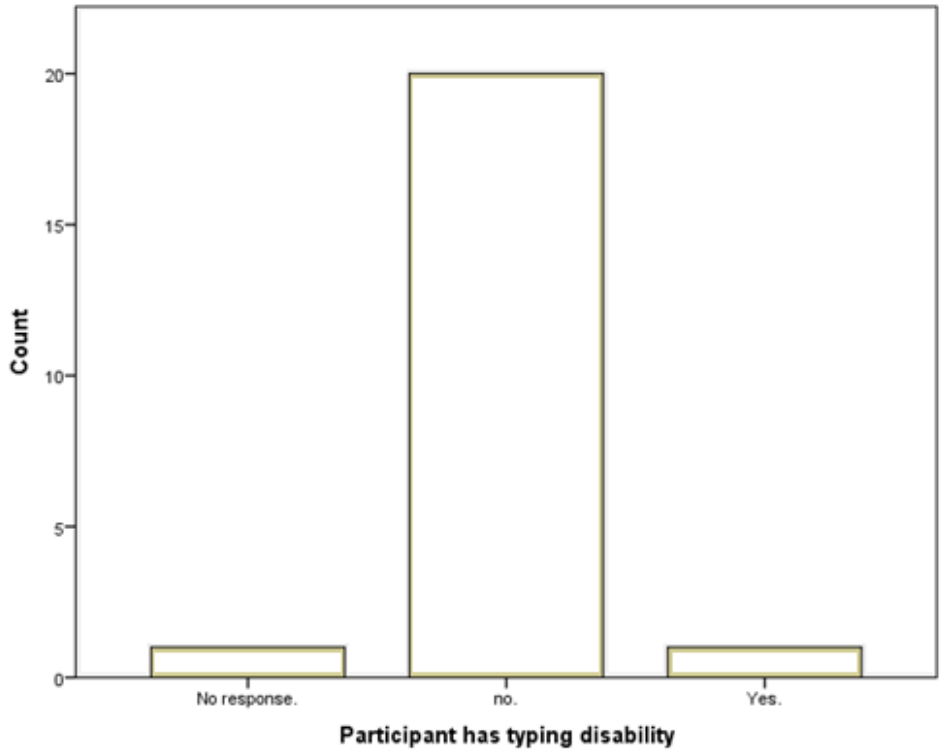


Figure 7.124: Frequency distribution of responses

7.8 Original direction of thesis – post anonymisation

This section onward contains the work that was carried out prior to the change of network delivery method of Facebook pages, see section 5.3.3 of thesis.

Below is presented the document that was approved by the Ethics Committee in the Summer of 2014. It described how the Facebook data is to be collected and anonymised.

Procedure for Anonymising Posts

Contents

Introduction

This document shows the procedures that will be used to anonymise the data gathered during the experiment and also how data from any participants who choose to withdraw from the research will be identified and removed. It also explains how the data files will be kept confidentially and securely.

Order of events

1. Participants sign the consent form – includes an email address & Facebook username.

2. User is added to excel file Participants.xlsx with email address and Facebook username.
3. A list of user-codes beginning with FBP1230, FBP1231, etc is created alongside the columns of participants. A column "Status" initially reads INACTIVE for each participant.
4. Participants are responded to using the Initial email response file. This contains the joining instructions.
5. As Participants apply to 'Friend' the Facebook research account, they are accorded a status of ACTIVE in the Participants excel file.
6. At the start of the data gathering process, a message will be sent by email and also posted on Facebook that the data recording will begin at a particular time on a particular day and that the recording will last for a given period.

Recording of participant activity commences.

The responses of the Participants will be recorded using a PC in the researcher's office, P141. This PC is protected using the University's security system and only system administrators will be able to access this PC other than the researcher. The PC will be kept up-to-date with operating system, application patches and antivirus product definitions. The office is currently occupied only by the researcher and is locked at all times when the researcher is not present. The PC is locked when the researcher is not present. A lockable filing cabinet is available in the office to hold DVD backup copies of all data gathered and a second set of backup disks will be held securely in the Engineering school office.

The software system used to record the Facebook activity will use the latest version of the Google Chrome browser. On a periodic basis, to be determined by the number of participants and their frequency of posting to Facebook, the Facebook page will be saved. There are two options available to sort the Facebook posts, by *Top Stories* and *Most Recent*. The Facebook system allows archives to be searched and saved as html files. Data source files will be saved using a naming convention that defines the sorting method, the date and time and the word *source*.

An example of a possible name for a Facebook data source file is:

```
3-3-2014-17-30-top-stories-source.html
```

As files are saved, a directory of associated images is created. This can be securely deleted once the html file has been saved.

Anonymising the html files

Html references

The process below applies to both types of output file, i.e. the files sorted by *Top Stories* and *Most Recent*. Each html file will be opened in a html editor (SeaMonkey) to extract the centre column of Facebook output and the result will be saved with its previous filename with the word *centre* appended. The html editor can now be closed.

An example of a possible name for a Facebook data source file edited in this manner is:

```
3-3-2014-17-30-top-stories-source-centre.html
```

The html file is opened in Notepad++, a text file editor. This text editor cannot display any graphical elements, keeping pictures posted secure from the researcher.
The nature of the Facebook html coding means that the text postings of any user is not adjacent to their identity. The top 70 lines of the html file do not contain any identifiable user information or postings, so the researcher cannot accidentally see Participants nor their postings.

Facebook keeps a track of who has posted any type of message using a syntax as shown below.

```
href="https://www.facebook.com/haley.packer"
```

The search pattern:

```
href=https://www.facebook.com/.*
```

entered into Notepad++ will create a list of all posts to the research account, including people who have responded publicly to the Participants.

The results of the search are pasted into a spreadsheet and delineated using the / character to place all Participants (and respondents) in a single column. This column can now be sorted alphabetically to reveal all Facebook members who have posted to this particular file. Duplicates are removed and there remains a list of Participants and respondents.

Participants are cross-referenced with the spreadsheet Participants.xlsx and the user-code beginning with FBPxxxx is obtained.

This can now be used in conjunction with the *Replace* facility in Notepad++ to fully anonymise the Participants.

Any respondents to participants posts (from their own circle of Facebook Friends) will be accorded an entirely different code to identify responses and respondents differently. This user-code will be of the form RESPONDENT. This research has no need to identify these respondents and this means that there is no need to keep a track of respondents across the various files used to gather data for the research. This can now be used in conjunction with the *Replace* facility in Notepad++ to fully anonymise the Respondents.

Name references

The actual names of respondents in the html file now need to be identified and replaced.

A Notepad++ search :

```
\$author">[A-Za-z ]*
```

Reveals the Facebook user names used on the Facebook page. The results of the search are pasted into a spreadsheet and delineated using the > character to place all participants (and respondents) in a single column. This column can now be sorted alphabetically to reveal all

Facebook members who have posted to this particular file. Duplicates are removed and there remains a list of Participants and respondents.

Participants are cross-referenced with the spreadsheet Participants.xlsx and the user-code beginning with FBPxxxx is obtained.

This can now be used in conjunction with the *Replace* facility in Notepad++ to fully anonymise all Participants as will those respondents who are not registered with this study.

Removing comments

Comments made as a response can be replaced with a non-identifying text string as follows.

Use the *Replace* function of Notepad++ to carry this out.

```
\$comment-body.0.\$end:0:\$0:0">[A-Z,a-z]*[^A-Z,^a-z]*[^<]*
```

Can be used to replace identifiable comments with a text string.

```
\$comment-body.0.\$end:0:\$0:0">xRESPONSE - RESPONSE - RESPONSEx
```

All comments made as a response on the html page are now replaced with the text string *xRESPONSE - RESPONSE – RESPONSEx*.

Replacing web links

Web links made as a response can be replaced with a non-identifying text string as follows.

Use the *Replace* function of Notepad++ to carry this out.

```
5pb3 _5dec"\R[^\{]*
```

Can be used to replace identifiable web links with a text string.

```
5pb3 _5dec"\R[^\{]*xWebComment - WebComment – WebCommentx
```

All comments made as a response on the html page are now replaced with the text string *xWebComment - WebComment – WebCommentx*.

More comments can be removed using

M\"\}">[^<]*

M\"\}">x*WebComment - WebComment – WebCommentx*

The type of comment can be easily identified as a WebComment.

C\"\}">[^<]*

C\"\}"> x*WebComment - WebComment – WebCommentx*

Hyperlinks to outside files can be replaced with:
Sometimes there are hyperlinks to other websites. These can be changed using the expressions below.

```
alt="RESPONSE[^\:]*
```

```
alt="RESPONSE  ... TEXT... https
```

More text

```
\$text0:0:\$0:0">[^<]*
```

```
\$text0:0:\$0:0">xCommentx
```

Remove comments from pictures
Sometimes there is identifiable data held with a picture. This can be removed using the following expressions in the Notepad++ *Replace* function.

```
px;" alt="[^"]*
```

```
px;" alt=" xPicture Commentx
```

and

```
px;"[^"]*alt="[^"]*
```

```
px;"[^"]*alt="xPicture Commentx
```

Remove websites

```
L\&amp;quot;\}">.*</div>
```

```
L\&amp;quot;\}">Website</div>
```

Once these edits have been made, the html source file is totally anonymised.

Encryption

At the end of the anonymization process, all unrequired files will be securely deleted from the PC's hard disk. The directory containing the files will be encrypted. Two copies of the encrypted data will be kept, one locked in the filing cabinet in my office, the other held locked in the School Office.

Notepad ++ usage

While carrying out the edits using Notepad++, it is not possible to see the text that is being replaced if the Replace all button is used, ensuring that the researcher does not see the names of participants or the content of the posts accidentally.

The recording ends

During the recording period, an email will be sent to all participants containing a hyperlink to the online questionnaire. Participants will receive a code to cross-reference their questionnaire submission to their activity recorded in the experiment to avoid responses from non-authorised participants. This code will not be the one used in the anonymization process, but will be a pseudo-random code, held securely in an encrypted spreadsheet. A copy will be held in the locked filing cabinet with another copy held on disk in the School Office.

A message will be sent to all participants on Facebook at the end of the recording process, informing participants that the experiment is complete.

Withdrawing from the research.

Any respondent who chooses explicitly to withdraw from the research gathering may do so by 'unfriending' the research Facebook account or by email. The codes created for the participants will allow data from a single respondent to be removed from the research data at any stage of the research project. The 'Friend' list will be checked regularly to ensure that only the 'Friends' of the Facebook account are used in the research.

Use of the data

The data gathered will be used to obtain the frequency that participants use individual tools available on Facebook. The UTC timestamp recorded in the html file will be used to match participants posts. The number of RESPONDENTS who made any reply to the participants will also be recorded for volumetric comparison purposes.

Conclusion

The edits shown above will totally anonymise the html file recorded during the experiment. A series of files will be recorded and anonymised and the overlap will be identified and extra data gathered can be deleted. The edits here are made manually, however it is anticipated that these edits can be made using a text editor such as UNIX *sed* to automate the replacements shown here.

7.9 Facebook data gathering, including sed scripts

Below is presented the method for obtaining Facebook pages that were delivered using HTML. This work was carried out to confirm that the data necessary could be collected from Facebook pages using a browser and text editing tools.

Facebook data gathering experiment

Contents

Objective

- To discover whether it is possible to save locally Facebook user activity.
- To discover whether it is possible to easily gather the data to produce simple statistics from a Facebook page.
- To discover what tools or techniques are required to do this.
- To discover whether it is possible to anonymise Facebook user ids.

Apparatus

Active Facebook account, SeaMonkey 2.16.1 html editor, Notepad++ v6.3, Excel 2007

Justification of experiment

It is morally acceptable to use anonymous data in statistics. Part of the data gathering process is to create files of data that can be analysed without compromising any of the users, whilst retaining a link to the user for other information such as age or place of birth – available if shared.

The centre panel of the Facebook SNS can be sorted by either *Most Recent* or *Top Stories*. These two sort methods allow for two different views of the data provided by Facebook. It may be instructive to compare the same data analysis method on each of the sort outputs.

Facebook data acquisition method

Log into a Facebook account.
Visit its Timeline and note the total number of Facebook friends attached to the account.

Gathering Most Recent

Return to the main Facebook page. Sort by *Most Recent*.
Use the mouse centre button to automatically scroll to the bottom of the Facebook page (this can be done manually, but it is a lengthy, RSI-inducing method).

The Facebook page will refresh periodically and eventually reach a point, below which, it requires user input to proceed[3]. The scrolling, manual or automatic may take several minutes [note to self – can this be done automatically?].

Save the html of the page locally, including as part of the filename `most_recent`, noting the time and date (to be used for calculating the period of data gathering).

Gathering Top Stories

Return to the main Facebook page. Sort by *Top Stories*.
Use the mouse centre button to automatically scroll to the bottom of the Facebook page (this can be done manually, but it is a lengthy, RSI-inducing method).

The Facebook page will refresh periodically and eventually reach a point, below which, it requires user input to proceed[4]. The scrolling, manual or automatic may take several minutes
Save the html of the page locally, including as part of the filename `top_stories`, noting the time and date (to be used for calculating the period of data gathering).

Selecting the posts/ mentions sorted by *Most Recent*

For data file `most_recent.html`
Open this local file in an html editor[5].
Select the centre panel, the one with all the posts, and copy it to a new html editor page. Save the file for later analysis & comparison purposes, noting its `most_recent` source and that it is the `centre panel`.

Open `most_recent.html` in your html editor.
Select the centre panel, the one with all the posts, but this time copy as text only. Save the file, indicating that it is `text only` and its `most_recent` source..

[3] Manual methods here are unproductive as the volume of data received from his point is limited by Facebook epolicy and therefore , at this point, an invalid avenue of exploration, however later automated Facebook page crawling may mean that the entire Facebook archive allowable could be farmed.
[4] Manual methods here are unproductive as the volume of data received from his point is limited by Facebook epolicy and therefore , at this point, an invalid avenue of exploration, however later automated Facebook page crawling may mean that the entire Facebook archive allowable could be farmed.
[5] SeaMonkey 2.16.1

Selecting the Posts/ Mentions sorted by Top Stories

For data file `top_stories.html`
Open this local file your html editor.
Select the centre panel, the one with all the posts, and copy it to a new html editor page. Save the file for later analysis & comparison purposes, noting its `top_stories` source and that it is the `centre panel`.

Open `top_stories.html` in your html editor.
Select the centre panel, the one with all the posts, but this time copy as text only. Save the file, indicating that it is `text only` and its `top_stories` source..

Delineating your data files

This must be carried out for both text files (*Most Recent* & *Top Stories*) derived from the original Facebook page. Only one process is described below

Open this text only version in Notepad++
Replace the word 'Options' with _____

This will neatly delineate the separate posts on the page.

Anonymising the data files

Use the Replace option in Notepad++ for each user's name that appears after the _____

With fbxxx (where x is an integer)

Open a spreadsheet. Create a column for Facebook anonymised users, beginning with fb001. Against each user, add the number of times the string was replaced in Notepad++. This is the most lengthy part of the process.

Observe the number of replacements made – this indicates the number of times the Facebook user's name was replaced in the page[6]. Manually, this will take much time – approximately 60 minutes.

Create a total, average and SD from the data given.

Look up the friends on the account in use.
Using my personal account plus data from 19 March 2014 at 21:29 to 11 March 2014 at 12:29

[6] Analysis of the current data set indicated that Facebook member names appeared not only in their actions but in other places in the page, *reactions*, as Likes or Comments. A more discriminating method of sorting the primary action must be chosen to separate Facebook member *actions* from *reactions*.

Improvements to the process

A further run of the experiment could automate the name replacement with scripting.

Automation requires saving the number of replacements made during the replacement edit.

Next time, get the user data stored before changing the usernames!!

Facebook data analysis critique

Analysis of the output shows that counting the replacements of names results in errors due to names also appearing in comments. This artificially elevates the number of posts – includes comments as well. This may be useful in showing users actions. sed can edit the input file to replace the first occurrence of a user as it occurs after the word Option.

UNIX Scripting

UNIX sed may be able to edit the output data much more quickly.

Use vi to create a sed operation. This one substitutes all lowercase vowels with their uppercase opposites in the file textfile and sends it to the screen only.

```
sed -e 's/a/A/g' \
    -e 's/e/E/g' \
    -e 's/i/I/g' \
    -e 's/o/O/g' \
    -e 's/u/U/g' textfile
```

So here is the output from the UNIX terminal.

```
cm34@newzeus 122 % vi sedscript01
"sedscript01" 5 lines, 102 characters
sed -e 's/a/A/g' \
    -e 's/e/E/g' \
    -e 's/i/I/g' \
    -e 's/o/O/g' \
    -e 's/u/U/g' textfile
~

~
```

A file containing text was also created – see below.

```
cm34@newzeus 123 % vi textfile
"textfile" [New file]
This is a file of fairly standard text. The quick brown fox
jumps over the lazy dog.
~
```

Now it is necessary to make executable the sed batch (shell script) file using chmod.

```
cm34@newzeus 125 % chmod 755 sedscript01
```

Then execute it.

```
cm34@newzeus 127 % sedscript01
ThIs Is A fIlE Of fAIrly stAndArd tExt. ThE qUIck brOwn fOx
jUmps OvEr thE lAzy dOg.

~
cm34@newzeus 129 % vi sedscript01
"sedscript01" 5 lines, 102 characters
sed -e 's/a/A/g' \
    -e 's/e/E/g' \
    -e 's/i/I/g' \
    -e 's/o/O/g' \
    -e 's/u/U/g' textfile
~
~
~
```