SAGE Research Methods Cases Psychology Submission for Consideration

Case Title

Using Unobtrusive Data to Study Criminal Behaviour: Understanding Malicious

Contamination Incidents

Author Name(s)

Dr Sarah C Kilbane

Author Affiliation & Country of Affiliation

University of Greenwich, United Kingdom

Lead Author Email Address

Email: s.kilbane@gre.ac.uk

Discipline: D3 [please do not alter]

Sub-discipline

General and Applied Psychology [SD-Psych-1]

Academic Level

Intermediate Undergraduate

Contributor Biographies

Dr Sarah Kilbane is a Lecturer in Criminology at the University of Greenwich with a

background in Forensic Psychology. Sarah was awarded her PhD in 2015 on the topic of

malicious contamination crimes, and has previously studied public figure stalking. Currently

her research interests include criminal threats and hoaxes, CBRN terrorism, and the use of mathematical modeling to explore crime.

Published Articles

Wilson, M. A., & Kilbane, S. C. (2016). Criminal poisoning and product tampering: Toward an operational definition of malicious contamination. *Deviant Behavior*, 1-19. doi: 10.1080/01639625.2016.1241060.

Abstract

Malicious contamination is a term used to describe a number of different types of criminal activity, from poisoning and product tampering to extortion and food terrorism. However, little is known about these types of crime as few empirical studies have been conducted to date. In particular, there is a lack of clear definitions in the literature for terms like 'product tampering' and 'poisoning'. In order to develop such definitions and to explore crimes of malicious contamination in more depth, a database was constructed consisting of all incidents of malicious contamination worldwide occurring over a forty year period. Out of necessity this database was constructed using unobtrusive, open source data which was then content analysed for the presence or absence of pertinent behavioural variables. The following case study highlights the advantages and disadvantages of working with unobtrusive data to study criminal behaviour, including issues related to validity, reliability and credibility. Specific examples have been included from the author's own PhD work and subsequent publication, with an emphasis on how some of the above-mentioned challenges were addressed. The importance of unobtrusive data to the study of forensic and investigative psychology is also discussed.

Learning Outcomes

By the end of this case study students should be able to…

1. Recognise the role of unobtrusive measures in the field of forensic psychology.

2. Explain how challenges in validity, reliability and credibility can be overcome when using unobtrusive data.

3. Compare the usefulness of different types of unobtrusive data for studying forensic psychology.

4. Propose their own research project using unobtrusive data.

5. Evaluate existing studies which have made use of unobtrusive data.

Case Study

Using Unobtrusive Data to Study Criminal Behaviour: Understanding Malicious Contamination Incidents

Project Overview

The following case study is based on my PhD research, which was designed to gain a better understanding of a relatively underexplored type of crime: malicious contamination. This includes cases of product tampering, criminal poisoning, extortion, and food terrorism, as well as any other act in which a consumer product has been intentionally contaminated. These crimes are often difficult to distinguish from one another, and so one of the primary goals of this PhD research was to develop clear definitions based on specific behaviours for, in particular, acts of product tampering and poisoning (see Wilson and Kilbane, 2016). In order to accomplish this, a database of all known cases of malicious contamination within the

chosen timeframe needed to be compiled and examined. This database construction, however, was not without its challenges.

When studying a new type of crime or a crime that has received little previous academic attention, a forensic psychologist must first examine what resources are currently available, including previous research. However, with infrequently occurring crimes existing databases can tend to be sparse, or may have been created in order to fulfill alternate goals, and so might not capture all of the variables which the researcher is interested in exploring. In addition, when studying particularly sensitive types of crime, including product tampering and food terrorism, the holders of such data may intentionally keep this information out of the public eye. In fact, many cases of product tampering may be known to the authorities or to targeted companies, but are kept from the media in order to prevent inspiring others to commit similar 'copycat' crimes from occurring, and to protect brands from negative publicity as well (Cremin, 2001; Dalziel, 2009). Finally, the rarity of such cases may mean that the information is not centrally contained in a manner which is easily accessible to researchers. Without a central, complete, and accessible database, I needed to compile my own database from existing, available information which could later be content analysed.

The case study discussed herein describes the process of database construction used in Wilson and Kilbane (2016), which is believed to be the first piece of research to offer clear, empirically-based definitions of product tampering and poisoning crimes, but also provide an analysis of the behaviour of those who commit these acts. In order to accomplish these goals, a dataset was created of all malicious contamination incidents occurring from 1970 to 2011, with unobtrusive, open source data collected through the use of police and government documents, newspaper reports and additional academic sources. This qualitative data was then content analysed in order to obtain quantitative data. This case study will address some

of the advantages and disadvantages of using unobtrusive data to study criminal behavior, with a focus on some of the pitfalls encountered throughout the research process.

Practicalities of Data Collection

In order to build a database of malicious contamination incidents, unobtrusive measures were used, and more specifically a content analysis of archival, primarily open source data was conducted. Open source data are those data which are easily accessible by all, and which do not require special access or clearance that one would gain through academic affiliation or through an employer, for instance. In this case, open source data was often used due to the unwillingness of private companies to disclose any previous threats or attacks against their products, and because of the difficulty in obtaining the necessary information from government agencies. Open source, archival data is typically non-reactive and unobtrusive in that the data is collected without direct interaction from the researcher, and so the data is not vulnerable to demand characteristics or participant effects.

Unobtrusive measures are regularly used in forensic psychology due to the inappropriateness of experimental or purely observational methods. For instance, forensic psychologists cannot construct scenarios in which an individual has their bag stolen simply to observe how they react or to ask them how they feel. Due to the fact that experimental studies are often inappropriate here, for many forensic psychologists "the employment of unobtrusive measures is not simply an alternative or a supplement to conventional techniques, but rather is often borne out of necessity" (Alison, Snook, & Stein, 2001, p. 247). While the control that an experimenter may have over a scenario is lost with unobtrusive measures, there is also necessarily more ecological validity, as information comes directly from the 'real world' rather than being produced under artificial conditions.

Although the most ideal solution in attempting to understand criminal behaviour may be to interview perpetrators or law enforcement directly – and such studies do certainly exist – this is often not possible due to constraints put on the researcher. This is especially true for student researchers who may be lacking in the time, financial resources, experience and access needed to conduct such interviews. However, Canter and Alison (2003) also note that in the case of investigative psychology, interviews may not be very useful as criminals may be deceptive, and that police officers may not be forthcoming with information due to both the constraints of their work and security concerns. These issues are unlikley to affect unobtrusive data in the same way.

As mentioned, the lack of interference by the researcher can be a clear advantage of unobtrusive research, but it can also make research more difficult as well (Alison et al., 2001). While unobtrusive methods will eliminate issues with the participants responding in a way that they believe will please the researcher or changing their behavior as a result of being observed, the other side of this trade-off is that the researcher must understand not only the context in which the source material was generated, but also the original author's motives as well. As a result, when using each of the sources described below the initial purpose of these reports must be noted, which often differs considerably – especially in the case of news reports – from empirical scientific research.

There are a number of different types of unobtrusive data that can be used in social science research, and Lee (2000) provides a detailed discussion of these. For forensic psychology specifically these may include (but are not limited to):

- Official records, including court documents, government reports, published statistics, police records, etc.

- News reports, including national, regional and local sources

- Books, magazines, and other published materials

- Visual imagery, such as photographs

- Online sources, such as social media content and other online communications

For my PhD study, data were taken from government press releases (i.e. published convictions from the US Food and Drug Administration), media reports from national and regional newspapers, and academic books and journal articles.

Police and government records. As Canter and Alison (2003) point out, forensic and investigative psychology often relies on data which have been collected for use in police investigations. However, the same authors note that policing records also contain potential biases which may include:

(a) details which are often relevant to the courts alone and are collected in order to aide prosecution,

(b) the distortion of information due to individual agendas,

(c) the omission of information which does not work towards the primary goal of prosecution,

(d) information which is collected by non-scientists,

(e) potential reactivity in the case of witness and victim statements, and

(f) pressures on the police officers in charge of recording this information.

It is therefore important that researchers consider such biases, espeically when drawing inferences from police records.

Issues also exist in regards to access. Of particular relevance to this study, Canter and Alison (2003) mention the difficulty of obtaining police records, especially with cases of corporate blackmail and extortion, which could damage victimised companies if made public.

While extortion cases made up a considerable part of the current study, due to the knowledge that cases were likely kept private by police and victimised companies, it was difficult to be certain of whether the cases identified from open source data alone were truly representative. For example, in the database created there were no 'successful' cases of extortion identified (meaning that the perpetrator got away with the money without being apprehended). This however is intuitive, as such cases may not even be known to the police. To have a complete list of extortion cases then, full cooperation would be needed from both law enforcement and victimised companies going forward.

Indeed, one of the specific issues in this study was the availability of government information. While the Food Standards Agency in the UK publishes a list of food safety prosecutions, their online records do not date before 2015, and a fredom of information request revealed that data before this point was held individually by local authorities rather than being centrally accessible. Additionally, very few of these cases were found to actually involve intentional contamination, and instead focus on issues of corporate negligence, so would not explicitly meet the inclusion criteria for this study.

While the Food and Drug Administration press releases were an asset in identifying US cases that specifically resulted in a conviction, relying on this type of data may have led to an overabundance of medical product tampering cases in the dataset. These cases often involved a medical health professional stealing narcotics from their place of work and replacing the missing drugs with an innocuous subtance such as saline. These cases may have been overreported here because of the relative ease of identifying the tampering incidents due to controls on such medications, and of identifying the perpetrators, who tend to work directly with such products. In addition, as prosecutions are the primary source of these press releases, cases involving threats and hoaxes alone, and specifically those without a known perpetrator, would likely remain a mystery as a result. One such case in which no perpetrator

was ever found is also one of the most notorious cases in US history; that of the Chicago Tylenol murders of 1983 (Mitchell, 1989). In this case an unknown assailant contaminated painkillers with cyanide, resulting in the deaths of seven consumers. The fact that this case would have been missed if relying on conviction data alone helps to illustrate the importance of using multiple different sources when attempting to fully understand a given phenomenon.

Media reports. According to Woolley (2000), political scientists have long relied on media sources to study complex social phenomena including, for example, military coups, riots, demonstrations, and elections. Media reports are readily available and often very detailed, making them a good source for an exploratory study into a topic which has not received much past academic attention, as was certainly the case with the study being discussed. As such, media reports were relied on heavily during the process of database construction.

Much like government and police records however, the use of media reports comes with several potential challenges. Regardless of the type of record (i.e. government report or media source) there may still be errors in how this real-world event was initially coded (Woolley, 2000). Therefore, the pertinent details presented in a report may change depending on the context in which the source was written, as well as the allegiances of the author. For example, cases of product tampering for political gain may be considered an act of 'food terrorism' by certain sources, but not by others. This however emphasises the importance of clear, empirically developed definitions. In any case it is thus crucial that the researcher carefully considers the source of the information being used.

In addition, as a story can change over time in several ways (e.g. the number of casualties, who is believed to be responsible, etc.) it is crucial that news reports are considered across time whenever possible. For example, early reports in the Stepping Hill

Hospital case indicated that a female nurse was suspected of having filled saline solution with insulin in the hospital near Manchester in 2011, resulting in a number of serious poisonings. However, reports from nearly four years after the poisonings began instead showed a different suspect (a male nurse from the hospital) being convicted of two murders and 22 counts of grievous bodily harm, with charges against the first suspect having been dropped. In this case, a snapshot in time would paint a different picture of the incident, as well as who was ultimately responsible for this crime.

In considering the context of the sources, one of the issues specific to this research was the bias towards Western newspapers, with all media sources being English language publications. This is despite the fact that an effort was made to examine all cases worldwide, with a number of international and region-specific newspapers used to collect data. As a result there was a preponderance of cases from the US and UK specifically, along with other English-speaking nations, such as Canada, Australia and New Zealand. This may be due to the likelihood of both Western and non-Western newspapers printing stories which occurred in these countries, or the result of a bias towards US and UK media sources in the databases searched. Alternatively, it may be that this bias toward US and UK cases represents an actual predisposition for events to occur within these countries. However, this is unlikely considering the availability of poisons worldwide and the ease of committing many of these acts. Either way this was found to be consistent with previous research, with Dalziel (2009) finding the most food defense incidents having occurred in the US and UK. Thus, while one of the goals of this work was to gain a global understanding of contamination incidents, this may not have been fully accomplished with the resources available. For instance, only one case was identified in all of South America throughout the time period studied, and it is expected that this may be more representative of bias in the sources used rather than a true representation of cases in this area.

Academic sources. Finally, in several of the cases used in this analysis there was an additional source of data in the form of academic records. These records consisted either of existing published case lists such as the work of Carus (2002) and Dalziel (2009), or in the form of academic case studies published in peer reviewed journals. Such papers involved multiple disciplines, primarily including medical and toxicology journals as well as business and marketing literature. Where possible these journal articles were also supplemented for additional case details using newspaper articles and police or government records as discussed.

However, as with other sources it is important here to identify the goal of the initial publication. For example, a case published in a marketing journal about a well-known instance of product tampering may serve as a case study designed to show the potential for large economic losses. As a result, it is very possible that a description of such a case would be lacking in very important detail for forensic psychologists, such as behavioural information or demographic data about the perpetrator. For example, in 2008 the US Centers for Disease Control and Prevention reported two Iraqi families having been poisoned with thallium from eating contaminated cake. While the publication carefully explained when each family member had fallen ill and the extent of their illness, there was very little detail provided on the police investigation into the matter, with no mention of the perpetrator. This is to be expected, as the readership is likley to be more interested in the spread and treatment of this poisoning incident rather than the behaviour of the perpetrator in this case.

Issues with Unobtrusive Methods

Some of the specific issues related to validity, reliability, and credibility of the data will now be discussed, as well as how these issues can be addressed. While these issues can

arise with a number of different types of unobtrusive data, the primary focus here is on media sources, which were the most prevalent sources of data in the current study.

Validity. Although the use of unobtrusive data avoids participant effects, there are other issues which must be considered as well. According to Franzosi (1987), the biggest problem with using the media as a source of data is the questionable validity of such reports, and as mentioned previously, the information provided in police and government sources can potentially be distorted based on individual agendas as well (Canter & Alison, 2003). A common problem when using unobtrusive reports is thus internal validity, as multiple sources may each report the same information in a different manner (Alison et al., 2001).

Additionally, Snyder and Kelley (1977) mention that two specific types of media bias may call into question the validity of such sources. These are (1) the nature of the news stories which are selected by the paper and (2) the content of the story which may not accurately represent what has happened in real life. These issues may be particularly problematic when considering certain publishers. While large-scale attacks and threats were often covered by multiple broadsheet newspapers in the US and the UK, and while such papers often reported on international incidents, many stories were found to be solely published in tabloid newspapers. This was concerning as these sources are often criticised for the accuracy of their reports, as well as the potential bias of the authors. These issues can be reconciled through the triangulation of sources, which is explored later in this case study.

However, it should also be noted that some of the smaller, regional cases of poisoning were regularly ignored by larger newspapers, often leaving tabloids as the only source. This left me with a choice to either ignore such incidents and leave the data incomplete, or to accept the fact that the data may be less than accurate for these specific cases. Unfortunately this is a trade-off that I was not necessarily prepared for. However, Franzosi (1987) notes that

media data are more likely to be insufficient rather than faulty, and so these tabloid sources were used with caution and were accompanied by an attempt to find additional sources wherever possible.

　　Reliability. An additional consideration with unobtrusive measures is that they can be prone to issues with reliability, or consistency between sources, as according to Alison et al. (2001, p. 249) the "lack of comprehensive information increases the potential for distortion". For example, as more information is collected over time the number of individuals known to have been injured in an attck may increase – or decrese if an earlier estimate was incorrect – and so multiple news stories may provide conflicting information. In such cases it was necessary to give weight to the most recent source, although in some cases a range of casualties was recorded if no agreement could be found.

　　Alison and colleagues (2001, p. 250) also advise that "[i]t is likely that the same behaviour(s) in different situations may arise for different reasons yet they are interpreted in the exact same way". This could be true of a person who poisons their spouse out or revenge as compared to someone who poisons a spouse in order to claim life insurance benefits; on the surface the result is the same, while the underlying motive may be very different. However, this may not stop the author of each story from coming to the same conclusion in both cases, possibly ignoring any conflicting information. Again, multiple sources should be considered here, although this also highlights the difficulty of inferring perpetrator motive from unobtrusive data.

　　Finally, Franzosi (1987) notes that the main issues with reliability are problems in interpretation of information and incorrect coding when recording information. While little can be done to counteract these issues with the original sources, in the process of coding this

information into the database these problems can be dealt with through the process of inter-rater reliability, which is explored below.

   Credibility. An additional consideration which was relevant to the construction of this dataset was the credibility of the media reports used. Schum (1994) provides three different characteristics which help to determine the credibility of a source of evidence, which are:

1) veracity *(is the witness or attester of the event expected to report truthfully?)*,

2) objectivity *(does the witness of the event have a stake in the outcome?)*, and

3) observational sensitivity *(is it possible for the witness to have observed the event?)*

These criteria are particularly relevant when using human evidence, such as eyewitness testimony and police records, but can be applied to news sources as well.

   When considering the majority of newspapers, veracity can often be assumed as the goal of these publications is to report the events of each case as they actually unfold. Franzosi (1987) also mentions that the facts, such as the location, date, and identity of the participants are likely to be reported accurately, while editorialising is more likely to have an effect on the motives behind such an incident, for example, or media speculation on the potential presence of mental illness. Therefore, one must take care when attempting to make any psychological inferences about a specific perpetrator. This is also true of larger and more violent events, which are more likely to have been reported accurately (Snyder & Kelly, 1977; Franzosi, 1987; Schrodt, 1994). In terms of observational sensitivity, while reporters may not witness the events themselves, they will often rely on those who have in order to develop an accurate presentation of what has happened.

The most significant of these issues for media sources is objectivity, as while reporters should remain objective they do retain a vested interest in selling papers and acquiring money, which may in turn affect what is selected for print. This could lead to cases of accidental food contamination being mistaken for intentional, malicious contamination in order to make a more compelling narrative. Again, the use of multiple different sources to confirm the presence of an intentional act of contamination is key here.

Addressing the Problems

While many of the issues raised are important problems when dealing with unobtrusive data, many of these issues can be overcome during the data collection and coding processes through the methods of **triangulation** and **inter-rate reliability**.

Triangulation. Regardless of which of the abovementioned types of unobtrusive data are used, it is always a possibility that the reports may be incomplete, or they may represent the bias of the original author. Indeed, while the potential for error should not be ignored with such sources, "if they are recognized and accounted for by multiple measurement techniques, the errors need not preclude use of the data" (Webb, Campbell, Schwartz, & Sechrest, 1966, p. 53). The process by which multiple sources are used in order to check the reliability of the data can be referred to as triangulation.

In this sample, triangulation of data was employed wherever possible in order to ensure accuracy of information, and to minimize the effect of any bias, with multiple sources being used to code information. Woolley (2000) argues that there must be a way to check the validity of news reports rather than comparing them to other news sources in order to simply confirm existing hypotheses. For this reason triangulation was not simply used between

media sources, but also by including government reports and academic journal articles as discussed previously.

However, it was not always possible to ensure that more than one different type of source was used. While the majority of cases in the sample were coded from at least two different sources, there was still a minority of cases in which only one source was found. This could be the case when a threat or hoax was noted as having occurred by another academic source, but where no official or published record of such an incident could be found. In this case such incidents were included to ensure that the database was as complete as possible, especially important as contamination incidents can be relatively rare. While this issue only occurred in a minority of cases, it is worth noting that reliance on only one source is not ideal for the collection of such data.

Inter-rater reliability. An inter-rater reliability assessment was conducted by a second researcher experienced in the use of unobtrusive data and content analysis. This analysis was conducted on 15% of the data and revealed a significant kappa value which according to Landis & Koch (1977), would be considered to be in the 'substantial' range and very near to the 'almost perfect' range. In other words, there was a high level of agreement between myself and the second researcher concerning our individual interpretations of the data.

However, there were also some discrepancies between researchers. Only two variables were found to have an agreement level of less than 79%, and both variables concerned the point at which contamination occurred (*unknown point of adulteration* and *home point of adulteration*). This level of disagreement was the result of confusion between the two categories, and in fact 75% of disagreements in each of these categories were due to the opposite category being coded by the second researcher. In order to resolve this issue a

clearer definition was agreed by the two researchers. In instances of rater disagreement the coding was checked for error, and if different the rating from the initial researcher was used.

Accepting the Limitations of the Data

One of the most important practical lessons I have gained from this particular set of data is that, as a researcher, I must learn to accept not only my limitations, but also the limitations of my data as well. While a researcher can strive to collect the best data available and can improve their personal knowledge and strengthen their own skills, they must also be realistic about what can be achieved from the data they have collected. For example, while understanding the mental state of a perpetrator at the time of a crime may be a crucial aspect of the work of a forensic psychologist, when using unobtrusive data the researcher must accept that he or she may need to make interpretations, but also refrain from overreaching. Indeed, as Canter and Alison (2003) note, there is a duty on the part of the researcher to take care in making psychological inferences from such sources of data. Therefore, while it may be possible to say that an individual was at least partially motivated by monetary gain when an extortion demand is made, identifying revenge as a motive can be much more difficult without direct confirmation from the perpetrator. This of course does not mean that unobtrusive data cannot or should not be used, but instead that the researcher must first decide what they would like to accomplish, and then understand what type of data will be best suited for their needs.

Conclusions

Unobtrusive sources of data can be extremely useful in the social sciences when it is practically, economically, or ethically problematic to collect experimental data, and when existing databases do not meet the needs of the researcher. However, there are certainly limitations to the use of these data as well. With a clear understanding of the pros and cons of using unobtrusive data it is possible to explore new topics in subjects like forensic psychology, where data on understudied topics may be difficult to find.

Exercises and Discussion Questions

1) When might experimental methods be inappropriate in the study of forensic psychology (e.g. for what types of crime or in which specific scenarios)?

2) What are the benefits of using unobtrusive methods for student researchers in particular?

3) Are there any ways other than those which have already been mentioned to strengthen the validity, reliability and credibility of unobtrusive data?

4) What other sources could have been helpful in exploring this topic? Are there any that you think have not yet been mentioned?

5) Can ethical issues be ignored when using unobtrusive measures? Why or why not?

Further Readings

Bryman, A. (2016). *Social research methods* (5th ed.). Oxford : Oxford University Press.

Chase, J. (1995). Historical analysis in psychological research. In G. Breakwell, S. Hammond, & C. Fife-Schaw (Eds.), *Research methods in psychology* (pp. 314-326). London: SAGE.

Lee, M. (2000). *Unobtrusive methods in social research.* Buckingham: Open University Press.

Web Resources

N/A

References

Alison, L., Snook, B., & Stein, K. (2001). Unobtrusive measurement: using police information for forensic research. *Qualitative Research, 1*(2), 241-254. doi: 10.1177/146879410100100208.

Canter, D., & Alison, L. (2003). Converting evidence into data: The use of law enforcement archives as unobtrusive measurement. *The Qualitative Report, 8*(2), 151-176.

Carus, W. (2002). *Bioterrorism and biocrimes: The illicit use of biological agents since 1900.* Amsterdam: Fredonia Books.

Centers for Disease Control and Prevention. (2008). Thallium poisoning from eating contaminated cake--Iraq, 2008. *MMWR: Morbidity and Mortality Weekly Report*, 57(37), 1015-1018.

Chase, J. (1995). Historical analysis in psychological research. In G. Breakwell, S. Hammond, & C. Fife-Schaw (Eds.), *Research methods in psychology* (pp. 314-326). London: SAGE.

Cremin, B. (2001). Extortion by product contamination. *American Behavioral Scientist, 44*(6), 1042-1052.

Dalziel, G. R. (2009). *Food defence incidents 1950-2008: A chronology and analysis of incidents involving the malicious contamination of the food supply chain.* Nanyang, Singapore: Centre of Excellence for National Security.

Franzosi, R. (1987). The press as a source of socio-historical data: Issues in the methodology of data collection from newspapers. *Historical Methods, 20*(1), 5-16.

Landis, J., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174.

Lee, M. (2000). *Unobtrusive methods in social research*. Buckingham: Open University Press.

Mitchell, M. L. (1989). The impact of external parties on brand-name capital: The 1992 Tylenol poisonings and subsequent cases. *Economic Inquiry, 27*(4), 601-618.

Schrodt, P. (1994). The statistical characteristics of event data. *International Interactions, 20*, 35-53.

Schum, D. (1994). *The evidential foundations of probabilistic reasoning*. New York: John Wiley & Sons.

Snyder, D., & Kelly, W. (1977). Intensity, media sensitivity and the validity of newspaper data. *American Sociological Review, 42*(1), 105-123.

Webb, E., Campbell, D., Schwartz, R., & Sechrest, L. (1966). *Unobtrusive measures: Nonreactive research in the social sciences.* Chicago, IL: Rand McNally College Publishing Company.

Wilson, M. A., & Kilbane, S. C. (2016). Criminal poisoning and product tampering: Toward an operational definition of malicious contamination. *Deviant Behavior*, 1-19. doi: 10.1080/01639625.2016.1241060.

Woolley, J. (2000). Using media-based data in studies of politics. *American Journal of Political Science, 44*(1), 156-173. doi: 10.2307/2669301.