

Cross-Cultural Perspectives on Millennial Work Engagement: A Self-Determination Theory Perspective

ABSTRACT

Work engagement has long been recognized as a critical driver of organizational success. With Millennials comprising the largest segment of the current workforce, this cross-cultural study explores how personality traits and the satisfaction of psychological needs impact their work engagement. The findings reveal that conscientiousness and the fulfilment of basic psychological needs are significant predictors of work engagement. Specifically, UK Millennials exhibited higher levels of openness to experience, conscientiousness, agreeableness, and internalization, while Thai Millennials reported greater autonomy satisfaction, with no significant differences in relatedness or competence satisfaction. Furthermore, internalization negatively moderated the relationship between conscientiousness and cognitive work engagement. The study provides empirical evidence on Millennials' work-related values and motivational preferences through self-determination theory. Additionally, the cross-cultural comparisons reveal differences between Millennials in the two different countries based on sociocultural contexts and identify lower work engagement levels in the UK sample as a potential area for further research. Practical recommendations are offered for organizations aiming to enhance work engagement by addressing worker personality dimensions, psychological needs, and reward systems.

Keywords: Work Engagement, Personality Traits, Psychological Needs, Millennials, Cross-cultural Comparison

INTRODUCTION

In today's competitive business landscape, talent management strategies are increasingly shaped by macroeconomic forces, technological advancements, demographic shifts, and social changes. Organizations must navigate these complexities to enhance productivity by maximizing the value their employees bring (Hewitt, 2014). However, many fail to meet employee expectations, offering misaligned career opportunities, performance management systems, and compensation structures in an attempt to boost engagement and performance (Hewitt, 2014). Despite evidence that external rewards like commissions and bonuses can undermine intrinsic motivation (Amabile, 1993; Deci et al., 1999), many organizations continue to use these incentives under the operant conditioning framework (Skinner, 1953) to drive desirable behaviors, such as work engagement (Stone et al., 2009). These methods, however, may not be the most effective for fostering sustainable engagement (Stone et al., 2009).

Interestingly, Millennials—who now represent the largest proportion of the current workforce (Gabriellova & Buchko, 2021)—value external rewards more than previous generations, making them a crucial factor in driving their engagement (Twenge et al., 2010; Hewitt, 2014). This preference stands in contrast to earlier findings that highlight the positive association between intrinsic rewards and work engagement (Meyer et al., 2010; Fairlie, 2011). While research on work engagement has grown substantially over the past decade, studies exploring the boundary conditions of intrinsic rewards, particularly among Millennials, remain scarce (Rahman Malik et al., 2015). Ignoring this gap could lead to significant challenges for organizations, given the strong link between work engagement and key outcomes like employee performance, customer satisfaction, and financial success (Bakker et al., 2011). This study seeks to address these gaps by examining the influence of different motivational sources through the lens of self-determination theory (Deci & Ryan,

1985, 2000), and investigating the moderating role of internalization in the work engagement process for Millennials. Specifically, the study will explore how personality dimensions (Costa & McCrae, 1992) and basic psychological needs (Deci & Ryan, 1985, 2000)—both established predictors of work engagement (e.g., Xanthopoulou et al., 2009; Meyer et al., 2010)—affect the three dimensions of work engagement (Schaufeli et al., 2006). Additionally, the study aims to bridge the research gap concerning the relationship between personality factors and basic psychological needs through an analysis of the study model (Figure 1).

Considering cultural dimensions (Hofstede, 2001; DeVoe & Iyengar, 2004) and work-related values (Kao & Sek-Hong, 1997; Deci et al., 2001), personality traits, psychological needs, and motivational preferences vary significantly across countries, leading to differences in work engagement levels (Shimazu et al., 2010). This study focuses on a cross-cultural comparison between Millennials in the UK and Thailand, examining how these factors differ between the two countries. The findings will enhance our understanding of how personality, basic psychological needs, and internalization influence work engagement, enabling organizations to adapt their selection, management, assessment, and reward strategies to foster greater engagement among Millennials. By creating environments that fulfill basic psychological needs (Albrecht, 2010) and tailoring reward systems to different employee groups (Hewitt, 2014), organizations can achieve improved financial outcomes driven by enhanced work engagement (Bakker et al., 2011).

Research Question: What is the influence of personality dimensions and basic psychological needs on work engagement among Millennial workers, and to what extent do the internalization process of work engagement and cross-cultural differences moderate these relationships?

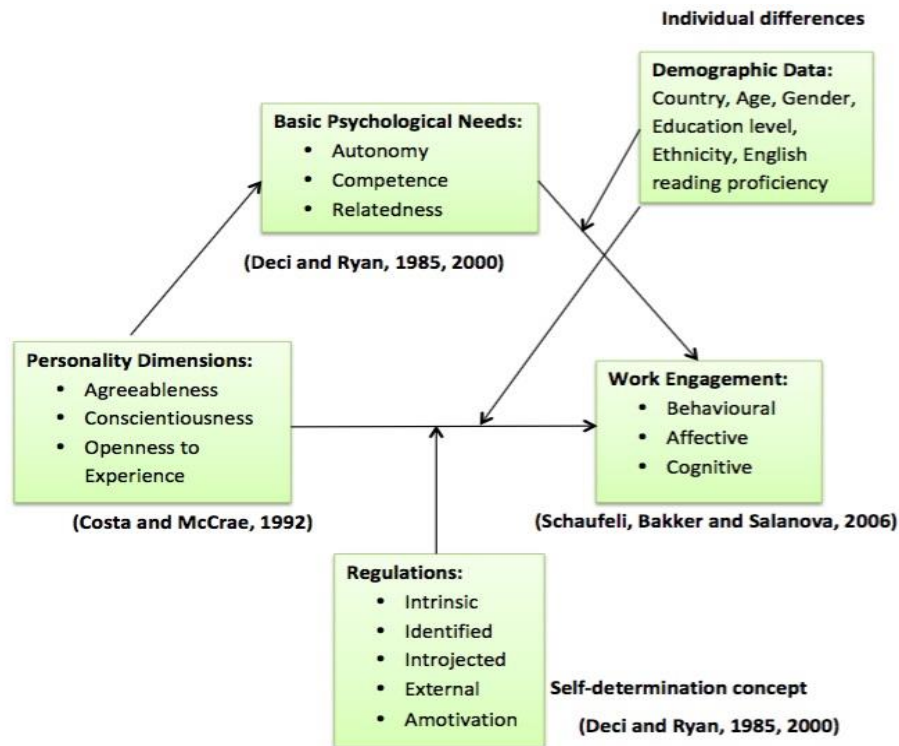


Figure 1 The study framework

LITERATURE REVIEW

Millennial Workforce

Global employee surveys (e.g., Hewitt, 2014) indicate that the workforce is being reshaped by Millennials, with the retirement of Baby Boomers and fewer Generation X employees. Millennials, with distinct values and workplace engagement preferences, significantly impact organizational performance and employee well-being (Schullery, 2013). Understanding Millennials, their needs, and values is crucial for organizations. This generation, often referred to as ‘Gen Net’ or ‘Digital Natives’ due to their exposure to digital technology during formative years, has a unique approach to work (Tapscott, 2009; Schullery, 2013). For this study, Millennials are defined as employees aged 21 to 33, following Ad Age Magazine’s (1993) classification. The following sections will introduce and review the key variables under investigation and explore their interconnections.

Work engagement

The definition of work engagement varies, encompassing terms like 'positive attitude,' 'passion,' and 'enthusiasm,' without a universally agreed-upon meaning (Jafri, 2013). Kahn (1990) first defined it as the physical, cognitive, and emotional involvement of employees in their work roles (Kahn, 1990, cited in Albrecht, 2010). Recently, definitions have evolved to include resilience, learning, adaptability, and speed due to technological advancements (Hewitt, 2014). Work engagement is typically conceptualized through three dimensions: behavior, affect, and cognition (Konrad, 2006; Towers Perrin, 2009), akin to Schaufeli et al.'s (2002) definition as a state of vigor, dedication, and absorption. This study adopts Schaufeli's (2006) widely accepted framework due to its consistency and suitability for cross-cultural comparison. These three dimensions are: behavior, which involves high energy and persistence in work (vigor); affect, which refers to strong involvement and a sense of significance in work (dedication); and cognition, characterized by deep focus and enjoyment in work, often accompanied by a feeling that time passes quickly (absorption).

Work engagement is crucial for organizational outcomes. Studies, like WERS (2011) and Gallup, reveal declining engagement with age and a significant portion of disengaged employees, respectively (Dromey, 2014; Fleming, Coffman, & Harter, 2005). Given its positive impact on performance, customer satisfaction, and financial results (Bakker et al., 2011), organizations must understand and address the engagement needs of Millennials, their largest workforce segment, through tailored rewards and strategies (Hewitt, 2014).

Basic psychological needs

To drive work engagement, it is essential not only to provide various rewards but also to address other work-related needs. Unlike the principles of operant conditioning, which emphasize external rewards like monetary compensation, the Self-Determination Theory (SDT) posits that intrinsic motivation plays a key role in employee engagement (Stone, Deci, and Ryan, 2009). According to SDT, employee motivation is fueled by a sense of task

importance, which can enhance work performance, particularly in complex and creative tasks (McGraw, 1978). The theory identifies three basic psychological needs—autonomy, competence, and relatedness—that are fundamental drivers of intrinsic motivation (Deci and Ryan, 1985, 2000).

First, autonomy refers to the need for self-determined behavior, where individuals feel they have control over their actions. Second, competence relates to the need for effectiveness, where individuals feel capable and proficient in their tasks. Lastly, relatedness refers to the need for meaningful connections, satisfaction, and supportive relationships with others. Satisfying these needs is crucial for fostering motivation in the workplace (Stone, Deci, and Ryan, 2009). For example, providing adequate job resources is vital for intrinsic motivation as it helps fulfil the need for autonomy (Van den Broeck et al., 2008). Therefore, this study utilizes the three basic psychological needs outlined in Self-Determination Theory (Deci and Ryan, 1985, 2000) to explore how the fulfilment of these needs influences work engagement, particularly among Millennials.

The relationship between basic psychological needs and work engagement

The relationship between basic psychological needs and work engagement is central to the Self-Determination Theory (SDT), which posits that motivation is driven by two key feelings: willingness and engagement (Deci and Ryan, 2000). The satisfaction of employees' basic psychological needs has been shown to predict both task engagement and overall psychological adjustment in the workplace (Deci et al., 2001). This relationship is identified as a crucial factor in enhancing work engagement within Meyer and colleagues' framework of engagement (2010). For instance, employees are more likely to be genuinely engaged in tasks that continuously satisfy their basic psychological needs (Deci and Ryan, 2000). Even in less interesting tasks, employees can maintain engagement if they understand the task's value or meaning, which creates a more enjoyable work experience (Stone, Deci, and Ryan, 2009).

Furthermore, work engagement is seen as an aspect of intrinsic motivation within the critical psychological state of the Job Characteristics Model (Hackman and Oldham, 1980), which emphasizes the positive impact of basic needs satisfaction on work outcomes (Deci and Ryan, 2000; Vandercammen et al., 2014). Research consistently supports the idea that job resources, such as social support (relatedness), autonomy, and opportunities for development (competence), are positively associated with work engagement (Schaufeli et al., 2009; Halbesleben, 2010). These findings suggest that the fulfillment of basic psychological needs serves as a strong predictor of increased work engagement. Based on these insights, it is hypothesized that the three basic psychological needs—autonomy, competence, and relatedness—are positively related to work engagement (Table 2.2).

Work Engagement Psychological Needs	3 Dimensions Behavioural/Affective/Cognitive
Autonomy	Hypothesis 1.1: Autonomy is positively related to 3 dimensions of work engagement.
Competence	Hypothesis 1.2: Competence is positively related to 3 dimensions of work engagement.
Relatedness	Hypothesis 1.3: Relatedness is positively related to 3 dimensions of work engagement.

Table 2.2 Hypotheses of the relationship between three basic psychological needs and three dimensions of work engagement

Personality factors

Trait theory suggests that personality traits are genetic and evolve over a lifetime, with individual differences reflecting consistent behavior across situations (Robbins and Judge, 2015). The "Big Five" personality model (Costa and McCrae, 1992) is commonly used to assess workplace behavior. The five dimensions are: openness to experience (intellectual curiosity and openness to new ideas), conscientiousness (self-discipline, structure, and reliability), agreeableness (cooperation, sociability, and compromise), extraversion (positive energy and outgoingness), and neuroticism (emotional instability and negative emotions like anxiety and depression) (Costa and McCrae, 1992). This study will focus on three

dimensions—openness, conscientiousness, and agreeableness—due to their established links to basic needs and work engagement, as discussed in the literature.

The relationship between personality dimensions and basic psychological needs

The Big Five personality dimensions are predictors of basic psychological needs satisfaction, with studies showing that traits such as openness to experience, conscientiousness, and extraversion are positively correlated with workaholic patterns, which fulfill basic psychological needs (Bratko and Sabol, 2006; Andreassen et al., 2010). Specifically, these traits are linked to increased work involvement, drive, and enjoyment, which align with autonomy, competence, and relatedness in SDT (Deci and Ryan, 1985, 2000). In contrast, agreeableness is negatively correlated with workaholic patterns, and neuroticism is positively correlated, except for enjoyment of work (Andreassen et al., 2010). However, there is a gap in understanding how these personality dimensions directly relate to the satisfaction of the three basic psychological needs. This study aims to address this gap by proposing that personality dimensions are indeed related to basic psychological needs (Table 2.3).

Basic Psychological Needs Personality Traits	Autonomy / Competence / Relatedness
Openness to experience	Hypothesis 2.1: Openness to experience is positively related to level of three basic psychological needs.
Conscientiousness	Hypothesis 2.2: Conscientiousness is positively related to level of three basic psychological needs.
Agreeableness	Hypothesis 2.3: Agreeableness is positively related to relatedness and negatively related to autonomy and competence.

Table 2.3 Hypotheses of the relationship between personality factors and three basic psychological needs

Building on previous empirical research in Self-Determination Theory (SDT) (Deci and Ryan, 2000; Vandercammen et al., 2014), work engagement is seen as a result of fulfilling psychological needs. Furthermore, there is evidence linking Big Five personality traits to workaholic behaviors, which can have negative consequences on social, family, and other activities (Andreassen et al., 2010; Scott et al., 1997). However, Andreassen et al. (2010)

suggested that these workaholic patterns may be understood as a manifestation of the satisfaction of the three basic psychological needs. Consequently, it is proposed that these three psychological needs act as mediators in the relationship between personality factors and work engagement.

The relationship between personality dimensions and work engagement

Research has shown that certain personality dimensions influence work engagement, with extroversion, agreeableness, openness to experience, and conscientiousness positively affecting engagement levels, while neuroticism has a negative impact (Xanthopoulou et al., 2009). Conscientiousness, in particular, is consistently identified as the strongest predictor of work engagement (Kim et al., 2009; Akhtar et al., 2015; Inceoglu and Warr, 2015).

Agreeableness also has a direct positive effect, particularly in tasks requiring teamwork (Wefald et al., 2011), and mediates the relationship between personality and organizational outcomes like job satisfaction and commitment (Wefald et al., 2011). Additionally, openness to experience, especially creative thinking, is a positive predictor of work engagement (Inceoglu and Warr, 2015; Akhtar et al., 2015). Given these findings, it is hypothesized that personality dimensions are related to work engagement (Table 2.4).

Work Engagement	
Personality traits	Affect/Cognition/Behaviour
Openness to experience	Hypothesis 3.1: Openness to experience is positively related to work engagement.
Conscientiousness	Hypothesis 3.2: Conscientiousness is positively related to work engagement.
Agreeableness	Hypothesis 3.3: Agreeableness is positively related to work engagement.

Table 2.4 Hypotheses of the relationship between personality factors and three dimensions work engagement

Based on the relationships identified in previous research (e.g., Kim et al., 2009; Schaufeli et al., 2009; Xanthopoulou et al., 2009; Meyer et al., 2010; Inceoglu and Warr, 2015), personality and basic psychological needs are considered independent variables, while work engagement serves as the dependent variable. To further explore these influences, Hypothesis

4 proposes a regression model that predicts work engagement levels based on personality traits and psychological needs, while controlling for factors such as country, education level, ethnicity, and English reading proficiency.

Hypothesis 4: Personality factors and basic psychological needs predict overall work engagement, with controls for country, education level, ethnicity, and English reading proficiency.

Literature on empirical cross-cultural studies

This study aims to compare the effects of personality and basic psychological needs on work engagement between UK and Thai samples. Previous cross-cultural research provides insights relevant to this study.

Personality. Regarding personality, studies (Hofstede and McCrae, 2004; Migliore, 2011) highlight significant correlations between Hofstede's cultural dimensions (2001) and the Big Five personality traits (Costa and McCrae, 1992). For example, masculinity and uncertainty avoidance positively predict openness to experience, while power distance negatively predicts it. Based on Hofstede's cultural rankings, the UK scores higher than Thailand on masculinity and lower on power distance, suggesting higher openness to experience in the UK. Additionally, power distance correlates positively with conscientiousness, and national wealth affects conscientiousness, with poorer countries exhibiting higher conscientiousness. Therefore, Thai participants may show higher conscientiousness due to higher power distance and lower national wealth. Finally, uncertainty avoidance negatively predicts agreeableness, indicating that individuals in high uncertainty avoidance cultures like Thailand may have lower agreeableness. Thus, the differences in cultural contexts between the UK and Thailand are expected to impact personality traits, leading to Hypotheses 5.1A, 5.1B, and 5.1C (Table 2.5), which compare personality traits between Millennials from these two countries.

Hypothesis 5.1 Personality dimensions of the UK and Thailand participants are different.	
Compared variables	Hypotheses
Openness to experience	5.1A. Participants from the UK have higher levels of openness to experience than those from Thailand.
Conscientiousness	5.1B. Participants from Thailand have higher levels of conscientiousness than those from the UK.
Agreeableness	5.1C. Participants from the UK have higher levels of agreeableness than those from the UK.

Table 2.5 Hypotheses of the personality comparison between two groups: the UK Millennials and the Thailand Millennials

Basic psychological needs: The measurement model of basic psychological needs (Deci & Ryan, 1985, 2000) was tested in the US and Bulgaria, revealing cross-cultural support for the self-determination theory. The study found that Bulgarian workers reported higher autonomy need satisfaction than American workers, attributed to greater autonomy support from supervisors and work environments (Deci et al., 2001). However, no differences were found in relatedness and competence needs. The study suggested that sociocultural factors, such as managerial climate, are key in shaping need satisfaction, particularly autonomy, which may influence work engagement.

Motivation theories, often rooted in Western ideologies, focus on individual goals and needs (Kao & Sek-Hong, 1997; Munro et al., 2014). To expand these theories to Eastern ideologies, the concept of moral obligation should be considered. This introduces a broader understanding of autonomy, where individuals in collectivist cultures (e.g., Thailand) may experience autonomy through group-focused values and moral obligations, challenging the traditional view of autonomy as solely individualistic (Kashima et al., 1995; Ryan & Lynch, 1989). Therefore, Hypothesis 5.2A (Table 2.6) was developed.

Hypothesis 5.2 Basic psychological need of the UK and Thailand participants are different.	
Compared variables	Hypotheses
Autonomy	5.2A. Participants from Thailand have higher levels of autonomy satisfaction than those from the UK.
Relatedness	5.2B. There is no difference of relatedness need satisfaction between the two groups of participants.

Competence	5.2C. There is no difference of competence need satisfaction between the two groups of participants.
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Table 2.6 Hypotheses of the basic psychological needs comparison between two groups: the UK Millennials and the Thailand Millennials

Work engagement: The 2013 Aon Hewitt work engagement survey (2014) reported a global engagement score of 61%, with Europe at 57% and Asia Pacific at 61%. Within Europe, Central Europe had the highest score (61%) and Western Europe the lowest (55%). In Asia Pacific, India led with 66%, while Japan had the lowest score (34%). Southeast Asia scored 62%. This study targets employees from the UK (Western Europe) and Thailand (Southeast Asia), with an expectation that engagement levels in Southeast Asia are higher than in Western Europe (Hypothesis 5.3, Table 2.7). However, cultural factors, such as collectivism and social harmony, may influence the expression of positive emotions and engagement levels, especially in countries like Japan (Shimazu et al., 2010; Iwata et al., 1995). These factors should be considered when interpreting results, particularly in relation to positive affect expressions.

Hypothesis 5.3 Work engagement levels of the UK and Thailand participants are different.	
Compared variables	Hypotheses
Work engagement	Participants from Thailand have higher levels of overall work engagement: behavioural, affective, and cognitive, than those from the UK.

Table 2.7 Hypotheses of the work engagement comparison between two groups: the UK Millennials and the Thailand Millennials

Regulations (Sources of motivation): Employees in Western countries typically prioritize intrinsic motivation (e.g., self-actualization) due to the influence of the analytic tradition from Greek Aristotelian thought (DeVoe and Lyengar, 2004). In contrast, employees in Asian countries tend to balance intrinsic and extrinsic motivations, influenced by the holistic concepts of Buddhism (Nisbett et al., 2001). However, the preference for extrinsic motivation in Asian employees is moderated by collectivist social norms (DeVoe and Lyengar, 2004). To measure motivation levels, this study uses the multidimensional self-determination index

(SDI) (Tremblay et al., 2009; Chen and Bozeman, 2013). Hypothesis 5.4 (Table 2.8) compares internalization levels between Millennials from the UK and Thailand, as measured by the SDI.

Hypothesis 5.4 Internalization levels of the UK and Thailand participants are different.	
Compared variables	Hypotheses
Internalization level	Participants from the UK have higher levels of internalization than those from Thailand.

Table 2.8 Hypotheses of the internalization comparison between two groups: the UK Millennials and the Thailand Millennials

Regulations or motivation types (measured by SDI) as a moderator

According to SDT (Deci and Ryan, 1985, 2000), motivation is a continuum from external regulation to intrinsic motivation, with five types of regulation: external regulation (avoiding negative consequences or seeking rewards), introjection (avoiding guilt), identification (pursuing personal goals), integration (aligning actions with one's sense of self), and intrinsic motivation (engaging in activities for inherent satisfaction). As individuals internalize motivation, behaviors become more self-determined, with intrinsic motivation leading to the most positive outcomes. Meyer et al. (2010) applied this framework to work engagement, suggesting that employees with amotivation are disengaged, while those with autonomous regulation (integrated and intrinsic motivation) are fully engaged. Although Millennials still prefer intrinsic rewards, they exhibit a stronger interest in extrinsic rewards compared to GenXers and Baby Boomers (Twenge et al., 2010). Despite this, Millennials' preference for extrinsic rewards has a limited moderating effect on work attitudes and behaviors due to small variability in responses (Twenge et al., 2010). Intrinsic motivation, particularly valuing the meaning of work, is positively related to work engagement (Fairlie, 2011).

Based on this framework and Millennials' motivation preferences, it is hypothesized that intrinsic motivation will positively influence work engagement, while extrinsic rewards may moderate this relationship. Hypothesis 6 examines whether the internalization process

(from amotivation to intrinsic motivation) moderates the relationship between personality traits and work engagement.

Hypothesis 6: Internalization levels in SDT moderate the relationship between personality and work engagement.

METHODS

This study employed a quantitative design using an online questionnaire to gather primary data from Millennials across various countries. The age range (21-33 years) was used as a criterion, ensuring participants shared similar generational experiences. No specific professional or organizational criteria were applied, so convenience sampling was used. The primary data was collected from the UK and Thailand, with a correlational and quasi-experimental design to explore variable relationships and cross-national comparisons (Dancey & Reidy, 2014). A pilot test was conducted prior to the main data collection to assess the recruitment approach and refine the research instruments (Van Teijlingen & Hundley, 2010). The final data collection included 302 full- and part-time employees from the UK and Thailand, aged between 21 and 33 years. Two participants were excluded for exceeding the age limit.

Measures

Personality: Millennials' personality was assessed using the NEO-Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1992), focusing on three dimensions: openness to experience, agreeableness, and conscientiousness. The 36 items used in this study were selected from the full inventory, despite lower reliabilities for agreeableness and openness compared to Costa and McCrae's original study.

Basic psychological needs (Independent variables): Basic psychological needs were measured using a shortened version of the Basic Psychological Needs Scale (BPNS), adapted from the Adolescent Students' Basic Psychological Needs at School Scale (Tian et al., 2014).

The reliability of autonomy, relatedness, and competence scales was consistent with prior studies, with slight variations in competence reliability.

Work engagement: Individual levels of work engagement were measured using the Utrecht Work Engagement Scale (UWES-9) (Schaufeli et al., 2006), which evaluates three dimensions: vigour, dedication, and absorption. The internal consistency for the scale was confirmed to be adequate, with Cronbach's alpha values above 0.7 for each dimension. However, referring to the literature review about the effect of national culture in cross-cultural work engagement research, the items consisting of positive words in the UWES-9, which will be used in the current study, would be negatively affected by the response propensity based on national cultures (Shimazu et al., 2010). Thus, the responses on the UWES-9 from the sample in different countries need to be interpreted cautiously.

Internalization levels or regulations (Moderators): Internalization levels were measured using a custom scale based on Chen and Bozeman's (2013) work on motivational styles. The scale included five regulation types: intrinsic, identified, introjected, external, and amotivational, each assessed on a 5-point Likert scale. Items were weighted to calculate a self-determination index (SDI), reflecting the strength of intrinsic versus extrinsic motivation (Chen & Bozeman, 2013; Meyer et al., 2010).

To measure levels of internalization, the values from different regulations were weighted in self-determination index (SDI) by higher SDI results interpreted as stronger intrinsic work motivation (Chen and Bozeman, 2013): positively weighting autonomous motivation and negatively weighting non-autonomous motivation (Meyer et al., 2010).

$$\text{SDI} = (3 \times \text{intrinsic}) + (1.5 \times \text{identified}) - (1 \times \text{introjected}) - (2 \times \text{external}) - (3 \times \text{amotivated})$$

By using the multidimensional approach to work motivation: the SDI to measure internalization levels (SDT) (Deci and Ryan, 2000), potential results in the present study will also reflect different traditions in different countries. The reliability of the introjected regulation scale in this study is below .70, while the amotivation scale's reliability is also low, similar to previous research (Chen & Bozeman, 2013; Tremblay et al., 2009), suggesting that both scales should be interpreted with caution.

Main study

The survey was conducted with 302 employees (293 complete responses) aged between 21 and 33 years, primarily from the UK and Thailand. Participants were selected through convenience sampling and volunteered based on personal connections without incentives. Statistical analyses were performed using IBM SPSS Statistics for Mac. Pearson's product-moment correlation coefficients were used to examine the relationships between the variables, while the Independent-Samples T Test was employed for cross-national comparisons between UK and Thai participants. Levene's Test of Equality of Variances was applied to assess variance equality between these groups, using a significance threshold of $p < .05$ (Dancey & Reidy, 2014).

To examine the impact of personality and basic psychological needs as predictors, multiple regression analysis was conducted to explore their relationship with work engagement as the dependent variable, controlling for demographic variables such as country, age, gender, education level, ethnicity, and English reading proficiency. For analyzing the moderating effect of internalization, both the independent variable (conscientiousness) and the moderator (SDI) were standardized by centering, creating interaction terms between the centered variables. A regression analysis was then performed using the standardized independent variable, the moderator, and the interaction term (with the dependent variable

unstandardized). Additionally, the PROCESS macro add-on (Hayes, 2013) was used for moderation analysis with the relevant control variables.

RESULTS

Data collection resulted in 293 complete responses out of 300, yielding a response rate of 97.67%. The sample included 186 females (63.5%), 106 males (36.2%), and 1 cross-gender respondent (0.3%). The participants' ages ranged from 21 to 33 years, with 94 (32.1%) in the 21-25 age group, 180 (61.4%) in the 26-30 age group, and 19 (6.5%) in the 31-33 age group. The majority of participants were from the UK ($n = 165$, 56.3%) and Thailand ($n = 121$, 41.3%), and had completed education at the postgraduate (56%) and undergraduate (21.2%) levels. Ethnicities represented included Asian ($n = 143$, 48.8%) and White ($n = 134$, 45.7%), with an average English reading proficiency score of 3.92 out of 5 on a self-rating scale.

Variables	Autonomy	Relatedness	Competence
Behavioural engagement	.356**	.340**	.526**
Affective engagement	.374**	.285**	.537**
Cognitive engagement	.366**	.255**	.524**
Overall work engagement	.406**	.326**	.588**

Note: $N = 293$, ** significant at $p < .001$

Table 4.2 Correlations of the three basic psychological needs and work engagement

Regarding Hypothesis 1, the results in Table 4.2 indicated that all three basic psychological needs, as outlined by Self-Determination Theory (Deci & Ryan, 1985, 2000), were positively and moderately correlated with overall work engagement, measured by the UWES-9 (Schaufeli et al., 2006), at a significance level of $p < .001$. These findings suggest that as satisfaction of basic psychological needs increases, work engagement also increases. The strongest positive correlation was found between competence and overall work engagement ($r = .588$, $p < .001$), explaining 34.57% of the variance in work engagement. In contrast, the weakest positive correlation was found between relatedness and cognitive work engagement ($r = .255$, $p < .001$). Based on these results, it can be concluded that satisfying competence

needs is the most effective driver of overall work engagement, compared to the other two basic psychological needs.

Variables	Openness to experience	Conscientiousness	Agreeableness
Autonomy	.228**	.400**	.186**
Relatedness	.230**	.404**	.354**
Competence	.247**	.470**	.174**

Note: N = 293, ** significant at $p < .01$

Table 4.3 Correlations of the three personality factors and the three basic

For Hypothesis 2, as shown in Table 4.3, three personality dimensions—openness to experience, conscientiousness, and agreeableness—were found to be positively related to the basic psychological needs ($p < .01$). Specifically, conscientiousness and competence exhibited a moderate positive correlation ($r = .470$, $p < .01$), with 22.1% of the variation in conscientiousness explained by the variation in competence. The relationship between agreeableness and relatedness showed the strongest positive correlation ($r = .354$, $p < .01$). This suggests that higher levels of agreeableness are associated with greater satisfaction of relatedness needs. The moderate positive relationship between conscientiousness and competence can be interpreted as reflecting the characteristics of conscientious employees, such as self-discipline, which helps them succeed in their work and meet competence needs. However, it is important to note that organizations should not overly rely on conscientiousness scores from personality tests as the sole predictors of work effectiveness, as discussed in the recommendations section.

Variables	Openness to experience	Conscientiousness	Agreeableness
Behavioural engagement	.051	.313**	.115*
Affective engagement	.060	.303**	.116*
Cognitive engagement	.079	.337**	-.020
Overall work engagement	.070	.351**	.083

Note: N = 293, * significant at $p < .05$, ** significant at $p < .001$

Table 4.4 Correlations of the three personality factors and work engagement

Testing Hypothesis 3, the results presented in Table 4.4 reveal that only conscientiousness is positively and moderately correlated with work engagement at a significance level of $p < .001$. Specifically, the correlation between conscientiousness and overall work engagement was found to be moderate ($r = .351$). In contrast, no significant correlation was observed between the other two personality dimensions—openness to experience and agreeableness—and overall work engagement. However, weak positive correlations were found between agreeableness and behavioral work engagement ($r = .115$, $p < .05$), as well as between agreeableness and affective work engagement ($r = .116$, $p < .05$). These findings support the idea that conscientiousness plays a role in the process of work engagement creation, as suggested by Bakker et al. (2008).

The lack of a significant relationship between openness to experience and work engagement, as outlined in Hypothesis 3.1, is consistent with previous studies that have reported inconsistent findings regarding this relationship (Akhtar et al., 2015; Inceoglu & Warr, 2015). While openness to experience has been identified as a positive predictor of work engagement in some studies (Akhtar et al., 2015), no significant association was found between openness to experience and work engagement in this study, except for the creative thinking facet in Inceoglu and Warr's (2015) study. The present study measured openness to experience using a composite score derived from nine retained items, rather than specific facets. Additionally, items related to creative thinking were excluded to improve the internal consistency of the scale, which may have influenced the results and data interpretation.

Variables	Age	Education level	English reading proficiency
Overall work engagement	.085	.126*	-.157**

Note: N = 293, * significant at $p < .05$, ** significant at $p < .01$

Table 4.5 Correlations of the control variables and overall work engagement

To test Hypothesis 4, Pearson's product-moment correlation coefficient was first used (see Table 4.5) to examine the relationships between the control variables and the dependent

variable (work engagement) before selecting which variables to include in the regression model. The results showed weak correlations between two control variables (education level and English reading proficiency) and overall work engagement ($r = .126, p < .05$ for education level; $r = -.157, p < .01$ for English reading proficiency). Based on these findings, these two variables, along with the remaining controls (country, gender, and ethnicity), were entered into the regression model in the next step. Next, a multiple regression analysis was conducted to explore how the explanatory variables relate to work engagement (see Table 4.6). The related variables were entered into a multiple regression analysis to predict overall work engagement step by step: the related controls, the personality (conscientiousness), and three basic psychological needs respectively.

Variables	R	R Square	Adjusted R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Step 1	.234	.055	.038					
(Constant)				3.299	.507		6.510	.000**
Country				.127	.147	.066	.861	.390
Gender				-.078	.124	-.036	-.624	.533
Education level				.131	.078	.099	1.670	.096
Ethnicity				.104	.077	.105	1.352	.177
English reading proficiency				-.056	.077	-.057	-.735	.463
Step 2	.451	.203	.186					
(Constant)				.530	.601		.882	.378
Country				.041	.136	.022	.305	.761
Gender				.074	.116	.035	.637	.524
Education level				.125	.072	.094	1.725	.086
Ethnicity				.122	.071	.123	1.729	.085
English reading proficiency				-.154	.072	-.156	-2.148	.033*
Conscientiousness				.827	.113	.401	7.295	.000**
Step 3	.642	.413	.394					
(Constant)				-1.122	.555		-2.021	.044*
Country				-.004	.117	-.002	-.036	.971
Gender				.081	.101	.038	.801	.424
Education level				.098	.062	.074	1.570	.118
Ethnicity				.069	.062	.070	1.120	.264
English reading proficiency				-.165	.062	-.167	-2.657	.008**
Conscientiousness				.268	.114	.130	2.339	.020*
Autonomy				.141	.102	.081	1.393	.165
Relatedness				.052	.093	.032	.557	.578
Competence				.843	.105	.471	8.066	.000**

Note: Dependent variable = Overall work engagement, N = 293, * significant at $p < .05$, ** significant at $p \leq .01$

Table 4.6 Hierarchical multiple regression analyses predicting the criterion variable (overall work engagement) from the explanatory variables

In Step 2, only conscientiousness was entered into the regression model, in addition to the controls, since there were no significant correlations between openness to experience and agreeableness and overall work engagement, as shown in Hypothesis 3. Personality alone was found to have a moderate predictive power for work engagement, so the three basic

psychological needs were introduced in Step 3. The results showed that the cumulative effect of the explanatory variables on work engagement was moderately strong (Multiple R = .642). The controls, conscientiousness, and the three basic psychological needs explained 39.4% of the variance in work engagement (Adjusted R Square).

The regression coefficients revealed that conscientiousness ($b = .268$, $t = 2.339$, $p = .020$) and competence ($b = .843$, $t = 8.066$, $p < .001$) were significant predictors of work engagement. Additionally, English reading proficiency was found to be a significant negative predictor of work engagement ($b = -2.657$, $t = -2.657$, $p = .008$). Standardized regression coefficients indicated that competence ($\beta = .471$) was the strongest predictor of work engagement, followed by conscientiousness ($\beta = .130$), and English reading proficiency ($\beta = -.167$). In conclusion, the results suggest that work engagement can be explained by the combined influences of competence, conscientiousness, and English reading proficiency. Specifically, the fulfillment of competence needs and higher levels of conscientiousness were positively related to work engagement, while higher English reading proficiency was negatively associated with work engagement. These findings highlight the potential for organizations to increase work engagement by fostering competence and conscientiousness, while addressing language-related biases (see the Discussion section for further details).

Variables	UK $\bar{X}$ (SD) (n = 165)	Thailand $\bar{X}$ (SD) (n = 121)	Mean difference (UK - Thailand)	t (df = 284)	p (2-tailed)	95% CI	
Lower	Upper						
Personality:							
▪ Openness to experience	3.5145 (.56259)	3.2470 (.39139)	.26746	4.740	.000**	.15639	.37854
▪ Agreeableness	3.5719 (.49254)	3.4523 (.35277)	.11961	2.393	.017*	.02122	.21800
▪ Conscientiousness	3.7311 (.54567)	3.6153 (.44610)	.11580	1.972	.050*	.00019	.23141
Basic psychological needs							
▪ Autonomy	3.7612 (.63741)	3.9322 (.50170)	-.17102	- 2.537	.012*	-.30369	-.03835
▪ Relatedness	3.9242 (.69098)	3.8492 (.54341)	.07507	1.028	.305	-.06869	.21883
▪ Competence	3.8348 (.61330)	3.9236 (.52226)	-.08871	1.317	.189	-.22125	.04384
Work engagement							
▪ Behavioural engagement	3.4141 (1.24077)	3.7741 (.85874)	-.35996	- 2.898	.004**	-.60443	-.11550
▪ Affective engagement	3.6586 (1.39003)	4.1708 (1.06989)	-.51221	- 3.520	.001**	-.79861	-.22582
▪ Cognitive engagement	3.6869 (1.11512)	4.0523 (.92497)	-.36547	- 2.939	.004**	-.61025	-.12069
▪ Overall work engagement	3.5865 (1.13879)	3.9991 (.81933)	-.41255	- 3.563	.000**	-.64047	-.18463
Self-determination index (Internalization level)	- 3.4424 (3.66568)	- 4.5758 (2.96054)	1.13333	2.889	.004**	.36118	1.90549
Regulations (motivational factors)							
▪ Intrinsic regulation	3.8404 (.64664)	3.8953 (.59166)	-.05491	-.735	.463	-.20192	.09209
▪ Identified regulation	4.0364 (.71570)	3.9201 (.54776)	.11625	1.556	.121	-.03084	.26334
▪ Introjected regulation	3.9455 (.76113)	3.7314 (.68630)	.21405	2.448	.015*	.04197	.38613
▪ External regulation	3.7818 (.76301)	4.0689 (.64538)	-.28705	- 3.351	.001**	-.45565	-.11845
▪ Amotivation	3.1697 (.73678)	3.4242 (.72776)	-.25455	- 2.902	.004**	-.42723	-.08186

Note: CI = confidence interval of the difference, SD = Standard Deviation, N = 293, * significant at $p \leq .05$, ** significant at $p < .01$

Table 4.7 Mean comparison for each variable in the study between the participants from the UK and Thailand

To assess Hypothesis 5, a series of independent sample t-tests were conducted to compare the personality dimensions, basic psychological needs, work engagement levels, and motivation types between participants from the UK and Thailand (see Table 4.7).

Personality Dimensions The results revealed significant differences between the UK and Thailand participants across three personality dimensions: openness to experience, agreeableness, and conscientiousness. UK participants scored higher on all three dimensions compared to the Thai participants. Specifically, UK participants had higher mean scores for openness to experience ($M = 3.51$, $SD = 0.56$), agreeableness ($M = 3.57$, $SD = 0.49$), and conscientiousness ($M = 3.73$, $SD = 0.55$) than Thai participants ($M = 3.25$, $SD = 0.39$; $M = 3.45$, $SD = 0.35$; $M = 3.62$, $SD = 0.45$, respectively). The most significant difference was found in openness to experience, with a t-value of 4.740 ($p < .001$). The mean difference between the two groups was 0.27, with a 95% confidence interval for the difference ranging from 0.16 to 0.38. This indicates that the difference in openness to experience scores is unlikely to have arisen due to sampling error, suggesting that country (the UK vs. Thailand) affects personality dimensions, particularly openness to experience.

Basic Psychological Needs: In terms of basic psychological needs, significant differences were found only in the autonomy dimension. The autonomy scores were significantly lower for UK participants ($M = 3.76$, $SD = 0.64$) compared to Thai participants ($M = 3.93$, $SD = 0.50$), with a mean difference of -0.17 ($t(284) = 2.537$, $p < .05$). However, no significant differences were observed between the UK and Thai participants in the other two basic psychological needs: relatedness and competence. These findings suggest that country conditions (the UK vs. Thailand) have an impact on autonomy levels but not on relatedness or competence.

Work Engagement: Regarding work engagement, significant differences were observed in overall work engagement levels between participants from the UK and Thailand.

UK participants ($M = 3.59$, $SD = 1.14$) reported significantly lower work engagement than Thai participants ($M = 3.99$, $SD = 0.82$), with a mean difference of -0.41 ($t(284) = 3.563$, $p < .001$). This indicates that country conditions significantly affect overall work engagement levels, as measured by the three dimensions of work engagement in the UWES-9.

Motivational Factors and Regulations: Further analysis of motivation and regulation types revealed significant differences between the UK and Thai participants. UK participants showed a higher preference for introjected regulation ($M = 0.21$) and external regulation ($M = -0.29$) compared to Thai participants. Specifically, Thai participants preferred external motivation factors, such as job security and benefits, more than UK participants ($t(284) = 3.351$, $p < .01$). Additionally, Thai participants reported significantly higher levels of amotivation ($M = -0.25$) than UK participants ($t(284) = 2.902$, $p < .01$), indicating a higher lack of motivation among the Thai group.

Internalization Levels: The comparison of internalization levels, as measured by SDI (calculated from the five motivational types), revealed that UK participants had higher internalization levels ($M = 1.13$) than Thai participants ($t(284) = 2.889$, $p < .01$). This suggests that country conditions affect preferable types of motivation, leading to differing levels of internalization between the two groups.

Due to the aforementioned differences of the variables between the UK and Thailand sample (shown in Table 4.7), separate regression analyses for each country were performed to examine how these explanatory variables influenced work engagement levels in each group (see Table 4.8). The findings are discussed below, with a focus on the strength of the associations and the role of personality dimensions, basic psychological needs, and other predictors in work engagement for both groups.

UK Sample: For the UK sample, the association between work engagement and the explanatory variables was moderately strong, with a multiple correlation coefficient (Multiple R) of .646. The personality dimensions, basic psychological needs, and control variables accounted for 37.5% of the variation in work engagement, as indicated by the adjusted R square value. Among the explanatory variables, competence was a strong predictor of work engagement, with a regression coefficient of .963 ($t = 6.707$, $p < .001$). Additionally, English reading proficiency negatively predicted work engagement, with a regression coefficient of -.268 ($t = -2.65$, $p < .01$).

Competence emerged as a stronger predictor than English reading proficiency, with a standardized regression coefficient of .519, compared to -.177 for reading proficiency. These results suggest that for the UK sample, work engagement is positively influenced by the satisfaction of competence needs and negatively influenced by English reading proficiency. In other words, the higher the competence satisfaction, the more engaged individuals are at work, whereas lower English reading proficiency is associated with lower work engagement.

Thailand Sample: For the Thailand sample, the association between work engagement and the explanatory variables was also moderately strong, with a multiple correlation coefficient (Multiple R) of .633. However, the personality dimensions, basic psychological needs, and control variables accounted for only 34% of the variation in work engagement, indicating less predictive power compared to the UK sample. In this sample, autonomy (regression coefficient = .528, $t = 3.060$, $p < .01$) and competence (regression coefficient = .457, $t = 2.593$, $p < .05$) both significantly predicted work engagement.

When comparing the two predictors, autonomy was found to be a stronger predictor of work engagement than competence, with standardized regression coefficients of .324 for autonomy and .291 for competence. This suggests that for the Thailand sample, both autonomy and competence needs are positively related to work engagement, with autonomy

playing a more significant role. Thus, the satisfaction of autonomy needs has a stronger positive influence on work engagement levels than competence in the Thailand Millennials.

Variables	R	R Square	Adjusted R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
UK Sample (N = 165)	.646	.417	.375					
(Constant)				-.944	.941		-1.004	.317
Age				.079	.125	.040	.629	.530
Gender				.131	.150	.057	.875	.383
Education level				.163	.092	.114	1.776	.078
Ethnicity				.045	.080	.038	.564	.573
English reading proficiency				-.268	.101	-.177	-2.650	.009**
Openness to experience				-.009	.145	-.005	-.065	.949
Agreeableness				-.108	.165	-.047	-.654	.514
Conscientiousness				.286	.160	.137	1.790	.075
Autonomy				.020	.140	.011	.143	.886
Relatedness				.125	.134	.076	.934	.352
Competence				.963	.144	.519	6.707	.000**
Thailand Sample (N = 121)	.633	.401	.340					
(Constant)				-.028	2.357		-.012	.990
Age				.231	.132	.141	1.750	.083
Gender				-.002	.140	-.001	-.015	.988
Education level				-.025	.088	-.023	-.283	.778
Ethnicity				-.125	.714	-.014	-.175	.861
English reading proficiency				.011	.085	.011	.132	.895
Openness to experience				-.116	.184	-.056	-.631	.529
Agreeableness				-.091	.188	-.039	-.482	.631
Conscientiousness				.297	.180	.162	1.652	.101
Autonomy				.528	.173	.324	3.060	.003**
Relatedness				-.064	.147	-.043	-.439	.662
Competence				.457	.176	.291	2.593	.011*

Note: Dependent variable = Overall work engagement, * significant at $p < .05$, ** significant at $p \leq .01$

Table 4.8 Regression analyses predicting the criterion variable (overall work engagement) from the explanatory variables, separated for the two sample groups: the UK and Thailand Millennials

Comparison Between UK and Thailand Samples A comparison of the regression models for the UK and Thailand samples (see Table 4.8) reveals that competence has a positive influence on work engagement in both groups. However, English reading proficiency does not affect work engagement levels in the Thailand sample. This lack of an effect may reflect the similarity in English proficiency levels within the Thai sample, which may not allow the statistic to distinguish any differences in language proficiency that could influence work engagement.

An interesting finding emerged regarding the satisfaction of autonomy needs, which was a stronger positive predictor of work engagement in the Thailand sample than competence. This is noteworthy given that autonomy satisfaction levels were lower in the Thailand sample compared to the UK sample. This suggests that the working conditions in Thailand, which may involve less pressure compared to the UK, could facilitate higher levels of work engagement among Thai Millennials. This presents an important consideration for

organizations in Thailand, emphasizing the need to maintain autonomy support through managerial systems and job resources.

Furthermore, the role of conscientiousness in predicting work engagement was explored. Despite conscientiousness being a positive predictor of work engagement in the Millennials sample overall (see Tables 4.4 and 4.6), it had no significant influence on work engagement levels in either the UK or Thailand samples (see Table 4.8). This suggests that conscientiousness, while often associated with work engagement in general, may not be a reliable predictor when work climate and cultural contexts are taken into account.

Furthermore, although UK participants scored higher in conscientiousness than Thai participants (see Table 4.7), conscientiousness did not emerge as a significant factor in the work engagement of either group.

Moderating Effect of Internalization on the Relationship Between Conscientiousness and Cognitive Work Engagement

To assess Hypothesis 6, the moderating effect of internalization on the relationship between conscientiousness and cognitive work engagement was tested. As per the findings from Hypothesis 3, conscientiousness was significantly related to overall work engagement. The focus of the analysis was on cognitive work engagement, which showed the most substantial relationship with conscientiousness.

Descriptive statistics for conscientiousness (independent variable) and internalization levels, as measured by the Self-Determination Index (SDI) (moderator), were calculated and centered to create versions of these variables that could be used in the regression model (see Table 4.9).

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Conscientiousness	293	2.09	5.00	3.6876	.50476
SDI	293	-15.33	9.17	-3.9215	3.41825

Table 4.9 Descriptive statistics for the independent variable and the moderator

Regression Model 1: Without Control Variables

In the first regression model (Table 4.10), which did not include control variables, the moderating effect of internalization was not statistically significant. The p-value for the interaction between conscientiousness and SDI was .06, just above the commonly accepted threshold of .05 for statistical significance. This suggests that, without controlling for additional variables, internalization did not significantly moderate the relationship between conscientiousness and cognitive work engagement.

Regression Model 2: With Control Variables

In the second regression model (Table 4.10), four control variables were added, along with standardized versions of the independent variable (conscientiousness), the moderator (SDI), and the interaction term (conscientiousness * SDI). This model revealed a significant negative moderating effect of internalization on the relationship between conscientiousness and cognitive work engagement. The standardized Beta for the interaction term was -.129, with a p-value of less than .05, indicating statistical significance. Additionally, the regression coefficient for the interaction was -.073, with a standard error of .032 (95% Confidence Interval = -.137 to -.010). Since the confidence interval does not include zero, the negative moderating effect was deemed reliable.

Variables	R	R Square	Adjusted R Square	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	95% CI	
				B	Std. Error				Lower	Upper
Model 1	.352	.124	.115							
(Constant)				3.848	.059		65.664	.000**	3.732	3.963
Conscientiousness (Centered version)				.724	.117	.345	6.205	.000**	.495	.954
SDI (Centered version)				.010	.018	.033	.578	.564	-.025	.045
Interaction between Conscientiousness and SDI				-.061	.033	-.108	-1.874	.062	-.126	.003
Model 2 (with controls)	.422	.178	.158							
(Constant)				3.760	.467		8.056	.000**	2.841	4.678
Country				.071	.139	.036	.508	.612	-.203	.344
Education level				.118	.075	.088	1.567	.118	-.030	.267
Ethnicity				.080	.074	.079	1.087	.278	-.065	.225
English reading proficiency.				-.134	.074	-.134	-1.814	.071	-.280	.011
Conscientiousness (Centered version)				.792	.116	.377	6.821	.000**	.563	1.020
SDI (Centered version)				.025	.018	.082	1.423	.156	-.010	.060
Interaction between Conscientiousness and SDI				-.073	.032	-.129	-2.263	.024*	-.137	-.010

Note: Dependent variable = Cognitive work engagement, CI = Confidence interval, N = 293, * significant at $p < .05$, ** significant at $p < .01$

Table 4.10 Regression analysis results show moderation analysis of internalization levels measured by SDI on the relationship between conscientiousness and cognitive work engagement

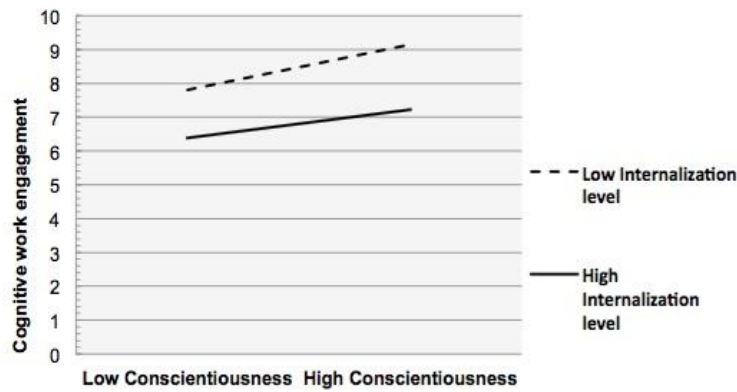


Figure 3 The line graph illustrating the moderating effect of internalization levels on the relationship between conscientiousness and cognitive work engagement

Figure 3 illustrates the nature of the moderating effect, which shows that as internalization levels (measured by SDI) increase, the positive linear relationship between conscientiousness and cognitive work engagement decreases. This suggests that higher levels of internalization reduce the strength of the positive effect of conscientiousness on cognitive work engagement.

These findings present an interesting insight into the boundary conditions of intrinsic rewards for Millennials, particularly in relation to cognitive work engagement. The negative moderating effect of internalization indicates that extrinsic rewards may have a more significant role in strengthening cognitive work engagement for individuals with high conscientiousness. Specifically, when employees with high conscientiousness levels experience higher internalization, extrinsic rewards may serve to enhance their cognitive engagement, while intrinsic motivation may not have as pronounced an effect.

DISCUSSION

This study explored the relationships between personality, basic psychological needs, and work engagement in Millennials, with a cross-cultural comparison between the UK and Thailand. The results revealed several significant relationships.

The relationships of personality dimensions, basic psychological needs, and work engagement in Millennials

Firstly, all three basic psychological needs (competence, autonomy, and relatedness) showed moderate positive correlations with work engagement, confirming that fulfilling these needs enhances engagement through motivation (Deci & Ryan, 1985; Meyer et al., 2010). Notably, competence was the strongest predictor of work engagement, suggesting that challenging tasks that promote achievement could enhance engagement. Autonomy and relatedness were also important, with autonomy linked to work-related decision-making and relatedness fostered by positive work relationships.

Secondly, personality dimensions (conscientiousness, agreeableness, and openness) were positively associated with basic psychological needs. Conscientiousness had the strongest link to competence satisfaction, explaining how organized, reliable employees enhance their work effectiveness (Bratko & Sabol, 2006). Agreeableness was correlated with relatedness, highlighting the importance of good interpersonal relationships for employees high in this trait.

Thirdly, conscientiousness showed a moderate positive correlation with overall work engagement, aligning with previous studies (Kim et al., 2009; Xanthopoulou et al., 2009). However, neither openness to experience nor agreeableness were significantly related to overall engagement, although agreeableness showed mild positive correlations with behavioral and affective engagement.

Finally, competence and conscientiousness were identified as the strongest predictors of work engagement, supported by multiple regression results (Table 4.6). Interestingly, higher English reading proficiency negatively affected work engagement, suggesting potential linguistic differences between the UK (native) and Thailand (non-native) samples, which could influence cross-cultural studies (Shimazu et al., 2010). The study also found that

work engagement levels were higher among Thai participants compared to UK participants (Table 4.7).

The cross-cultural comparison between Millennials from the UK and Thailand

Personality: The UK sample scored higher than the Thailand sample across all three personality dimensions, with Hypotheses 5.1A and 5.1C being supported, while Hypothesis 5.1B was rejected. These findings align with previous research on the correlations between Hofstede's cultural dimensions (Hofstede, 2001) and the Big Five personality traits (Costa & McCrae, 1992; Hofstede & McCrae, 2004). The UK sample exhibited higher openness to experience, which can be attributed to the UK's more masculine culture (Hofstede, 2001), a factor that positively correlates with openness (Hofstede & McCrae, 2004). This suggests that individuals in more masculine cultures tend to be more assertive and competitive, fostering intellectual curiosity. Additionally, the UK, with its lower uncertainty avoidance (Hofstede, 2001), was associated with higher levels of agreeableness, reflecting greater tolerance for uncertainty and a tendency to view themselves as cooperative, sociable, and compromising.

However, the results did not align with predictions regarding conscientiousness. While it was expected that the Thai sample, with its higher power distance (Hofstede, 2001) and lower national wealth, would score higher on conscientiousness, the UK sample actually scored higher in this regard. The Thailand sample was found to be more disorganized and unreliable, contrary to the hypothesis that wealthier nations (such as the UK) might foster more wasteful behavior in their Millennials. These findings suggest that social and contextual factors, such as national wealth and cultural characteristics, may shape personality traits. This highlights the reciprocal relationship between individual differences and broader social contexts, where both can influence job performance and national wealth (Woods et al., 2013).

Psychological needs: The UK sample reported lower levels of autonomy satisfaction compared to the Thailand sample, supporting Hypothesis 5.2A and aligning with Deci et al.'s

(2001) findings. Sociocultural factors suggest that the Thai sample, influenced by collectivism, tends to autonomously adhere to moral obligations and embrace group norms (Ryan & Lynch, 1989). Despite relatively poorer work conditions in Thailand compared to the UK, participants from Thailand experienced less work-related pressure. This suggests that, in terms of managerial climate and autonomy support, work conditions in Thailand may be more effective in fulfilling employees' autonomy needs than those in the UK.

Although autonomy satisfaction varied, the satisfaction of relatedness and competence did not show significant differences between the two countries (supporting Hypotheses 5.2B and 5.2C), consistent with Deci et al.'s (2001) study. The items measuring relatedness and competence reflected participants' personal relationships with colleagues and their self-assessed ability to learn new skills, which were not influenced by organizational managerial styles. As such, the different managerial approaches in the UK and Thailand did not have a notable impact on the satisfaction of relatedness and competence in Millennials from either country.

Work engagement: Work engagement levels in the UK sample, as measured by the three dimensions - behaviour, affect, and cognition - were lower than those in the Thailand sample, supporting Hypothesis 5.3 and aligning with the 2013 work engagement survey (Hewitt, 2014). This lower engagement in the UK raises concerns for organizations about the urgent need to improve employee engagement within the UK workforce. According to Wiley et al. (2010), direct supervisors play a key role in driving work engagement among UK employees. The affective dimension of work engagement exhibited the largest mean difference between the UK and Thailand participants. Previous research on employee engagement and organizational citizenship behaviours (OCB) in Thailand (Rurkkhum & Bartlett, 2012) highlighted the strong positive relationship between engagement and the civic virtue component of OCB, which involves participation in organizational matters (Organ,

1988). As such, the high levels of affective engagement among Thai participants in the present study can be interpreted as a reflection of civic virtue, where employees feel more connected and meaningful through active involvement in work.

SDI: Regarding internalization measured by SDI, the UK sample reported higher levels of internalization compared to the Thailand sample, supporting Hypothesis 5.4 and confirming findings from DeVoe and Lyengar (2004) and cultural differences in motivational perception (Nisbett et al., 2001). Thai Millennials, influenced by Buddhism-based traditions, tend to view motivation holistically, whereas UK Millennials, shaped by analytic traditions (e.g., Greek Aristotelian thought), tend to focus on intrinsic motivation, such as fulfilling organizational and personal interests. Therefore, the study's results suggest that Thai participants perceive motivation more extrinsically, including both external and introjected regulations, whereas UK participants are more intrinsically motivated, driven by personal achievement and organizational success. Additionally, the study reflects the influence of collectivism on the internalization process. Thai participants exhibited preferences for introjected regulations, which are more internalized than external regulations. However, collectivistic values did not strongly enhance internalization levels, as measured by the multidimensional approach of SDI, within the Thailand sample.

Lastly, amotivation levels were significantly higher in the Thailand sample than in the UK sample. Thai employees expressed considerations for job alternatives, both for themselves and their families, and took into account the low cost of living in their working region. These factors may undermine employee motivation. Consequently, organizations could tailor their reward systems based on the different motivational sources of employees. For example, subsidiaries of European companies in Thailand could design a rewards system that emphasizes external and introjected regulations (e.g., medical insurance) rather than

intrinsic regulations, such as job enrichment, which offers more opportunities for employees to utilize their abilities.

The comparison of regression analyses predicting work engagement levels of the Millennials from the UK and Thailand

The differences observed in the cross-cultural comparison of the aforementioned variables suggest that work engagement levels in the UK sample can be attributed to the positive influence of competence needs satisfaction and the negative influence of language proficiency. In contrast, work engagement levels in the Thailand sample are more influenced by the fulfillment of two basic psychological needs: autonomy and competence. Specifically, competence is a key psychological need for Millennials in both countries, with fulfilling this need through challenging tasks leading to a sense of achievement, regardless of cultural context. However, the impact of autonomy satisfaction is more pronounced in the Thailand sample, where the collectivistic culture facilitates autonomous behaviors in the workplace (Ryan and Lynch, 1989). This, in turn, promotes higher work engagement by fulfilling autonomy needs (Schaufeli et al., 2009). In contrast, the individualistic culture in the UK may create barriers to accepting group norms and engaging in autonomous work behaviors.

As a result, the relatively low levels of work engagement among UK Millennials can be attributed to the less positive effects of autonomy fulfillment compared to those seen in their Thai counterparts. While UK Millennials exhibit higher levels of conscientiousness, the characteristics of self-discipline and reliability do not have a significant positive effect on work engagement when considered independently within the UK sample. Similarly, the relatively lower levels of conscientiousness in the Thailand sample do not significantly impact work engagement, meaning that low conscientiousness does not correlate with poor job performance in this group. In conclusion, the assumption of a reciprocal relationship

between personality traits and national wealth, as discussed in the section on personality differences in the cross-cultural comparison, warrants further exploration in future research.

The moderating effect of internalization (SDI) through SDT

From the result in Hypothesis 6, internalization levels had a negative moderating effect on the relationship between conscientiousness and cognitive work engagement: the strength of the personality - work engagement relationship is decreased by an increase of internalization.

This result contradicted the self-determination concept (Deci and Ryan, 1985, 2000): more intrinsic motivation (more internalization) produces more positive consequences. Moreover, it showed that the Millennials' work engagement propensity could not be predicted by the framework of employee engagement (Meyer et al., 2010) - intrinsic motivation drives employee engagement. Therefore, the interesting issue about the Millennials' preferred source of motivation was brought up: the Millennials are more interested in extrinsic rewards than intrinsic rewards, agreeing with Twenge and colleagues (2010).

The boundary condition of positive effects of intrinsic rewards was shown in the present study's result: demonstrating the positive effect of extrinsic rewards. According to cognitive evaluation theory, the effects of extrinsic rewards on intrinsic motivation depend on an individual's reward interpretation (Deci et al., 1999). If the Millennials have an internal locus of control (Rotter, 1966): self-control over situations, they may not experience an external control from the presence of extrinsic rewards (Gagné and Deci, 2005). Thus, intrinsic motivation of the Millennials with high conscientiousness in personality would not be reduced by those extrinsic rewards, but rather cause an increase of motivation driving cognitive work engagement through the creation process (Meyer et al., 2010).

Practical implications

The result of relatively low work engagement levels in the UK employees brings up an urgent HR issue. The results suggest a key to drive the UK's employee engagement is to improve

the effectiveness of their direct supervisors (Wiley et al., 2010). In light of this, assessment and selection methods should be reviewed so that managerial positions are assigned to managers who acknowledge their subordinates, and to control and develop their performance via performance and talent management systems. By doing this, companies in the UK could create a specific country-level engagement driver (Wiley et al., 2010), and the effectiveness of immediate managers would be improved systematically.

Work climate is another critical factor driving employee engagement through the process of basic psychological needs satisfaction (Albrecht, 2010). For example, autonomy need: a positive predictor of work engagement, could be fulfilled by job resources (Schaufeli et al., 2009; Halbesleben, 2010). Therefore, organizations could provide social support (interactions among colleagues), job redesign, development and learning opportunities, and performance feedback systems in order to satisfy employees' three basic psychological needs leading to an increase of work engagement in the long run (shown in the relationships between basic psychological needs and work engagement). Furthermore, regarding employee recruitment and selection processes, 'general causality oriented' measures (Deci and Ryan, 1985) are normally used to select candidates who tend to be engaged with a greater internal locus of control, and more proactive to satisfy their basic psychological needs from work circumstances. Additionally, for the Millennials, organizations still need to assess and understand their true work-related values in order to match them with suitable reward types (regulations), because the mismatch between preferred sources of motivation and rewards would potentially have a negative influence on the work engagement creation process (shown in the moderating effect of internalization).

Finally, personality testing should be used cautiously in the selection process. Even if many research findings (e.g. the result of Hypothesis 3.2 in the present study) showed that conscientiousness is a positive predictor of work engagement, the result from a personality

test fails to acknowledge contexts: how the personality interacts with others and the work environment (Furnham and Heaven, 1999, cited in Searle, 2003). Due to social desirability and impression management, distortion and faking would be found in a self-reported personality assessment (Searle, 2003). Consequently, a human resource department could choose other alternative selection methods, e.g. situational judgment tests, and structured interviews, to probe a certain characteristic and observe interactions (Slaughter et al., 2014).

Study limitations and suggestions for future research

Firstly, the present study interpreted and discussed the results based on cultural dimensions at a national level: the UK's has lower levels in collectivism and uncertainty avoidance than Thailand's (Hofstede, 2001). However, generational values, occupational norms, and organizational cultures can be measured in future studies as a means of distinguishing differences across occupations, generations and countries.

Secondly, this study found a personality difference (conscientiousness) in the cross-cultural comparison, which could not be explained purely by the influences of national culture and national wealth. Thus, the interaction between personality traits and culture still needs to be explored in reciprocal mechanistic terms. Apart from cultural factors, job demands could be added as potential variables shaping individual traits.

Lastly, due to the inconsistent findings of the boundary conditions of using intrinsic rewards, there are still some research gaps about the effects of individual differences in the process of work engagement creation through self-determination theory. Thus, further research can focus on the exploration of individual differences in terms of predictors and moderators in work engagement relationships caused by different sources of motivation.

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