



# Understanding the Relationship between Colleague Friendships and Work Engagement with Wellbeing; A Three Wave Study

Samantha Shimmin

Supervised by: Dr. Vicki Elsey

April 2019

## **Acknowledgments**

---

I would like to give a special thanks to my lovely supervisor Dr. Vicki Elsey, whose continuous guidance, encouragement and insight was invaluable throughout the whole process of this project. Also, to my amazing friends and family for their constant support and motivation, and of-course to my participants for being a pivotal part of this project and taking the time to complete my study.

## Abstract

### Understanding the Relationship between Colleague Friendships and Work Engagement with Wellbeing; A Three Wave Study

#### ABSTRACT

**Objective:** To understand the predictive relationship of colleague friendships and work engagement with wellbeing. The study aims to account for fluctuations within each construct whilst measuring three separate aspects of colleague friendships (colleague support, workplace friendship opportunity and prevalence). Following the findings of previous literature linking such variables to positive organisational outcomes, the current study hypothesises a positive predictive relationship to also be present between the constructs and wellbeing.

**Methods:** Participants (all of whom employed) completed a Qualtrics questionnaire online, including 5 scales regarding colleague friendships, work engagement and wellbeing. A demographic and control survey were also included. Participants completed the same questionnaire once a week for three weeks, receiving reminder emails from the researcher at each time-point.

**Results:** Significant positive correlations were present between each of the predictor variables and the outcome variable at all time-points. The hierarchical regression analysis revealed that the introduction of work engagement into the predictive model led to significant additional explanation of variance within wellbeing. This finding was present at each of the three time-points. The introduction of colleague friendships was only able to significantly account for wellbeing variance at the third time-point.

**Conclusions:** The results confirm that there is a predictive positive relationship present between colleague friendship and work engagement with wellbeing over a three-week period.

<b>KEY WORDS;</b>	<b>Mental Wellbeing</b>	<b>Colleague Friendships</b>	<b>Work Engagement</b>
<b>Workplace</b>	<b>Friendship Opportunity</b>	<b>Friendship Prevalence</b>	<b>Colleague Social Support</b>

## Introduction

---

Wellbeing is a dynamic construct which has been difficult to define. This originally was due to any definitions of wellbeing lacking theory-based formulation of the construct (Ryff & Keyes, 1995). Wilson (1967) initially suggested wellbeing to be encapsulated by a young, successful individual in good health, married with high optimism and self-esteem. Whilst research has provided support for such demographic factors and their influence on wellbeing, the findings from further studies have highlighted the dynamic nature of wellbeing and how it cannot be defined so simply (Headey & Wearing, 1992; Tomy & Cummins, 2011; Hendry & Kloep, 2002; Kloep, Hendry & Saunders, 2009). Dodge, Daly, Huyton and Saunders (2012) proposed a subsequent definition of stable wellbeing; when an individual possesses the psychological, social, and physical resources required to meet corresponding challenges. The remainder of this paper will follow this definition whilst allowing for two dimensions within; the hedonic experience of feeling pleasure and pain avoidance, as well as the eudaimonic experience of purpose and self-realisation (Ryan & Deci, 2001).

Wellbeing is essential within many aspects of an individual's life. Diener and Chan (2011) linked high subjective wellbeing to health benefits and longer life expectancy, outlining the importance of understanding such a construct and its contributors. Literature has highlighted family life, peer friendships and the impact of work all to be major contributors towards wellbeing (Snow & Mann-Feder, 2013; Strazdins, Shipley, & Broom, 2007). With over 32.3 million people in the UK reported to be employed in 2018, it is clear to see why an individual's work has become of increasing interest (Gov.uk, 2018). Work-life factors such as working environment, workplace culture and working hours have previously been implied to impact upon self-reported wellbeing (Lu, Gilmour, Kao, & Huang, 2006; Sparks, Faragher, & Cooper 2001). This has further alluded to be a two sided-relationship, as wellbeing has been found to influence workplace behaviours and job performance (Sonnentag, 2015). Longitudinal research into workplace wellbeing has also revealed sustained impacts upon employee mental and physical health due to negative work experiences (Hoobler, Rospenda, Lemmon & Rosa, 2010); making the importance of understanding such contributors towards wellbeing clear. Supplementary literature has begun to research areas such as workplace social environment and relationships, work engagement, human resource policies and psychological capital regarding their influence on work-place wellbeing (Avey, Luthans, Smith, & Palmer, 2010; Sonnentag 2015; Woods, 2010).

Despite such relationships beginning to be explored, understanding is still lacking with a number of influencing factors being under-researched within the workplace. Much of the limited research has been based upon wellbeing indicators, such as job satisfaction, rather than measuring the construct of wellbeing directly. This has led to confusion between the relationships and inconclusive findings within the constructs. It is therefore important to further research influential workplace factors of wellbeing. By understanding the specific factors that can influence wellbeing, the basis for producing positive interventions within work can be put in place, in an attempt to limit the negative impact or even encourage positivity within employee wellbeing. Researching employee wellbeing allows for a greater understanding in how to protect and nurture staff whilst motivating them to be greater employees.

## **Wellbeing and Colleague Friendship**

Normative peer friendships have been established to have positive impacts for an individual. They have been implied to positively influence development of self-esteem and healthy autonomy as well as to act as a buffer and protect from depression and loneliness (Snow & Mann-Feder, 2013; Nangle, Erdley, Newman, Manson & Carpenter, 2003). The impact of such friendships within the context of the workplace and occupational domain of psychology has further been linked to positive outcomes, however, the impact upon wellbeing has not been as clearly established and understood as within other domains.

Berman, West and Ritcher (2002, p.218) defined multiplex workplace friendships to be “non-exclusive workplace relations that involve mutual trust, commitment, reciprocal liking and shared interests or values”. This definition identifies such relationships to be deeper in meaning than acquaintances or ‘associative friends’ referring to proximity based, convenient friendships (Reisman, 1984). Initial research into the concept of colleague friendships by Riordan and Griffeth (1995) suggested a direct positive relationship of friendship opportunity with job involvement and satisfaction. Further research has supported early conclusions, suggesting workplace friendship to impact job performance, job involvement, job satisfaction, as well as organisational commitment and identification (Ting & Ho, 2017; Akila & Priyadarshini, 2018). Such studies have however, used different friendship measurements, focusing on separate aspects of workplace friendships rather than using a standardised measure of the construct. Whilst research has provided strong evidence towards a relationship between workplace friendships and work-based benefits, the complexity of such friendships are often not considered. A post-positivist approach, whereby the organisational outcomes of workplace factors are the main focus, is present within much of organisational research. Rumens (2017) highlights such approach within the limited research of colleague friendships. Job performance and organisational commitment are often measured in relation to workplace friendships. The impact of how such relationships impact the individual employee in terms of their own gains, such as wellbeing, is often ignored within literature. When wellbeing has been measured, it has also been conducted in relation to job efficiency and performance (Sonnentag, 2015; Akila & Priyadarshini, 2018).

Social identity theory on the other hand, suggests that colleague friendships and positive work-based groups can be healthy towards an employee’s social identity and further self-image/self-esteem (Tajfel, 1974). This theory suggests individuals feel more positively about themselves if they are accepted as a member of an in-group. When viewed in relation to the workplace, research has suggested colleague shared social identity can have a positive impact on both work and life satisfaction due to the support and appreciation provided by in-group members (Haslam, Jetten, Postmes & Haslam, 2009). Extending from these findings, Haslam, Jetten and Waghorn (2009) suggest such social identity can protect individuals from burnout during stressful work activity, promoting healthier behaviours, greater wellbeing, and higher morale. Further qualitative research has sustained these findings, identifying supportive colleague friendships to act as a buffer from stressful work tasks and situations (Pignata, Boyd, Winefield & Provis, 2017).

Recent research on medical work groups can be seen to support such theory whereby healthy colleague relationships positively impact individual physical and mental wellbeing. Aalto, Heponiemi, Josefsson, Arffman and Elovainio (2018) found physician's wellbeing factors such as sleep quality, workability, and distress to be positively impacted by collegial support and good team climate. Schön Persson, Nilsson Lindström, Pettersson, Nilsson & Blomqvist (2018) further suggested healthcare employee's workplace relationships to be strongly linked to health promotion efforts. Such findings further highlight the importance of a need for greater understanding of the relationship colleague friendships hold with wellbeing. Whilst recent studies begin to explore the impact these friendships can have on an individual within work and outside, they have focussed on small medical working groups. Further research is therefore needed to gain a greater understanding of the influences colleague friendships have on employee general wellbeing within the working population and how greater wellbeing can be promoted.

### **Wellbeing and Work Engagement**

Early definitions of work engagement saw engaged employees to be those fully emotionally, cognitively and physically connected to their work role (Kahn, 1990). Schaufeli, Salanova, González-Romá and Bakker (2002) extended such definition to be a positive work-related state characterised by vigour (high energy and resilience), dedication (strong sense of work involvement, significance and enthusiasm) and absorption (fully engrossed in and concentrated on work). Much of the previous literature including work engagement is present within studies of the Job Demand-Resources (JDR) model first suggested by Demerouti, Bakker, Nachreiner & Schaufeli (2001). The JDR model proposed workplace outcomes to be influenced by personal and job resources as well as job demands. Studies have suggested high resources to buffer the impacts of high demands leading to positive outcomes. If such resources are lacking, or not present within the workplace, high job demands can lead to negative outcomes. Revised versions of the JDR model have included work engagement and burnout (workplace exhaustion) acting as mediators within the model (Schaufeli & Bakker, 2004). Such models propose a negative relationship between the motivating factor of work engagement and de-motivating influence of burnout. Seligman and Csikszentmihalyi (2000) highlighted the negative focus of such workplace research, with 15 negative workplace outcomes for every positive outcome it is understandable why burnout has often been the focus of research within the model. Conversely, positive psychological movements have encouraged work engagement and its impacts to be further explored. The work-related state has further been suggested to be linked to improved creativity, innovation and productivity as well as greater job performance and client satisfaction (Bakker, Schaufeli, Leiter & Taris, 2008; Christian, Garza & Slaughter, 2011; Gawke, Gorgievski, & Bakker, 2017).

Working within the JDR model the construct is considered to mediate the relationship between many of these associations. However, such studies have failed to specify causal ordering of variables within the research and their effect on work engagement as a motivator as well as the final outcome of the model. This is due to the predominant cross-sectional nature of data within this area of research. Further to this, the research included is based upon one-time data collection or two-wave studies. Such

methodological design does not allow for the fluctuations across time and situation within the construct to be measured or allowed for (Bakker, 2014; Reina-Tamayo, Bakker & Derks, 2017). Gawke et al (2017) highlights the importance of future research to include at least three time-waves in order to further disentangle the dynamic motivational process of work engagement.

A considerable amount of such research has established a relationship between work engagement and work-related outcomes, nevertheless, Rothmann (2008) began to consider work engagement as a form of wellbeing proposing its inclusion in a four-part workplace wellbeing model. Further research has also referred to work engagement as an indicator of such wellbeing (Schaufeli, Taris, & Van Rhenen, 2008). With a recent review of work engagement, research identified its growing importance in promoting team and organisational health, wellbeing and performance (Bakker & Albrecht, 2018). The mediating role work engagement holds between positive psychological capital and employee wellbeing and morale has begun to be explored within hospitality employees (Paek, Schuckert, Kim & Lee, 2015). Gupta and Shaheen (2018) further investigated the relationship between work engagement and wellbeing with psychological capital acting as a mediator, nevertheless, these results remain inconclusive. Whilst literature is present regarding the exploration of work engagement and its positive impacts within the workplace and further on employee wellbeing, critical understanding of the direct relationship it holds is lacking and unclear. The positive impacts of work engagement within other aspects of the workplace outlines its importance in greater understanding of the construct, similar to that of employee wellbeing. Further research is therefore required to contribute to the understanding of such relationships between influential and important constructs.

### **The Current Study**

Despite previous literature within organisational psychology beginning to explore concepts such as colleague friendship and work engagement, it is clear that the focus of much of the research is their impact upon performance and efficiency to benefit an organisation, and not the individual. Whilst the association between such constructs and work-related outcomes (job performance, organisational commitment, job involvement, etc) is often understood much of the research fails to dedicate equal research to the wellbeing of the individual (Ting et al, 2017; Akila et al, 2018; Schaufeli et al 2004; Bakker et al, 2008; Christian et al, 2011; Gawke et al, 2017). Studies conducted into wellbeing within the context of work have been highlighted, however, to be unable to account for the dynamic aspect of wellbeing. Sonnentag (2015) suggests wellbeing should be tested a minimum of three times to allow for such fluctuations and provide true representation. Such designs are wanting within research of colleague friendships and work engagement also (Gawke et al, 2017; Sias and Cahill, 1998).

Whilst the association between colleague support and friendship has begun to be linked to organisational outputs, Sonnentag (2015) further highlights the inconclusive findings of the workplace social environment impact on employee wellbeing. Recent research has begun to suggest links between physical wellbeing and colleague support, although such findings are limited in general application as they focus on small, high stress medical job roles which may not apply to other workplaces (Josefsson et al, 2018;

Schön Persson et al, 2018). The JDR model is established within much of the previous literature of the workplace, frequently including work engagement. However, such research often does not allow for work engagement to be considered a job resource, measuring the direct relationship work engagement holds with outcomes; including wellbeing. Aspects of colleague friendship have begun to be introduced as job resources within JDR models (Mudrak et al, 2018). Only specific factors of such relationships within the workplace were considered within the model exploration. The introduction of such also remains unclear and under-researched within models of employee wellbeing.

Reviewing the previous literature, it is proposed the direct relationship between colleague friendships and work engagement with wellbeing is unclear. Research has further highlighted the importance of additional research into the influencing factors of wellbeing due to its impact on physical and mental health. The current study therefore aims to understand the relationship between colleague friendships and work engagement with wellbeing. The study will investigate the constructs' predictive power in wellbeing. Fluctuations within each construct will be accounted for as a three-wave design will be present. The study will aim to standardise the measurement of colleague friendships by measuring three prominent aspects of the relationships identified within previous findings. Confounding variables will also be aimed to be controlled.

The study hypothesises a positive relationship to be present between work engagement and colleague friendships with wellbeing, whereby colleague friendships and work engagement account for unique variance of wellbeing across three time-points.

The research question of the current study is: **Do colleague friendships and work engagement predict wellbeing when measured at multiple time-points?**



## Method section

---

### Design:

The study followed a quantitative approach using a longitudinal, correlational design. The predictor variables of the current study were colleague friendships (social support, workplace friendship prevalence and opportunity) and work engagement (vigour, dedication and absorption). The control factors of the study included gender, household income, relationship status and working hours. The outcome variable of the study was mental wellbeing.

### Participants:

At the first time-point of the study, 107 participants were initially recruited via opportunity sampling. The study was promoted on the researcher's social media outlets; Facebook, Instagram, Twitter, Reddit and LinkedIn. Organisational groups on Facebook were also approached by the researcher including 'Workplace Wellbeing' and 'Life and Work Wellbeing balance'. All participants recruited were over the age of 18, reported themselves not be diagnosed with a mood disorder and to be working once a week or more. Those with mood disorders were excluded from taking part due to previous literature suggesting symptoms of such disorders to possibly impact variables being measured. For example, mood disorders are often linked to lower self-reported wellbeing, greater social isolation, and lack of motivation (Cruwys and Gunaseelan, 2016; MacQueen et al., 2000; Kampmann, Emmelkamp & Morina, 2018; Hershenberg et al., 2016). Such symptoms could therefore impact the predictor variables of colleague friendship and work engagement as well as the outcome variable of wellbeing. In addition, those who work less than once a week, or not at all, were not invited to take part due to their inability to truly represent how workplace friendship and engagement can impact wellbeing. Research has also suggested those on flexible contracts working less than once a week, or temporary contracts, show different workplace friendship behaviours than typical and report different impacts on wellbeing (Pedersen & Lewis, 2012; Sparks et al., 2001).

Of the initial 107 recruited participants, only 94 of these participants provided meaningful responses. The age range of the sample was 18-66 with the mean age of 27.54 (SD=11.94). Of this sample, 75 participants identified as female and 19 as male. Following onto the second time-point, 75 participants provided responses. However, following treatment of data only 39 responses were used in the analysis. The age range remained the same as the first time-point (18-66) with a mean age of 28.8 (SD=12.83). Of these participants, 32 identified as female and 7 as male. At the final time-point, only 22 participants followed on to provide meaningful responses, with 30 participant's data sets having to be removed during data treatment. The age ranged once again from 18-66; the mean age at this measurement was 29.91 (SD=14.18). With 16 females and 6 males taking part at this time-point, the male to female ratio remained predominantly female (1:2.67).

Further frequencies regarding participant relationship status, household income, and working hours can be found below in Table 1.

Table 1. *Frequencies of participant responses to demographic question.*

Time-point	1		2		3	
Variable	Frequency	Valid percent	Frequency	Valid percent	Frequency	Valid percent
<b>Gender</b>	<b>(n=94)</b>		<b>(n=39)</b>		<b>(n=22)</b>	
Male	19	20.2%	7	17.9%	6	27.3%
Female	75	79.8%	32	82.1%	16	72.7%
<b>Relationship</b>	<b>(n=91)</b>		<b>(n=38)</b>		<b>(n=22)</b>	
Married	16	17.6%	8	21.1%	5	22.7%
Relationship	37	40.7%	11	28.9%	9	40.9%
Single	38	41.8%	19	50%	8	36.4%
<b>Working hours</b>	<b>(n=93)</b>		<b>(n=39)</b>		<b>(n=22)</b>	
>4-18	10	10.8%	5	12.8%	3	13.6%
18-30	30	32.3%	12	30.8%	7	31.8%
30-42	19	20.4%	7	17.9%	5	22.7%
42+	34	36.6%	15	38.5%	7	31.8%
<b>Household income</b>	<b>(n=83)</b>		<b>(n=33)</b>		<b>(n=20)</b>	
£1-9,999	9	10.8%	0	-	0	-
£10,000-29,999	37	44.6%	18	54.5%	10	50.0%
£30,000-49,999	17	20.5%%	6	18.2%	5	25.0%
£50,000-69,999	10	12.0%	4	12.1%	2	10.0%
£70,000-89,999	4	4.8%	3	9.1%	2	10.0%
£90,000-109,999	2	2.4%	0	-	0	-
£110,000 +	4	4.8%	2	6.1%	1	5.0%

## **Materials:**

A survey containing five scales was distributed using Qualtrics. Participants were also asked to answer demographic and control questions at the first time-point only.

### **a) Demographic and Control Questionnaire**

Participants were asked to state their preferred contact email followed by their age. They were then asked to select which gender they identify as. Participants were further requested to provide answers regarding their relationship status, their main household earners income and typical weekly working hours. Categorical answers were provided for each question (See Appendix A). Each factor was included to be controlled for in the current study due to previous research suggesting them to impact at least one of the current variables; colleague friendships, work engagement or wellbeing (Morrison, 2009; Dush & Amato, 2005; Huppert, 2009; Kinman & Jones, 2008; Schaufeli et al., 2008).

### **b) Colleague Friendship Scales**

Three scales were used to measure aspects of colleague friendship. Previous literature highlighted the importance of workplace friendship opportunity and prevalence as well as colleague support. Such factors were therefore measured within the construct of colleague friendship (Riordan & Griffeth, 1995; Chiaburu, Van Dam & Hutchins, 2010).

Colleague prevalence was measured using Nielsen, Jex and Adams' (2000) six item scale. The scale uses a five-point Likert scale when answering to what degree participants agree with an item statement. Within the scale '1' represented 'strongly disagree' and '5' represented 'strongly agree'. Items within the scale include statements such as 'I have formed strong friendships at work' and 'I feel I can trust many co-workers a great deal'. The scale also included a reverse scored item 'I do not feel that anyone I work with is a true friend'. The scale was chosen due to prevalence being important to consider within colleague friendship. The scale had been validated to show good internal consistency of  $\alpha=.89$  offering a strong basis in the decision to utilise (Nielsen et al., 2000). The current study supported such validation, finding good internal consistency at each of the three time-points; (1)  $\alpha=.711$  (2)  $\alpha=.758$  (3)  $\alpha=.802$ .

Nielsen et al., (2000) friendship opportunity scale was also used to measure colleague friendships. This scale consisted of six items and was scored using the same five-point Likert scale as the above prevalence scale. The scale included items such as 'I am able to work with my co-workers to collectively solve problems' and 'Communication among employees is encouraged by my organisation'. Friendship opportunity within the workplace is important to consider for the development of colleague friendships (Riordan & Griffeth, 1995). The scale has also been found to have a Cronbach's alpha score of  $\alpha=.84$  through Nielsen et al's., (2000) validation, suggesting the study to have good internal consistency. Current study scale validation; (1)  $\alpha=.853$  (2)  $\alpha=.878$  (3)  $\alpha=.912$ .

Social support has predominantly been used to measure colleague relationships in previous studies. The current study therefore used Alves, Chor, Faerstein, Lopes, and Werneck's (2004) short version of the 'Job Stress Scale'. This scale was scored on a four-point Likert scale where '1' represented 'Strongly agree' and '4' represented 'Strongly Disagree', meaning higher scores signified lower levels of perceived social

support in the workplace. The social support scales included items such as 'my co-workers support me' and 'I enjoy working with my co-workers'. Validation of this scale showed good internal consistency of  $\alpha=.85$  (Alves et al., 2004). Current study internal consistency scores were also high; (1)  $\alpha=.875$  (2)  $\alpha=.875$  (3)  $\alpha=.895$ .

#### **a) Work Engagement Scale**

The Utrecht nine item work engagement scale was used to measure work engagement in the current study (Schaufeli, Bakker & Salanova, 2006). The nine-item scale measured all three components of work engagement: Vigour, Dedication and Absorption. The items were scored from '1' to '6' on a Likert scale where '1' symbolised the participant to 'never have this feeling' in relation to the item statement and '6' to represent the participant to 'always have this feeling'. The option of 'I occasionally have this feeling' was also present in the scale. A high score on this scale therefore represented that the participant had high work engagement whilst a low score suggested poor work engagement. Balducci, Fraccaroli & Schaufeli (2010) conducted a study on the scales psychometric properties to find good internal consistency for each component of work engagement: Vigour ( $\alpha=.86$ ), Dedication ( $\alpha=.89$ ), and Absorption ( $\alpha=.76$ ). The current study conducted internal consistency analysis on the overall work engagement scale to find the following results; (1)  $\alpha=.931$  (2)  $\alpha=.952$  (3)  $\alpha=.961$ .

#### **b) Wellbeing Scale**

Wellbeing was measured in the current study using the fourteen item 'Warwick-Edinburgh Mental Wellbeing Scale' (WEMWBS). The scale has been validated by Tennant et al., (2007) to have an excellent internal consistency ( $\alpha=.89$ ). The current study validated such internal consistency: (1)  $\alpha=.932$  (2)  $\alpha=.935$  (3)  $\alpha=.951$ . Items within the scale included 'I've been feeling relaxed', 'I've been feeling loved', and 'I've had energy to spare'. Items such as these were rated on a five-point Likert scale from '1' (representing 'None of the time') to '5' (representing 'All of the time'). Typically, when using this questionnaire participants are asked to rate these items in accordance to how often they have had these feelings within the last two weeks. Due to the design of the study requiring participants to complete the questionnaire once a week for three weeks, they were subsequently asked to answer the questions rating how often they had such feelings within the last week.

#### **Procedure:**

The study first achieved full ethical approval from Northumbria Health and Life Science ethics committee (Appendix B). Participants were asked to follow the link provided to take them to the first online questionnaire, where they were provided with an information sheet (Appendix C). Participants were then required to provide a structured code word so that they were able to identify their data if they wished to withdraw from the study (Appendix D). The first questionnaire included the demographic and control questions, consenting participants provided their email addresses to enable the researcher to contact participants with links for the follow-up questionnaires. Following the completion of the first questionnaire the researcher took note of the email address and the date in which it was completed. The researcher emailed the second link to participants one week later where they completed the questionnaire for a second time. Once participants completed the second questionnaire, it was recorded alongside the date and the

following week they were emailed the third link to the final questionnaire. After each time the questionnaire was completed, participants were presented with a debrief. Upon completion of the study, a final more detailed debrief was provided at the end of the whole study which summarised the tasks and restated the studies aims in greater detail (See Appendix E).

**Procedure for analysis:**

The data was downloaded from Qualtrics where it was first screened and cleaned by the researcher leaving only meaningful data sets to be used in the analysis. Once the data was ready to be analysed, the researcher ensured the data showed no issues of multi-collinearity, linearity, normality and homoscedasticity. The data from the first time-point was initially analysed. A Spearman's Rho correlation was run due to the non-parametric nature of the data. A hierarchical linear regression analysis was then conducted. The control variables of marital/relationship status, household income (economic status), weekly working hours, and gender were entered into the first block of the regression. The second block consisted of work engagement and the third block introduced the colleague friendship factors of work place friendship opportunity, work place friendship prevalence, and colleague social support.

This analysis was repeated using the averaged mean scores from the second and third measurement point, representing scores over a two-week and three-week period.

## Results

---

### Treatment of Data

Data from each time-point was first screened to leave only useful responses for successful analysis. Partial and non-complete responses were removed from the data set. Test run through responses conducted by the researcher and supervisor were also extracted. Participants were only removed if they had not completed two or more questions within a section regarding a construct. If single questions were left unanswered they were included due to the mean scores of each scale being used within the analysis rather than the sum. Of the one hundred and seven initial participants at the first time-point, thirteen participants' data were removed due to incomplete responses. The second time-point saw eleven participants removed and five were removed from the third time-point.

Once partial data was removed, the variables were labelled. All reverse scored items were treated as such, reversing the scores provided. Mean scores for each construct were then calculated creating new variables of 'Work engagement mean', 'Prevalence mean', 'Opportunity mean' and 'Support mean'. These variables were used in further analysis.

Regarding the second and third time-point, mean data scores from the second time-point were matched to the mean data scores from the first time-point using the code words provided by participants. Participants who could not be matched to the initial time-point were removed. A number of participants provided different code words at different time-points despite being asked to use structured codes. This led to many participants being removed. Participants were also removed at this point if they completed the second measurement point within a week of completing the first questionnaire or over two weeks. A further eighteen participants were removed from the second data set at this stage of treatment. This process was repeated, matching the third time-point data to the first and second time-point participants. From this, twenty-five participants were removed from the third time-point.

The matched scores were then averaged to be used in the further analysis, providing new mean scores for each variable at the second and third time-point. The demographic and control scores were also matched to the participant's responses at this stage to be used as controls in further analysis.

Outliers were expected within the data and tested for at each measurement point. Despite a number of outliers being identified at both the first and second time-point within variables using scatter graphs and box-leaf plots (See Appendix F), when the analysis was run with and without the outlying participants, no significant difference within the findings was identified. The researcher therefore decided not to permanently remove the data sets at any of the time-points. This also allows for more representative results of the true findings and data. The researcher also used Spearman's Rho correlation analysis which causes outliers to lose its disproportionate impact within correlational findings.

Following the treatment of data, ninety-four participant's data could be analysed at the first time-point, thirty-nine participants at the second and twenty-two at the third.

### **Analysis of Data**

Hierarchical multiple linear regression analysis was used to develop a model for predicting wellbeing from work engagement and colleague friendships (friendship prevalence, friendship opportunity and colleague social support). The model controls for gender, working hours, household income, and relationship/marital status. All SPSS output for the analysis for time-point 1, 2 and 3 can be found in appendix G, H and I retrospectively.

The model was tested at the three time points, first measuring the predictive value averaged over one week, then over two and finally over three. The basic descriptive statistics of the results for each time point can be found in the Table 2 below. The assumptions of normality, linearity and homoscedasticity of residuals were tested at each of the three time-points. No issues were found within the data set, suggesting analysis could be successfully run (See Appendix G, H & I).

The reliability of the scales used to measure wellbeing, work engagement and the colleague friendship factors were first tested at each time-point. Spearman's rank order correlation was initially run due to the non-parametric nature of the data. This was conducted to understand the significance and direction of the relationship between the predictor and outcome variables.

Correlation and Cronbach alpha scores for each of the three time-points can be found in the Table 3 below (following Table 2).

Table 2. *Descriptive statistics for each variable score at each time-point*

Variable	Time-point 1				Time-point 2				Time-point 3			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Prevalence<sup>a</sup></b>	3.84	.62	2.50	5.00	3.89	.557	2.59	4.92	3.86	.606	2.67	4.94
<b>Opportunity<sup>a</sup></b>	3.90	.72	1.17	5.00	3.94	.690	2.17	5.00	3.92	.664	2.11	5.00
<b>Support<sup>a</sup></b>	3.15	.65	1.00	4.00	3.16	.596	1.58	4.00	3.13	.611	1.50	3.83
<b>Work engagement<sup>a</sup></b>	3.83	1.16	1.22	5.89	3.87	1.17	1.45	5.89	3.97	1.10	1.82	5.85
<b>Wellbeing<sup>a</sup></b>	3.43	.71	1.57	4.93	3.40	.675	2.07	4.75	3.44	.627	2.38	4.71
<b>Relationship<sup>b d</sup></b>	1.76	.74	1.00	3.00	1.71	.802	1.00	3.00	1.86	.774	1.00	3.00
<b>Income<sup>c</sup></b>	2.82	1.48	1.00	7.00	3.00	1.44	2.00	7.00	3.00	1.376	2.00	7.00
<b>Hours<sup>a</sup></b>	2.83	1.05	1.00	4.00	2.82	1.10	1.00	4.00	2.73	1.077	1.00	4.00
<b>Gender<sup>a</sup></b>	1.80	.40	1.00	2.00	1.82	.389	1.00	2.00	1.73	.456	1.00	2.00
<b>Age<sup>a</sup></b>	27.54	11.94	18	66	28.28	12.83	18	66	29.91	14.18	18	66

Note. Time-point 1 <sup>a</sup>n=94 <sup>b</sup>n=91 <sup>c</sup>n=83; Time-point 2 <sup>a</sup>n=39 <sup>b</sup>n=38 <sup>c</sup>n=33; Time-point 3 <sup>a</sup>n=22 <sup>b</sup>n=20 <sup>d</sup>n=22



Table 3 *Spearman correlations and scale reliabilities from each time-point*

Time-point one ( <sup>a</sup> n=94 <sup>b</sup> n=91 <sup>c</sup> n=83 <sup>d</sup> n=93)									
	1	2	3	4	5	6	7	8	9
1.Prevalence <sup>a</sup>	(.711)	-	-	-	-	-	-	-	-
2.Opportunity <sup>a</sup>	.424**	(.853)	-	-	-	-	-	-	-
3.Support <sup>a</sup>	.242*	.387**	(.875)	-	-	-	-	-	-
4.WE <sup>a</sup>	.137	.454**	.266**	(.931)	-	-	-	-	-
5.Relationship <sup>b</sup>	-.095	.177	.077	.279*	(n/a)	-	-	-	-
6.Income <sup>c</sup>	-.018	-.016	-.113	.168	.115	(n/a)	-	-	-
7. Hours <sup>d</sup>	-.047	-.151	.030	-.229*	-.276*	-.268*	n/a	-	-
8.Gender <sup>a</sup>	.159	.095	.055	.081	.025	-.074	.264*	(n/a)	-
9.Wellbeing <sup>a</sup>	.273*	.452**	.357**	.601*	.165	.042	-.121	-.021	(.93)
Time-point two ( <sup>a</sup> n=39 <sup>b</sup> n=38 <sup>c</sup> n=33)									
	1	2	3	4	5	6	7	8	9
1.Prevalence <sup>a</sup>	(.758)	-	-	-	-	-	-	-	-
2.Opportunity <sup>a</sup>	.495*	(.878)	-	-	-	-	-	-	-
3.Support <sup>a</sup>	.418*	.515*	(.875)	-	-	-	-	-	-
4.WE <sup>a</sup>	.450*	.583**	.588*	(.952)	-	-	-	-	-
5.Relationship <sup>b</sup>	.054	.212	.187	.187	(n/a)	-	-	-	-
6.Income <sup>c</sup>	.063	.190	.325	.327	.075	(n/a)	-	-	-
7. Hours <sup>a</sup>	.044	-.238	.055	-.202	-.425*	-.098	(n/a)	-	-
8.Gender <sup>a</sup>	.259	.149	.107	.240	.081	-.077	.221	(n/a)	-
9.Wellbeing <sup>a</sup>	.525*	.533**	.491*	.649**	-.045	.297	-.004	.074	(.935)
Time-point three ( <sup>a</sup> n=22 <sup>b</sup> n=20)									
	1	2	3	4	5	6	7	8	9
1.Prevalence <sup>a</sup>	(.802)	-	-	-	-	-	-	-	-
2.Opportunity <sup>a</sup>	.633*	(.912)	-	-	-	-	-	-	-
3.Support <sup>a</sup>	.435*	.601*	(.895)	-	-	-	-	-	-
4.WE <sup>a</sup>	.565*	.690**	.481*	(.961)	-	-	-	-	-
5.Relationship <sup>a</sup>	-.420	-.214	-.189	-.139	(n/a)	-	-	-	-
6.Income <sup>b</sup>	.019	.304	.139	.084	-.152	(n/a)	-	-	-
7. Hours <sup>a</sup>	.429*	.114	.422	.016	-.437*	-.103	(n/a)	-	-
8.Gender <sup>a</sup>	.225	.161	.161	.282	.164	-.184	.218	(n/a)	-
9.Wellbeing <sup>a</sup>	.689**	.626*	.415	.575*	-.630*	.286	.160	-.080	(.951)

Note. Cronbach alpha reliabilities for observed variables are in parenthesis in the diagonal,

'WE'=Work Engagement, 'Relationship'=Relationship status, 'Income'=Main household earner income, 'Hours'=Working hours per week

\*p<.05, \*\*p<.001

The correlational findings were considered by the researcher at each time-point.

### **(1) Time-point one (over one week)**

The correlations at this time-point show the outcome variable of wellbeing to not be significantly correlated with any of the control factors (relationship status, household income, working hours and gender). Wellbeing is, however, positively and significantly correlated to the novel predictor of work engagement ( $r(92) = .601, p < .001$ ) as well as each of the colleague friendship variables (Friendship prevalence;  $r(92) = .273, p < .001$ , Friendship opportunity;  $r(92) = .452, p < .001$  and Colleague social support;  $r(92) = .357, p < .001$ ). These correlational findings suggested a good basis for the following regression analysis.

The correlations also show significant relationships to be present between the predictor variables themselves. Friendship opportunity is significantly correlated to each of the predictor variables introduced (Friendship Prevalence;  $r(92) = .424, p < .001$ , Colleague Social Support;  $r(92) = .387, p < .001$ , Work Engagement;  $r(92) = .454, p < .001$ ).

Such correlational findings suggest multicollinearity may be an issue, nevertheless, the tolerance scores for each variable was above 0.1 suggesting no issue present. The minimum tolerance identified was .643 (VIF=1.56) for friendship opportunity. Despite the scores suggesting slight correlation between variance, they lie within the acceptable boundaries.

### **(2) Time-point two (over two weeks)**

The control variables were again found not to be significantly correlated to the outcome variable of wellbeing. The novel predictor variables were yet found to be positively significantly correlated to wellbeing (Friendship prevalence;  $r(37) = .525, p = .001$ , Friendship opportunity;  $r(37) = .533, p < .001$ , Colleague support;  $r(37) = .491, p < .002$ , Work engagement;  $r(37) = .649, p < .001$ ).

Each of the introduced predictor variables were also found to be significantly correlated to each other. For example, a positive significant relationship was found between work engagement and each of the colleague friendship variables (Friendship prevalence;  $r(37) = .450, p = .004$ , Friendship opportunity;  $r(37) = .583, p < .001$ , Colleague social support;  $r(37) = .588, p < .001$ ).

Multicollinearity was not found to be an issue with the lowest tolerance score being .506 (VIF=1.98) for work engagement.

### **(3) Time-point three (over three weeks)**

The correlation findings show a significant negative correlation between the outcome variable of wellbeing and relationship status ( $r(20) = -.630, p = .002$ ). All other control variables were not found to be significantly correlated to the outcome variable.

Wellbeing was also found to have a positive significant relationship with each of the novel predictor variables except colleague social support  $r(20) = .415, p = .055$ . Both of the other colleague friendship factors were positively correlated to wellbeing (Friendship prevalence;  $r(20) = .689, p < .001$ , Friendship opportunity;  $r(20) = .626, p = .002$ ). Work engagement was also significantly correlated to wellbeing ( $r(20) = .575, p = .024$ ).

No issues were found with multicollinearity (lowest tolerance .310, VIF=3.23).

The correlational findings suggested a solid basis for further regression analysis. Hierarchical linear regression analysis was run at all three time-points introducing work engagement at the second block and colleague friendships at the third block whilst block one consisted of control variables. The co-efficient scores of the regression analysis at each time-point can be found below in Table 4.

Table 4. *Hierarchical linear regression analyses ( $\beta$ ) of the effect of Work Engagement and Colleague Friendships on Mental Wellbeing*

	Time-point 1 ( $\beta$ )			Time-point 2 ( $\beta$ )			Time point 3 ( $\beta$ )		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
<b>Variable</b>									
<b>Relationship</b>	.104	-.019	.002	-.169	-.147	-.098	-.649	-.406*	-.305
<b>Household income</b>	.042	-.020	.030	.184	.067	.076	.045	.144	.002
<b>Working hours</b>	-.018	.084	.137	-.017	.196	.283	-.093	.154	.086
<b>Gender</b>	-.066	-.150	-.166	.108	-.104	-.116	.116	-.081	-.069
<b>Work Engagement</b>		.644**	.510**		.770**	.543*		.648**	.122
<b>Friendship Prevalence</b>			.047			.089			.282
<b>Friendship Opportunity</b>			.209			.325			.443
<b>Colleague Social Support</b>			.106			.057			.094
<b>Total R<sup>2</sup></b>	.020	.392	.446	.063	.579	.676	.363	.714	.859
<b><math>\Delta R^2</math></b>	.020	.371**	.054	.063	.516**	.097	.363	.350**	.145*

Note. \* $p < .05$ , \*\* $p < .001$

### **(1) Time-point one**

The first block of the model, containing the control variables of relationship status, household income, working hours and gender was unable to significantly account for variance in wellbeing ( $R^2=.020$ ,  $F(4,74)=.385$ ,  $p=.819$ ). Introducing work engagement in the second block of the regression significantly accounts for the addition of 37.1% of the wellbeing variance ( $\Delta R^2=.371$ ,  $F(1,73)=44.55$ ,  $p<.001$ ). The final block introduces the colleague friendship variables of friendship prevalence, friendship opportunity and colleague social support. This block does not significantly explain additional variance of wellbeing ( $\Delta R^2=.054$ ,  $F(3,70)=2.27$ ,  $p=.088$ ). The model as a whole accounted for 44.6% of wellbeing variance ( $R^2=.446$ ).

When considering the standardised beta coefficients in the second block model, only work engagement significantly contributed to the regression ( $\beta=.644$ ,  $t(73)=6.675$ ,  $p<.001$ ). Work engagement again was the only significant contributor in the third predicting model ( $\beta=.510$ ,  $t(70)=4.712$ ,  $p<.001$ ). The remaining, non-significant beta values can be seen in the table 6 above.

### **(2) Time-point two**

Hierarchical multiple linear regression analysis showed the control factors at step one were not able to explain significant variance of wellbeing in the model ( $R^2=.063$ ,  $F(27,4)=.455$ ,  $p=.786$ ). The second step of the model, which included the control factors as well as work engagement, significantly explained 49.8% of the wellbeing variance ( $\Delta R^2=.498$ ,  $F(1,26)=31.85$ ,  $p<.001$ ). However, when colleague friendship variables were introduced there was no significant addition to the variance explained ( $\Delta R^2=.097$ ,  $F(3,23)=2.28$ ,  $p=.106$ ). The model as a whole accounted for 67.6% of the variance of wellbeing ( $R^2=.676$ ).

Work engagement was the only significant contributing factor to the model at both the second and third step of the regression (Step 2;  $\beta=.770$ ,  $t(26)=5.644$ ,  $p<.001$ , Step 3;  $\beta=.543$ ,  $t(23)=3.367$ ,  $p=.003$ ). Each coefficient for the predictive model can be found above in table 6.

### **(3) Time-point three**

The control variables once again do not significantly account for explained variance of wellbeing ( $R^2=.363$ ,  $F(4,15)=2.14$ ,  $p=.126$ ). Introducing work engagement to the model significantly accounts for 35% of the variance ( $\Delta R^2=.350$ ,  $F(1,14)=17.15$ ,  $p=.001$ ). When colleague friendships are introduced to this model at step three, an additional 14.5% of variance is significantly explained ( $\Delta R^2=.145$ ,  $F(3,11)=3.764$ ,  $p=.044$ ). The model as a whole over three weeks shows 85.9% of wellbeing variance to be explained ( $R^2=.859$ ).

The coefficients show relationship status to negatively contribute to the model at the second step ( $\beta=-.406$ ,  $t(14)=-2.198$ ,  $p=.045$ ). Work engagement also significantly contributed to the model at this stage ( $\beta=.648$ ,  $t(14)=4.141$ ,  $p=.001$ ). At the final step of the model, no contributor is found to significantly contribute to the predictive model, despite regression showing the model as a whole to be significant.

## Discussion

---

Do colleague friendships and work engagement predict wellbeing when measured at multiple time-points?

### **Summary of Findings**

The current study aimed to understand the relationship between colleague friendships and work engagement with wellbeing. The study intended to critically explore the direct relationship between work engagement and wellbeing which has been lacking in previous research. Fluctuations within the concepts were aimed to be accounted for by conducting measurements at three separate time-points. The construct of colleague friendships was further standardised through the measurement of three aspects; colleague social support, workplace friendship prevalence and opportunity. It was hypothesised that work engagement and colleague friendships would both positively predict mental wellbeing.

Correlational findings of the study revealed positive significant relationships to be present between work engagement and colleague friendships with wellbeing at each time-point, suggesting wellbeing to increase with high work engagement and colleague friendship levels throughout three weeks. The hierarchical multiple linear regression further demonstrated that the introduction of work engagement into a predictive model of wellbeing (following the control variables) provides significant explanation of wellbeing variance at each of the time waves. These findings further support the hypothesis regarding the predictive relationship of work engagement and wellbeing. Introducing colleague friendships at the third step of the hierarchical regression provided significant account of variance within wellbeing at the third time-point, further supporting the hypothesis of the current study. However, colleague friendships were unable to account for significant variance of wellbeing when introduced into the predictive model within the first two weeks of the study.

The findings of the current study, regarding the relationship between work engagement and wellbeing, support much of the previous literature concerning the positive impacts of work engagement (Rothmann, 2008, Bakker et al., 2008; Schaufeli et al., 2008). The findings contribute to such literature, providing a greater understanding of the direct relationship between the constructs. Much of the previous research has failed to explain the critical relationship between wellbeing and work engagement, focusing upon the mediating effect of work engagement whilst frequently considering measurements of workplace wellbeing indicators rather than measuring wellbeing itself (Bakker & Albretch, 2018). The three-wave design of the current study allowed for fluctuations within the work-related state to be allowed for, highlighted as an issue within the designs of other studies (Gawke et al., 2017). The findings of the current study were able to show work engagement to consistently significantly contribute to wellbeing. Such results support the idea that despite daily fluctuations within the workplace, especially considering variance in job resources and demands, work engagement is an isomorphic construct. This therefore suggests its nature is typically the same when studied as a general phenomenon. Longitudinal findings of Hakanen and Schaufeli (2012) are

supported by the results of the current study regarding work engagements impact on life satisfaction.

Colleague friendships were the most novel construct included within the study in relation to wellbeing. Interestingly, the introduction of colleague social support, workplace friendship prevalence and opportunity to the predictive model at the third step of the hierarchical regression model only produced significant account of variance within wellbeing at the third time-point (over a three week period). The findings from the first two time-points are discrepant to the limited research regarding colleague friendships and wellbeing indicators (Akila & Priyadarshini, 2018). Colleague friendships were introduced to the predictive model at the third step, following work engagement. It could be suggested that the relationship between colleague friendships and wellbeing is influenced by work engagement; particularly as positive correlations between the novel construct and outcome variable are present. Further significant relationships were found at all time-points between each colleague friendship variable and work engagement. This suggests colleague friendships may be working through work engagement towards wellbeing, with work engagement acting as a mediator. Previous research supports this suggestion as Anitha (2014) found work environment, team and co-worker relationships to be significant predictors of work engagement. Baker (2019) further suggested workplace friendship to be a critical factor in the retention and engagement of employees. This relationship would additionally correspond with revisions of the job demands-resources (JDR) model where colleague friendships act as a resource; work engagement as a motivator; wellbeing as the outcome (Mudrak et al, 2018; Bakker & Demerouti, 2008; Bakker & Demerouti, 2007).

The further finding of colleague friendship being significant within the predictive model at the third time-point only, provides support for previous studies suggesting a positive relationship between the constructs (Aalto et al., 2018). The study also highlights the importance of measuring wellbeing on at least three separate occasions (Sonnentag, 2015). The difference between the first two insignificant time-points and the third significant time-point could be explained by different factors. Early research by Sias and Cahill (1998) suggests the development of workplace friendships to follow three primary transitions from co-worker or acquaintance to friend, friend to close friend, close friend to best friend. The study suggests such transitions to be underpinned by the development of communication, regarding both work and home life. The study implies time spent working together is positively related to the development of these friendships. Further research on multiplex colleague friendship suggests the development and maintenance of such friendship to impact job performance and satisfaction (Methot, Lepine, Podsakoff & Christian, 2016). It could therefore be inferred that the continuous development and maintenance of friendship is being represented in the findings of the current study in relation to wellbeing. The change in significance could also be explained by the repeated measures aspect of the study. The study took place over a three week period whereby the participant was required to fill in the same questions regarding their work engagement, colleague friendships, and wellbeing on three occasions. Previous research has suggested that awareness and positive perception of friendship can have positive impacts on wellbeing indicators such as relief of depressive symptoms and increase willingness to partake in positive behaviour

change (Almaatouq, Radaelli, Pentland, & Shmueli, 2016; Lodder, Scholte, Goossens & Verhagen, 2017). It could therefore be implicated that as participants completed the questionnaire regarding such aspects of colleague friendships within the first and second week of the study, the surveys have encouraged individuals to think about and assess such friendships to a greater, more positive level than they would usually consider. Therefore, it could be suggested that the study itself acted as a three week intervention, increasing participant awareness and perception of colleague friendship and how they are impacting upon them. The current study controlled for variables previously linked to the predictor and outcome variables; gender, relationship status, economic status, and working hours. The findings, however, suggested that the control factors entered at the first stage of the predictive model account for no unique variance of wellbeing. The only significant correlational finding between such variables and wellbeing was found at the final time-point, where relationship status was negatively related to wellbeing. This finding, non-coherent to expectations, could be explained by the fact that the current study did not ask participants to state the quality of such relationship, only whether they were involved in one. Proulx, Helms and Buehler (2007) suggested the quality of and happiness present within a relationship is strongly linked to wellbeing. The remainder of the controls within the study showed no significant correlation with wellbeing, contradicting much of the previous literature (Morrison, 2009; Dush & Amato, 2005; Huppert, 2009). This therefore suggests that the remaining variance of wellbeing within the current study is explained by other factors not considered, such as personality and coping strategies (Hart, Wearing & Headey, 1995). Further research into workplace wellbeing suggests aspects such as control at work or job crafting, as well as managerial style to be influential on employee wellbeing (Sparks et al., 2001). The current study therefore contributes to the current literature in suggesting gender, relationship status, economic status and working hours to be considered beside other factors when exploring influencers of wellbeing.

### **Strengths and Implications**

The current study offers novel findings contributing towards the current literature in the dimensions and constructs of colleague friendships, work engagement and wellbeing. The study was able to present data and findings regarding specific influencers of mental wellbeing for employees, whilst offering a unique perspective on colleague friendships and work engagement and their relationship with wellbeing; an under-researched area within occupational psychology.

In response to authors claims that work-life research lacks theoretical grounding (Geurts & Demerouti, 2003), the current study has provided a basis of two established theories; Social identity theory (Tajfel, 1974) and the Job Demand-Resources (JDR) theory (Demerouti et al., 2001). The theoretical underpinning of social identity theory suggested an understanding of the relationship between colleague friendships and its influence of self-esteem and wellbeing factors. The JDR model was further used as a basis to understand the relationships between the constructs. Following previous findings, the current study investigated colleague friendships and work engagement as job resources (Mudrak et al., 2018; Christian, Garza et al., 2011). However, the findings of the study suggest work engagement to follow more recent versions of the model,



acting as a motivator between resources and outcome. Such findings include the implication of highlighting the importance of work engagement as its own construct and to further encourage research into the influencers of such and its further role for employees and organisations within the model and how it can be encouraged (Bakker & Albretch, 2018).

The longitudinal design strengthens the study due to the ability to understand the relationships over a length of time, rather than at a single subjective time-point. Fluctuations are able to be accounted for, as well as a greater understanding of sustainability of these relationships over time. This adds critical understanding of such constructs as the dynamic aspect of each of the variables is often ignored by research (Sonnentag, 2015; Bakker, 2014; Gawke et al., 2017). Such findings can be interpreted and lead to interventions within the workplace. It could be suggested that an implication of this study is to introduce assessment and intervention into organisations' regarding colleague friendship and work engagement levels to improve wellbeing. Previous research has suggested faculty development programs have been successful in helping employees build important relationships with peers, mentors and consultants (Morzinski & Fisher, 2002). Due to the findings of work engagement being particularly influential towards wellbeing, it is important for businesses to understand the engagement of their employees over time. Workshops and interventions could also be run to improve job resources and help employees improve personal resources to avoid burnout and encourage work engagement. Van Wingerden, Derks, & Bakker (2017) found interventions focused upon improving such resources and offering job crafting led to favourable influences on work engagement and job performance. Improvements within human resource policies and ideas could also be encouraged following the findings of the current study (Spence, 2015).

The findings of the study implied colleague friendships to be of more significance over three weeks suggesting the sustainability of colleague friendships to be important. Interventions could therefore be implemented by organisations when hiring new employees to encourage the development of such friendships, with research suggesting 'buddying' systems to be influential on work engagement and psychological capital (Nigah, Davis, & Hurrell, 2012). Further implementation of social events could be considered, offering employees further opportunity to develop friendships within the workplace to be greater than acquaintances in order to feel the benefit of such relationships.

### **Limitations and Future Research**

The study focused on three separate indicators of colleague friendships; workplace friendship prevalence and opportunity as well as colleague social support, allowing for the findings to contribute to social identity theory suggestions. However, the study failed to account for other aspects of workplace friendships such as social exchange and social network. Previous literature has suggested leader-member exchange to enhance workplace friendships (Herman, Dasborough, & Ashkanasy, 2008). Nonetheless, recent literature has questioned whether modern changes to organisations and increased digitisation of the workplace has changed the social exchange theory in work, pushing for further research to explore this within the modern workplace context (Chernyak-Hai,

& Rabenu, 2018). Social network perspective has also been deemed important within literature; studies have suggested group boundaries and social status within informal workplace networks to impact whether employees are subjected to positive or negative social workplace experiences (Ellwardt, Labianca & Wittek, 2012). Bizzi (2018) further outlines impacts of social network centrality and its impact on aspects of employee job performance, satisfaction and the effect it can have on supervisor treatment of employees and performance appraisals. It is therefore important to further understand workplace friendships in terms of social network and the impact it has on wellbeing as supervisor bias can be present. This would further lead to greater understanding and suggestions for Human Resource policies. Future research could therefore consider such theories. Qualitative designs could also be considered within such research, this would allow for a more in-depth quality understanding of the friendship factors present and influencing in terms of wellbeing. The working population as a whole were invited to take part in the current study. Despite participants being asked to provide information regarding their working hours to be controlled for; occupation types, working sectors, job contracts, and job roles were not accounted for. Whilst this allowed for the current study to offer more generalised findings, it was unable to account for the differences between such domains. Pedersen and Lewis (2012) suggested those working flexible working time contracts enhance their friendship prevalence by blurring boundaries of friends and family with friends and colleagues. Whilst this was found to have positive emotional and instrumental impacts on work, it was not found to be present in employees with non-flexible working times. Shift workers, with the most limited schedule flexibility, suggested their colleague friendships to be of more importance than workers who have greater opportunity for friendship outside of the workplace. Shift work has also been linked to lower wellbeing scores due to limitations on personal life outside of work as well as night-shift workers reporting negative impacts on their physical wellbeing (Jensen, Larsen & Thomsen, 2018). Future research could therefore extend the current study by exploring the relationship between colleague friendships and work engagement with wellbeing within separate workplace contexts. Comparisons could therefore be made and contribute to the understanding of such relationships and its impact within such occupations and workplace contracts. Physical indicators of wellbeing could also be measured alongside mental wellbeing to further understanding the extent of such relationships and its influences.

The longitudinal design of the current study left it vulnerable to attrition which was present between each time-point; this is common within longitudinal designs yet impacted the final sample size of the study which may have further influenced the results. A high percentage of the participants did not follow the protocol of the study. Despite being asked to complete the three questionnaires once a week for three weeks, with prompting emails being sent before each time-point, a number of participants did not complete the follow up studies on the same day as had been done the week before. This led to further participants data being removed from the study than initially intended. Participants who completed each time-point within the start of one week and end of the next were included in the analysis, however, further research should be conducted using stricter guidelines on time-points to offer a greater representation and understanding of such. Further longitudinal designs could also be conducted into the impacts such factors have over longer time periods to further understand the

sustainability of such constructs on wellbeing and look into fluctuations within the constructs and their impacts.

### **Conclusion**

The current study suggests a positive relationship to be held between colleague friendship and work engagement with wellbeing over a three-week period. The study highlights the consistency of the predictive power of work engagement in wellbeing. The findings further insinuate colleague friendships to become more prominent over time in its ability to predict wellbeing. The significant importance of work engagement within the workplace was highlighted by the study. The study offered strong coherence with theoretical underpinning and the ability to account for the dynamic aspects of the constructs, giving a view of how they act over time. Whilst the study held some limitations, it has been able to extend the scope on what is already known about college friendships, work engagement, and wellbeing. Suggestions for future research look to validate the findings of the current study whilst extending it to include other influential aspects unable to be measured and considered within the current study. Implications regarding reform to human resource policies and interventions within the workplace have been proposed, following suggestion for future research.

## References

---

- Aalto, A. M., Heponiemi, T., Josefsson, K., Arffman, M., & Elovainio, M. (2018). Social relationships in physicians' work moderate relationship between workload and wellbeing—9-year follow-up study. *European journal of public health*, 28(5), 798-804.
- Akila, A., & Priyadarshini, R. G. (2018). The impact of workplace friendships on organizational commitment and intention to leave. In *IOP Conference Series: Materials Science and Engineering*, 390(1), 012064. doi:10.1088/1757-899X/390/1/012064
- Almaatouq, A., Radaelli, L., Pentland, A., & Shmueli, E. (2016). Are you your friends' friend? Poor perception of friendship ties limits the ability to promote behavioral change. *PloS one*, 11(3), e0151588. <https://doi.org/10.1371/journal.pone.0151588>
- Alves, M. G. D. M., Chor, D., Faerstein, E., Lopes, C. D. S., & Werneck, G. L. (2004). Short version of the "job stress scale": a Portuguese-language adaptation. *Revista de Saúde Pública*, 38(2), 164-171.
- Anitha, J. (2014). Determinants of employee engagement and their impact on employee performance. *International journal of productivity and performance management*, 63(3), 308.
- Avey, J. B., Luthans, F., Smith, R. M., & Palmer, N. F. (2010). Impact of positive psychological capital on employee well-being over time. *Journal of occupational health psychology*, 15(1), 17.
- Baker, T. (2019). Twelve Powerful Ways to Engage or Disengage People at Work. In *Bringing the Human Being Back to Work* (pp. 113-121). Palgrave Macmillan, Cham.
- Bakker, A. B. (2014). Daily fluctuations in work engagement: An overview and current directions. *European Psychologist*.
- Bakker, A. B., & Albrecht, S. (2018). Work engagement: current trends. *Career Development International*, 23(1), 4-11.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of managerial psychology*, 22(3), 309-328.
- Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & stress*, 22(3), 187-200.
- Berman, E. M., West, J. P., & Richter, Jr, M. N. (2002). Workplace relations: Friendship patterns and consequences (according to managers). *Public Administration Review*, 62(2), 217-230.
- Bizzi, L. (2018). The problem of employees' network centrality and supervisors' error in performance appraisal: A multilevel theory. *Human Resource Management*, 57(2), 515-528.
- Chernyak-Hai, L., & Rabenu, E. (2018). The new era workplace relationships: Is social exchange theory still relevant?. *Industrial and Organizational Psychology*, 11(3), 456-481.

- Chiaburu, D. S., Van Dam, K., & Hutchins, H. M. (2010). Social support in the workplace and training transfer: A longitudinal analysis. *International Journal of Selection and Assessment*, 18(2), 187-200.
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel psychology*, 64(1), 89-136.
- Cruwys, T., & Gunaseelan, S. (2016). "Depression is who I am": Mental illness identity, stigma and wellbeing. *Journal of Affective Disorders*, 189, 36-42.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied psychology*, 86(3), 499.
- Diener, E., & Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being*, 3(1), 1-43.
- Dodge, R., Daly, A. P., Huyton, J., & Sanders, L. D. (2012). The challenge of defining wellbeing. *International journal of wellbeing*, 2(3). 222-235. doi:10.5502/ijw.v2i3.4
- Dush, C. M. K., & Amato, P. R. (2005). Consequences of relationship status and quality for subjective well-being. *Journal of Social and Personal Relationships*, 22(5), 607-627.
- Ellwardt, L., Labianca, G. J., & Wittek, R. (2012). Who are the objects of positive and negative gossip at work?: A social network perspective on workplace gossip. *Social Networks*, 34(2), 193-205.
- Gawke, J. C., Gorgievski, M. J., & Bakker, A. B. (2017). Employee intrapreneurship and work engagement: A latent change score approach. *Journal of Vocational Behavior*, 100, 88-100.
- Geurts, S. A., & Demerouti, E. (2003). Work/non-work interface: A review of theories and findings. *The handbook of work and health psychology*, 2, 279-312.
- Gov.uk (2018) Number in employment reaches record high. Retrieved from <https://www.gov.uk/government/news/number-in-employment-reaches-record-high>
- Gupta, M., & Shaheen, M. (2018). Does work engagement enhance general well-being and control at work? Mediating role of psychological capital. In *Evidence-based HRM: a Global Forum for Empirical Scholarship*, 6(3), 272-286.
- Hakanen, J. J., & Schaufeli, W. B. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. *Journal of affective disorders*, 141(3), 415-424.
- Hart, P. M., Wearing, A. J., & Headey, B. (1995). Police stress and well-being: Integrating personality, coping and daily work experiences. *Journal of Occupational and organizational Psychology*, 68(2), 133-156.
- Haslam, S. A., Jetten, J., & Waghorn, C. (2009). Social identification, stress and citizenship in teams: a five-phase longitudinal study. *Stress and Health: Journal of the International Society for the Investigation of Stress*, 25(1), 21-30.

- Haslam, S. A., Jetten, J., Postmes, T., & Haslam, C. (2009). Social identity, health and well-being: An emerging agenda for applied psychology. *Applied Psychology*, 58(1), 1-23.
- Headey, B., & Wearing, A. J. (1992). *Understanding happiness: A theory of subjective well-being*. Longman Cheshire.
- Hendry, L. B., & Kloep, M. (2002). Lifespan development: Challenges, resources and risks. *London: Thomson Learning*.
- Herman, H. M., Dasborough, M. T., & Ashkanasy, N. M. (2008). A multi-level analysis of team climate and interpersonal exchange relationships at work. *The Leadership Quarterly*, 19(2), 195-211.
- Hershenberg, R., Satterthwaite, T. D., Daldal, A., Katchmar, N., Moore, T. M., Kable, J. W., & Wolf, D. H. (2016). Diminished effort on a progressive ratio task in both unipolar and bipolar depression. *Journal of affective disorders*, 196, 97-100.
- Hoobler, J. M., Rospenda, K. M., Lemmon, G., & Rosa, J. A. (2010). A within-subject longitudinal study of the effects of positive job experiences and generalized workplace harassment on well-being. *Journal of Occupational Health Psychology*, 15(4), 434.
- Huppert, F. A. (2009). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, 1(2), 137-164.
- Jensen, H. I., Larsen, J. W., & Thomsen, T. D. (2018). The impact of shift work on intensive care nurses' lives outside work: A cross-sectional study. *Journal of clinical nursing*, 27(3-4), 703-709.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of management journal*, 33(4), 692-724.
- Kampmann, I. L., Emmelkamp, P. M., & Morina, N. (2018). Self-report questionnaires, behavioral assessment tasks, and an implicit behavior measure: do they predict social anxiety in everyday life?. *PeerJ* 6:e544.1 <https://doi.org/10.7717/peerj.5441>
- Kinman, G., & Jones, F. (2008). A life beyond work? Job demands, work-life balance, and wellbeing in UK academics. *Journal of Human Behavior in the Social Environment*, 17(1-2), 41-60.
- Kloep, M., Hendry, L., & Saunders, D. (2009). A new perspective on human development. In *Conference of the International Journal of Arts and Sciences* 1(6), 332-343.
- Lodder, G. M., Scholte, R. H., Goossens, L., & Verhagen, M. (2017). Loneliness in early adolescence: Friendship quantity, friendship quality, and dyadic processes. *Journal of Clinical Child & Adolescent Psychology*, 46(5), 709-720.
- Lu, L., Gilmour, R., Kao, S. F., & Huang, M. T. (2006). A cross-cultural study of work/family demands, work/family conflict and wellbeing: the Taiwanese vs British. *Career Development International*, 11(1), 9-27.
- MacQueen, G. M., Young, L. T., Robb, J. C., Marriott, M., Cooke, R. G., & Joffe, R. T. (2000). Effect of number of episodes on wellbeing and functioning of patients with bipolar disorder. *Acta Psychiatrica Scandinavica*, 101(5), 374-381.

- Methot, J. R., Lepine, J. A., Podsakoff, N. P., & Christian, J. S. (2016). Are workplace friendships a mixed blessing? Exploring tradeoffs of multiplex relationships and their associations with job performance. *Personnel psychology*, 69(2), 311-355.
- Morrison, R. L. (2009). Are women tending and befriending in the workplace? Gender differences in the relationship between workplace friendships and organizational outcomes. *Sex Roles*, 60(1-2), 1.
- Morzinski, J. A., & Fisher, J. C. (2002). A nationwide study of the influence of faculty development programs on colleague relationships. *Academic Medicine*, 77(5), 402-406.
- Mudrak, J., Zabrodská, K., Kveton, P., Jelinek, M., Blatný, M., Solcova, I., & Machovcova, K. (2018). Occupational well-being among university faculty: A job demands-resources model. *Research in Higher Education*, 59(3), 325-348.
- Nangle, D. W., Erdley, C. A., Newman, J. E., Mason, C. A., & Carpenter, E. M. (2003). Popularity, friendship quantity, and friendship quality: Interactive influences on children's loneliness and depression. *Journal of Clinical Child and Adolescent Psychology*, 32(4), 546-555.
- Nielsen, I. K., Jex, S. M., & Adams, G. A. (2000). Development and validation of scores on a two-dimensional workplace friendship scale. *Educational and Psychological Measurement*, 60(4), 628-643.
- Nigah, N., Davis, A. J., & Hurrell, S. A. (2012). The impact of buddying on psychological capital and work engagement: An empirical study of socialization in the professional services sector. *Thunderbird International Business Review*, 54(6), 891-905.
- Paek, S., Schuckert, M., Kim, T. T., & Lee, G. (2015). Why is hospitality employees' psychological capital important? The effects of psychological capital on work engagement and employee morale. *International Journal of Hospitality Management*, 50, 9-26.
- Pedersen, V. B., & Lewis, S. (2012). Flexible friends? Flexible working time arrangements, blurred work-life boundaries and friendship. *Work, employment and society*, 26(3), 464-480.
- Pignata, S., Boyd, C. M., Winefield, A. H., & Provis, C. (2017). Interventions: Employees' Perceptions of What Reduces Stress. *BioMed research international*, 2017(1), 1-12. <https://doi.org/10.1155/2017/33919080>
- Proulx, C. M., Helms, H. M., & Buehler, C. (2007). Marital quality and personal well-being: A meta-analysis. *Journal of Marriage and family*, 69(3), 576-593.
- Reina-Tamayo, A. M., Bakker, A. B., & Derks, D. (2017). Episodic demands, resources, and engagement. *Journal of Personnel Psychology*, 16(3), 125-136.
- Reisman, J. M. (1984). Friendliness and its correlates. *Journal of Social and Clinical psychology*, 2(2), 143-155.
- Riordan, C. M., & Griffeth, R. W. (1995). The opportunity for friendship in the workplace: An underexplored construct. *Journal of business and psychology*, 10(2), 141-154.

- Rothmann, S. (2008). Job satisfaction, occupational stress, burnout and work engagement as components of work-related wellbeing. *SA journal of industrial psychology*, 34(3), 11-16.
- Rumens, N. (2017). Researching workplace friendships: Drawing insights from the sociology of friendship. *Journal of Social and Personal Relationships*, 34(8), 1149-1167.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology*, 52(1), 141-166.
- Ryff, C.D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology*, 69(4), 719
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 25(3), 293-315.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and psychological measurement*, 66(4), 701-716.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness studies*, 3(1), 71-92.
- Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: three of a kind or three different kinds of employee well-being?. *Applied psychology*, 57(2), 173-203.
- Schön Persson, S., Nilsson Lindström, P., Pettersson, P., Nilsson, M., & Blomqvist, K. (2018). Resources for work-related well-being: A qualitative study about healthcare employees' experiences of relationships at work. *Journal of clinical nursing*, 27(23-24), 4302-4310.
- Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychological Association*, 55(1), 5.
- Sias, P. M., & Cahill, D. J. (1998). From coworkers to friends: The development of peer friendships in the workplace. *Western Journal of Communication (includes Communication Reports)*, 62(3), 273-299.
- Snow, K., & Mann-Feder, V. (2013). Peer-centered practice: a theoretical framework for intervention with young people in and from care. *Child welfare*, 92(4), 75-93
- Sonnentag, S. (2015). Dynamics of well-being. *Annual review of organizational psychology and organizational behaviour*, 2(1), 261-293
- Sparks, K., Faragher, B., & Cooper, C. L. (2001). Well-being and occupational health in the 21st century workplace. *Journal of occupational and organizational psychology*, 74(4), 489-509.
- Spence, G. B. (2015). Workplace wellbeing programs: if you build it they may NOT come... because it's not what they really need! *International Journal of Wellbeing*, 5(2), 109-124.



- Strazdins, L., Shipley, M., & Broom, D. H. (2007). What Does Family-friendly Really Mean?: Wellbeing, Time, and the Quality of Parents' Jobs. *Australian Bulletin of Labour*, 33(2), 202.
- Tajfel, H. (1974). Social identity and intergroup behaviour. *Information (International Social Science Council)*, 13(2), 65-93.
- Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and Quality of life Outcomes*, 5(1), 63.
- Ting, S. C., & Ho, M. H. (2017). The Influence of Workplace Friendship, Job Involvement, and Organizational Identification on Job Performance: Administrative Staffs of Private Science and Technology Universities in South Taiwan as an Example. *International Journal of Humanities and Social Sciences*, 9(6), 46-57.
- Tomyn, A. J., & Cummins, R. A. (2011). Subjective wellbeing and homeostatically protected mood: Theory validation with adolescents. *Journal of Happiness Studies*, 12(5), 897-914.
- Van Wingerden, J., Derks, D., & Bakker, A. B. (2017). The impact of personal resources and job crafting interventions on work engagement and performance. *Human Resource Management*, 56(1), 51-67.
- Wilson, W. R. (1967). Correlates of avowed happiness. *Psychological bulletin*, 67(4), 294.
- Woods, C. (2010). Employee wellbeing in the higher education workplace: a role for emotion scholarship. *Higher education*, 60(2), 171-185.