Exploring the Influence of Information Overload, Internet Addiction, and Social Network Addiction, on Students' Well-being and Academic Outcomes

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Abstract. This study explored how students' main information problems during the information age, namely internet addiction, information overload, and social network addiction, influence holistic well-being and academic attainment. The participants were 226 university students, all UK based and regular internet users. They answered the Internet Addiction Test, Information Overload Scale, Bergen Social Media Addiction Scale, and the Wellbeing Process Questionnaire. Data were analysed with SPSS using correlation and linear regression analysis. The univariate analyses confirmed the negative impact of information overload, internet addiction and social media addiction on positive well-being but not academic attainment. However, multivariate analyses controlling for established predictors of well-being showed that the effects of information overload, internet addiction and social media addiction were largely non-significant, confirming other research using this analysis strategy. Future research should examine the type of internet use as well as the extent of it.

Keywords: Internet addiction; Information overload; Social Media Addiction; Well-being; Mental workload

1 Introduction

1.1 Mental Workload

The study of mental workload has received an escalating interest from researchers in various fields [1, 2, 3]. Various research approaches have been used to investigate workload [4, 5]. For a long time, mental workload has been researched primarily in psychology and other related areas [6, 7]. In addition to creating many primary mental workload measures [12, 13, 14, 15, 16, 17], mental workload has been examined in laboratory settings and occupational frameworks [8, 9, 10, 11]. Measures such as task parameters, physiological measures, and self-assessment measures such as the Subjective Workload Assessment Technique [4], the NASA Task Load Index [18],

and the Workload Profile [19] have been widely used. The emerging need to assess and measure workload perception in workers has led researchers to use single-item measures, which are strongly correlated with longer scales, and can efficiently predict the workers' well-being.

The present study examined factors that can be related to a holistic concept of mental workload. The first, information overload, can be considered as a chronic state of excessive mental workload, often reflecting input that has high demand or needs to be ignored. Excessive internet use may also lead to workload issues, with the person ignoring other activities while on the internet or thinking about internet content, such as messages on social media. The concepts of information overload, internet addiction, problematic internet use and social media addiction are now introduced. The aim of the present study was to examine the associations between these variables and subjective well-being. This was carried out using the well-being process model, which has established predictors that must be controlled when assessing the effects of specific risk factors (in this case, information overload and internet use). Details of this model are given after the sections on information overload, internet addiction and social media addiction.

1.2 Information Overload

Information overload (IO) is defined as the difficulty the information user experience in understanding a current issue or making a decision due to the high presence of information. Toffler first mentioned information overload in his book "Future Shock" [20] and defined it as a state of stress experienced when the given amount of information exceeds the limit of information user processing capacity [21]. Information overload is a form of cognitive barrier that blocks, limits, or hampers the information-seeking process and causes frustration to the information user [22], resulting in a flawed decision-making process, confusing the user and resulting in low work quality [23]. Previous studies have reported the psychological and economic consequences of information overload, resulting in severe implications at an individual and organisational level. The ongoing studies on information overload revealed that information overload costs the US economy annually US$900 billion [24], which results in work stress that triggers psychological and physical outcomes like depression, anxiety, heart disease and high blood pressure [25]. Recent information overload implications are attributed to the progressing use of and outgrowing reliability on different internet activities, which results in more distraction and continuous information flow. The heavy load of information results in confusing the user, affecting their ability to set priorities, or difficulty recalling information [26]. Attention is a limited cognitive resource that is defective in overload conditions [27]. Miller [28] hypothesised that there is a cognitive threshold, and when the information flow rises, it leads to a cognitive decline in processing the information.

Numerous studies have investigated and documented the psychological and economic consequences of information overload in the workplace. However, there is a lack of research about students' perceptions of information overload and its psychological consequences and association with well-being. There is also insufficient research on the combined effects of internet addiction, social media addiction and information overload.

1.3 Internet Addiction

The study of internet usage began in the mid-1990s. There has not been a single approved term that identifies problematic internet use, although research on the internet and information technology has progressed. Scientists have used different terms to measure internet addiction; "Pathological Internet Use" [29-31], "Problematic Internet Use" [32,33], "Maladaptive Internet Use" [33, 34], Internet Behavior Dependence" [35], "Internet Dependence" [36, 37], "Internet Over-use" [38], "Misuse of the Internet" [39], and "Internet-related disorder" [40]. The different terms reflect the unrestricted use of the internet and the consequent abandonment of other responsibilities. Two primary models for conceptualising problematic internet usage symptoms have been developed, and they are detailed under the topics below.

1.4 Impulse-control disorder model

Young [37] has conceptualised and created the Internet addiction diagnostic questionnaire based on impulse control disorder, using the DSM-IV as a basis for pathological gambling. Common disorder symptoms include failure to quit or to decrease time spent online, being mentally preoccupied with internet activates, having an intense desire to connect online, feeling a sense of loss of control, having symptoms of tolerance and withdrawal, and a failure to meet social and academic duties. Young's approach was supported by other researchers and hypothesised that problematic Internet use is a form of obsessive-compulsive disorder (OCD). Young characterised this as a repeated pathological behaviour of online activities that closely match some of the most typical symptoms of OCD, including uncontrollable and time-consuming behaviours [30]. However, Shapira et al.'s [41] findings with university students indicate that problematic internet use should only be classified as an impulse control disorder. Nevertheless, based on the DSM-IV diagnostic criteria, the provided model is supported by clinical cases and publications and can be quickly adopted.

1.5 Cognitive-behavioural model

Davis [29, 42] introduced the Cognitive-Behavioral model for problematic internet use, emphasising the psychological traits and personal cognitions that motivate pathological internet usage. He suggested that the individual's cognitions are triggering each abnormal and intensive behaviour and that PIU was caused by pre-existing psychological issues such as social anxiety, depression, poor self-esteem, or maladaptive cognitions. Davis divided problematic internet users into two categories. The first group, known as Generalised Problematic Internet Users (GPIU), were addicted to the internet itself rather than a specific internet activity. If other difficulties, such as poor work performance, are present, they display more significant internet addiction symptoms. According to Davis, pathological internet usage is

caused by the "individual social context," which includes a lack of social support, isolation, and social shyness.

The other type is the Specified Problematic Internet Users (SPIU), who are drawn to a specific online activity, such as gambling or viewing social media content, and who may discontinue their internet addiction if they find a different source of the same material. Holden [43] agreed that most online addictive behaviours are comparable to offline addictive behaviours, including shopping, gambling, and pornography. Holden added that the internet combines all activities that an individual may become addicted to. Holmes' [44] findings confirmed Davis' hypothesis, which proposed that internet addiction resulted from psychological difficulties. Davis' model was further confirmed by the findings of Petrie and Gunn [45], who discovered that internet addiction was negatively correlated with positivity and extroversion and positively associated with depression. They concluded that internet addicts were most likely depressed and introverted.

1.6 Social Networks Addiction

In recent years, the usage of Social Network Services (SNS) has expanded, and it has become an integrated component of millions of people's everyday lives to share and connect with others. Individuals may communicate continually with others thanks to the development of speedy connection technology, smartphone usage, and a persistent internet connection [46]. Many people prefer smartphone-based SNS [47], and the advantages of smartphone-based SNS include the capability to connect at any time or place, feeling connected, and higher life satisfaction if the connection is managed [48, 49]. However, constant use of social media might have severe psychological and informational implications. Information overload, communication overload, and social fatigue may all be exacerbated by social media [21, 50-52].

1.7 Problematic Internet Use and Well-being

A detailed review of problematic internet use and well-being literature can be found in our latest publications [53-55]. The key findings are summarised briefly below. Several studies have found that problematic internet use is linked to reduced psychological well-being [56-58]. Specific components of well-being, such as subjective vitality and happiness, have been proven to be lower in people who use the internet problematically [59]

Longitudinal studies of problematic internet use have revealed that negative outcome scores are higher [60, 61]. However, some studies have obtained conflicting outcomes [62]. The main problem with most studies on problematic internet use is that they do not account for other predictors of well-being outcomes. For example, Alheneidi and Smith [54] discovered that problematic internet use was related to lower well-being, but this impact was no longer significant when established well-being predictors were added to the analysis. These findings provide credibility to the cognitive-behavioural model of internet usage [29, 42], concentrating on the motivating psychological characteristics and personal cognitions behind problematic internet use.

1.8 The Well-being Process

Well-being is challenging to define and involves many different factors. The "well-being process model" uses a comprehensive, holistic approach to well-being and provides a theoretical framework for developing a questionnaire that can be used in practice and policy. The initial study was founded on the Demands-Resources-Individual Effects (DRIVE) model, which was created to undertake occupational stress research [63-67]. Job features, perceived stress, personal traits such as coping techniques, and adverse outcomes were incorporated in this model (e.g. anxiety and depression). The model's next version [68-71] included positive qualities such as self-esteem, self-efficacy, and optimism, as well as a positive appraisal (e.g., job satisfaction) and outcomes (e.g. positive affect and happiness). Positive outcomes serve as the foundation for a wide range of approaches to subjective well-being. However, because they involve different CNS pathways, it is critical to incorporate both positive and negative components of well-being.

One initial concern was that the well-being process model required assessing numerous factors and using large scales, which resulted in a questionnaire that was extraordinarily long and unappealing to the participants. Short scales were constructed to address this issue, and they were significantly correlated with the longer scales from which they were formed [72-77]. The questionnaire has been adapted for use in student research [77]. Academic attainment and perception of workload, work efficiency, and course stress have been added to the outcome measures [78, 79]. Student stressors (e.g., too much academic work), social support, psychological capital (self-esteem, self-efficacy, and optimism), and negative coping methods are known determinants of student health (e.g. avoidance, wishful thinking and self-blame).

The present study's initial aim was to investigate whether internet addiction, social network addiction, and information and media overload from IT and media sources are linked to lower well-being and lower academic achievement. If the univariate analyses results were significant, multivariate analyses incorporating predictor variables of well-being and attainment would be performed to assess whether internet addiction, social network addiction and information overload had independent impacts or if they could be accounted for by other factors.

2. Measures

2.1. The Perceive Information Overload Scale

The information overload scale has been developed to measure the primary two sources that contribute to causing information overload, namely cyber-based and environment-based information overload. The Perceived Information Overload Scale was developed by Misra and Stokols [80] and had good internal consistency ($\alpha = .86$) and validity. The questionnaire consists of 16-items and is sub-divided into two subscales that measure environment-based and cyber-based information overload. The first part of the scale consists of nine items that assess the user's perception of information overload from cyber-based sources during the previous month, using a Likert scale of 5-points (0 = never and four = very often). Participants were asked

how often they were overwhelmed by replying to emails/ instant messages quickly; how often they felt overwhelmed with the amount of messages/emails or any social network notifications. The following part of the scale explores the environment-based information overload using seven items. The questions explore if the workplace demands exceed the participant's ability to function effectively, measuring how noisy and distracting their work and the home environment are. The sum of the items reflects the participants' perception of the cyber-based information overload score and environment-based information overload score. Although information overload is a form of stress, Misra and Stokols [80] found that the Perceived Information Overload Scale score and the Perceived Stress Scale score did not overlap, which indicated that information overload scales measure different concepts from perceived stress. Five previous studies investigated information overload and well-being [81-85]. All the findings confirm the negative outcome of information overload on well-being, although two studies showed a positive effect of information overload if the internet connection is controlled.

2.2. Internet addiction test (IAT)

The IAT has been widely used and translated into many languages. Though numerous internet addiction measures have been developed, the IAT has high face validity and is a reliable instrument, and it is the first validated questionnaire to assess internet addiction [86]. The measure was developed based on DSM-IV criteria of pathological gambling, which identify behavioural addiction. Using 20 items, the IAT scale examines the participant use of the internet for non-academic or non-job-related purposes during the last month. Using a Likert scale, participants respond on a scale from 0= not applicable and 5= always. For example, 'How often do you prefer the excitement of the Internet to intimacy with your partner?' and 'How often do you try to hide how long you have been online?'. The IAT identifies three types of internet users based on their dependency on the internet: controlled internet users, problematic internet users, and internet addicts.

- Scores from 31-49 reflect regular internet users who control their online activity.
- 50-79 points reflect occasional or frequent problematic internet use that might interfere with daily life flow.
- 80–100 points indicate heavy internet usage that is significantly affecting the participant's life.

2.3. Measuring well-being

Measuring well-being involves covering all the factors that contribute to well-being outcomes. However, using multi-measures may result in negative features associated with a lengthy questionnaire, like requiring high effort and time-consuming, which results in a low response rate [87]. Therefore, short measures are ideal for measuring well-being in empirical research. Perceived health [88] and quality of life [89] have been successfully measured with single items, and this approach has been widely utilised. Fisher et al. [87] found that single-item measures improve face validity and reduce criteria contamination.

2.3.1 The well-being process questionnaire (WPQ)

The Wellbeing Process Questionnaire (WPQ) was created to explore worker and student well-being [73, 75]. The concepts were measured using short scales correlated with more lengthy versions of the measures [90]. As a result, a solid and reliable short questionnaire for assessing well-being was developed [91]. The nature of well-being suggested that one has to consider several variables [92]. Using short items to measure well-being is ideal as it saves time, cost and effort. The well-being outcome score can be calculated using the combined effects of positive well-being (e.g., life satisfaction and happiness) and negative well-being (e.g., depression, anxiety, and stress [73]). The WPQ can be used in conjunction with other multi-item measures and known predictors of control. The WPQ is adaptable and may be tailored to various populations. Williams, Smith, and colleagues have created a bank of questions used with various groups. The outcome of utilising the WPQ with a variety of samples, including nurses [73, 75, 93, 95], students [77], university staff [95], police officers [96], and train workers [97]. The established factors consistently predict well-being outcomes in all the WPQ studies, and the short questionnaire often has the same predictive validity as multi-item scales.

2.3.2. The Student WPQ

The Student WPQ is a multi-dimensional single-item measure of well-being that includes a stressor measure based on students' circumstances and characteristics developed from the Inventory of College Students' Recent Life Experiences (ICSRLE), such as developmental difficulties, social mistreatment, and time pressure [98]. Well-being variables based on the DRIVE model are measured in the student WPQ version, including negative coping, social support, and positive personality (self-efficacy, self-esteem and optimism). The WPQ questions are answered on a 10-point scale (0 = not at all, 10 = extremely). The items include questions about the student's social support, personality, positive and negative outcomes, coping style, life satisfaction, life stress, physical fatigue, and mental fatigue, as well as questions about the student's social support, personality, positive and negative outcomes, coping style, life satisfaction, life stress, physical fatigue, and mental fatigue [90]. The WPQ scales yield a clear picture of positive and negative well-being outcomes, as well as determinants of well-being. Well-being predictors are measured with short scales. The scores for depression, negative affect, and anxiety add up to a negative well-being score. The sum of the scores for life stress, physical fatigue, and mental fatigue is the negative appraisal score. The sum of positive effects scores and positive appraisal, represented by the life satisfaction score, gives an overall positive well-being score.

2.4. Bergen Social Media Addiction Scale (BSMAS)

This scale was used to see how a specific sort of internet addiction, social network addiction, affects well-being, which Young [31] identified as one of the addictive online activities like texting and emailing. The Social Media Addiction Scale is an adaption of the Bergen Facebook Addiction Scale (BFAS) and is a validated and

reliable measure =.83 used to investigate the addiction of social media users [99]. Griffiths [100] proposed six potential addiction components for the scale: salience, tolerance, withdrawal, mood modulation, relapse, and conflict [99]. The social media scale consist of six items, answered on a 5-point Likert scale; ranging from 1-5, where (1) is very rarely and (5) is very often, regarding experiences during the past year, e.g., "How often during the last year have you felt an urge to use social media more and more?"

3. The Present Study

This study aimed to expand the findings on the effects of information overload and internet addiction on well-being in a university student sample. It also examined the effects of different types of internet use, focusing on social network addiction and its effects on the well-being and academic performance of a large sample of UK full-time students. In summary, this study aimed to investigate cross-sectional associations in 1) The prevalence of information overload (IO), internet addiction (IA) and Social Network Addiction (SNA) in a UK student sample; 2) The effects of Io, IA and SNA and other types on well-being and academic outcomes.

4. Methodology

4.1. Ethical approval

The research received approval from the Ethics Committee at the School of Psychology, Cardiff University.

4.2 Sample size calculation

In determining the appropriate sample size, the Tabachnick and Fidell [101] formula was considered. Tabachnick and Fidell suggested the following formula for sample size consideration, considering the number of independent variables used in the regression analyses: $N \geq 50 + 8m$ (m = number of independent variables). A medium-size relationship between dependent and independent variable was assumed, with $\alpha = .05$, $\beta = .20$ and ten independent variables in the regression model, $N \geq 50 + (8)\ (10) = 130$. The formula suggested that a sample size of 130 would be appropriate.

4.3 Design

The present study was a cross-sectional online survey delivered through the Qualtrics platform.

4.4 Participants

Two hundred and twenty-six UK-based students, who were regular internet users, participated in the study by answering online questionnaires through Qualtrics. Each participant was paid five pounds for completing the questionnaires. Fifty per cent

were male 50%, with an age range of 18-71 years (SD= 13.4). The mean number of hours spent at the University per was 30 hours.
Consent forms, instructions and debrief forms were included with the questionnaires. The aim of the study was explained, and participants were given all relevant information.

4.5 The Survey

The questionnaires used included the Perceived Information Overload Scale, consisting of 16 items measuring cyber and environmental information overload [80]. The Internet Addiction Test consists of 20 items that examine the use of the internet for non-academic or non-job purposes during the last month items measuring addiction based on DSM-IV criteria of pathological gambling [31]. The Student WPQ [77] is a multi-dimensional scale of well-being that includes a measure of stressors based on students' circumstances and factors and measures other well-being predictors based on the DRIVE model: negative coping, social support, and positive personality (self-efficacy, self-esteem and optimism). The Bergen Social Media Addiction Scale (BSMAS), which consists of six items to assess social media addiction based on six addiction elements [99], was also used.
Demographic data were collected to measure general health, gender, age, sleep quality, height, weight and smoking. In addition, the academic outcomes were perceived course stress and work efficiency, with both measured using a 10-point scale.

4.6 Statistical analysis

SPSS 20.00 was used to conduct all statistical analyses. Data met the assumption of normality. The reliability of the scales was tested using Cronbach alpha coefficients. Pearson correlations were conducted to evaluate the strength of the relationships among information overload, internet addiction, and the well-being total outcome and well-being factors using Cohen standards [102]. These initial correlations give an indication of the significance and size of bivariate associations. A correlation of 0.1 represents a small effect, one of 0.3 a medium-size effect, and one above 0.5 a large effect. The problem with univariate analyses is that they do not control for the influence of correlated attributes. For example, predictors of well-being may also be correlated with information overload and internet activity, and it is important to statistically adjust for these correlated attributes. Multiple linear regression and stepwise regression were conducted in order to assess the impact of information overload, internet addiction, SNA, and different internet use on the students' well-being. The initial analyses examined these variables alone. The 'Enter' variable selection method was chosen for the linear regression model. Multiple linear regression was conducted to predict the effects of different internet use on internet addiction, information overload, positive and negative well-being, and positive and negative appraisal. A total well-being outcome score was calculated by summing positive well-being, negative well-being, positive appraisal, and negative appraisal. Academic outcomes were also examined. Subsequent analyses included the

established predictors of well-being and academic outcomes to determine whether any effects of information overload and internet activity remained significant.

5. Results

5.1 Internet Addiction, PIU and SNA prevalence

The results were examined based on the thresholds for defining internet addiction, problematic internet usage, social network addiction and information overload. The following frequencies were obtained for the different categories:

- 0% were internet addicts
- 24.6% of the sample suffered from problematic internet use
- 28.8% were social network addicts
- 25.4% suffered from information overload "very often."

5.2 Pearson correlation analysis of associations between information overload, internet addiction, SNA, and well-being variables

A Pearson correlation analysis was conducted using the information overload, internet addiction, SNA, and well-being variables. The results revealed a significant positive correlation between information overload and internet addiction ($r = 0.76$, $p < .0001$). The correlation coefficient between information overload and internet addiction indicated a large relationship. There was a significant positive correlation between information overload and total SNA ($r = 0.71$, $p < .0001$). The correlation coefficient between information overload and SNA indicated a large relationship. There was a significant positive correlation between information overload and negative appraisal ($r = 0.51$, $p < .0001$). The correlation coefficient between information overload and negative appraisal indicated a large relationship showing that as information overload increases, negative appraisal increases. There was a significant negative correlation between information overload and positive wellbeing ($r = -.18$, $p < .01$). The correlation coefficient between information overload and positive well-being was .18, indicating a small relationship. There was a significant positive correlation between information overload and negative well-being ($r = .45$ $p < .005$). The correlation coefficient between information overload and negative well-being was .45, indicating a moderate relationship as information overload increases negative well-being tends to increase.

There was a significant positive correlation between internet addiction and SNA ($r = 0.84$, $p < .0001$). The correlation coefficient indicated a large relationship. There was a significant positive correlation between internet addiction and total negative appraisal ($r = 0.41$, $p < .005$). The correlation coefficient between internet addiction and negative appraisal indicated a moderate relationship. There was a significant negative correlation between internet addiction and total positive wellbeing ($r = -0.14$, $p < .001$). The correlation coefficient between internet addiction and positive well-being indicated a small relationship. There was a significant positive correlation between internet addiction and negative wellbeing ($r = 0.40$, $p < .005$). The correlation coefficient between internet addiction and negative well-being indicated a

moderate relationship confirming that as internet addiction increases, negative well-being increases.

There was a significant positive correlation between SNA and total negative appraisal ($r = 0.28$, $p < .005$). The correlation coefficient between SNA and negative appraisal indicated a small relationship. There was a significant negative correlation between SNA and positive well-being ($r = -0.14$, $p < .01$). The correlation coefficient between SNA and positive well-being was 0.14 indicating a small relationship. There was a significant positive correlation between SNA and negative well-being ($r = 0.28$, $p < .005$). The correlation coefficient between SNA and negative well-being indicated a small relationship. Information overload was positively correlated with course stress ($r = .33$, $p < .005$), with the size of the correlation indicating a small relationship between course stress and information overload. SNA was positively correlated with course stress ($r = .22$, $p < .01$), and a small association were indicated. SNA was negatively correlated with smoking ($r = -.15$, $p < .02$). Internet addiction was positively associated with course stress ($r = .32$, $p < .0001$), indicating that course stress would increase if internet addiction increased. Internet addiction was negatively correlated with smoking ($r = -.183$, $p < .006$), showing a small association. Internet addiction was negatively correlated with sleep quality ($r = -.13$, $p < .01$) which indicated a small association. Table 1 presents the results of the correlations.

Table 1. Pearson Correlation Matrix among Information Overload, Internet Addiction, SNA, and Well-being Outcomes and Demographics

Variable	Information Overload	SNA	Internet Addiction	Well-being
Social support	.11	-.038	.020	**.49****
Negative coping	**.47****	**.30****	**.40****	**.28****
Positive wellbeing	**-.18****	**-.13***	**-.14***	**-.40****
Negative wellbeing	**.45****	**.28****	**.40****	**.62****
Negative appraisal	**.51****	**.28****	**.41****	**.54****
Positive appraisal	.109	.057	.072	**-.73****
Stressors	**.69****	**.63****	**.63****	**.53****
Positive personality	**.15***	.07	.07	**-.77****
Course stress	**.33****	**.22****	**.32****	**.44****

5.3 Information overload, internet addiction and SNA predicting total well-being.

To test the associations between information overload, internet addiction, SNA and the well-being outcome, a linear multiple regression was conducted. The results of the linear regression model were significant ($F(3,227) = 28.43$, $p < .001$, $R2 = 0.27$), indicating that approximately 27% of the variance in well-being outcome was explained by information overload, internet addiction and SNA. Information overload significantly predicted the wellbeing outcome ($B = 0.40$, $t(227) = 5.59$, $p < .001$). Similarly, internet addiction significantly predicted the wellbeing outcome ($B = 0.29$, $t(227) = 2.56$, $p = .00$), as did SNA ($B = .46$, $t(227) = 4.51$ $p = .00$). Table 2 summarises the results of the regression model. These results show that although internet addiction, information overload and SNA are correlated, they still have independent effects on well-being.

Table 2. Results for Multiple Linear Regression with Information Overload, Internet Addiction and SNA Predicting Wellbeing Outcome

Variable	*B*	*SE*	β	*t*	*P*
(Intercept)	19.64	2.78		7.06	.00
Information Overload	.40	.07	.49	5.59	.00
Internet Addiction	.29	.11	.30	2.56	.01
SNA	.46	.10	.28	4.51	.00

Note. $F(3,227) = 28.43$, $p < .00$, $R2 = 0.27$

Stepwise regression was conducted to investigate the influence of the independent variables, information overload, internet addiction and SNA, on the well-being outcome after controlling for demographics and well-being covariates (stressors, social support, positive personality, and negative coping). The results indicated that the effects of information overload, internet addiction and SNA were not significant in predicting well-being; neither were the interaction variables of information overload* internet addiction, SNA*internet addiction or SNA*information overload.

5.4 Information Overload, Internet Addiction and SNA predicting specific appraisal and outcome measures.

Stepwise regressions were conducted to investigate the influence of the independent variables, information overload, internet addiction and SNA, after controlling for demographics and well-being covariates (stressors, social support, positive personality, and negative coping) on the specific appraisal and outcome measures. The results indicated that the effects of information overload, internet addiction and SNA were not significant in predicting positive well-being, negative well-being or positive appraisal. The results indicated that only information overload was

significant in predicting negative appraisal after controlling for demographics and well-being covariates ($B = 0.09$, t (217) = 3.47, $p < .001$). Internet addiction and SNA were not significant in predicting negative appraisal. The results of the last model of the stepwise regression are presented in Table 3.

Table 3. Stepwise Regression Last Model Results Information Overload, Internet Addiction and SNA Predicting Negative Appraisal

Variable	***B***	***SE***	***β***	***t***	***P***
(Constant)	2.05	1.58		1.29	.19
Smoking	-.37	.45	-.04	-.81	.41
Student stress	.13	.09	.08	1.42	.15
Gender	.48	.44	.05	1.08	.27
Sleep Quality	-.04	.35	-.01	-.11	.90
General Health	-.25	.12	-.12	-1.95	.05
Stressors	.01	.02	.04	.55	.57
Social support	.09	.04	.13	1.93	.05
Positive personality	-.10	.05	-.15	-2.09	.03
Negative coping	.33	.04	.45	6.68	.00
Information Overload	**.09**	**.02**	**.28**	**3.47**	**.001**
SNA	-.11	.06	-.17	-1.87	.069
Internet Addiction	.03	.03	.09	.94	.34

5.5. Information overload, internet addiction and SNA predicting academic outcomes.

Through a stepwise regression, the influence of information overload, internet addiction, and SNA on academic outcomes were examined, controlling for demographics and well-being covariates. No significant effects of information overload, internet addiction and SNA were obtained.

6. Discussion

Information overload, internet addiction, and SNA were all significantly associated with the total well-being outcome and specific appraisal and outcome measures. The

regression results showed that information overload, internet addiction, and SNA had significant effects on the well-being outcome; however, after controlling for well-being covariates (stressors, social support, positive personality and negative coping), these effects were no longer significant. Further analyses investigated the effects of information overload, internet addiction and SNA on well-being components while controlling for demographics and well-being covariates, and information overload only influenced negative appraisal. The effects of internet addiction and SNA on different well-being components were not significant after controlling demographics and well-being covariates. The independent variables' influence on academic outcomes were also investigated, and the results showed no significant effect after controlling for well-being covariates and demographics. After controlling for demographics and established well-being predictors, information overload, internet addiction, and SNA did not affect positive well-being, positive appraisal, or negative appraisal. The impact of internet addiction and SNA on academic outcomes were explored, but no significant effect was found. These results confirm other research using similar analysis strategies [53-55, 103, 104], which showed that effects on well-being initially attributed to information overland and internet use can be accounted for by the established predictors of well-being (positive personality; coping; social support, and student stressors). Such results show that it is important to use a multivariate approach, as univariate analyses do not consider the effects of correlated attributes. This is now an established approach in well-being research and should be applied to studies of mental workload, especially those using subjective reports. It is now important to determine whether similar effects are observed when objective outcomes are used. Indeed, many approaches to mental workload can be applied to the well-being area, which, up to now, has focused solely on subjective well-being rather than considering other indicators. When one moves to objective outcomes, the term well-being is often replaced by other concepts. For example, when objective signs of illness are observed, the topic is usually referred to as health. Similarly, in the work domain, changes in absenteeism, presenteeism, accidents and injuries are referred to as health and safety outcomes.

As well as examining different outcomes, further research is required to study samples that have a more extended experience of the issues examined here (e.g. workers) to determine the effect that age and occupation may play in various internet use, internet addiction and SNA on employees' well-being. It is also essential to examine the type of activity carried out on the internet. For example, interference from internet activity may be a more critical variable than internet use per se [53, 55, 103, 104]. Research can, therefore, continue with the present approach but manipulate samples and outcomes in order to determine whether information overload and internet activity do influence well-being. Alternatively, subjective well-being can be replaced with other outcomes which may be less affected by the other types of independent variables that have become the established predictors of well-being.

7. Limitations

The present research needs to be extended by using longitudinal studies, preferably involving interventions. In addition, more precise information on internet use needs to be obtained, and a diary methodology may be appropriate. Objective measures should

also be used to complement the subjective reports. As discussed above, wider approaches, such as those used in studies of mental workload, may help to develop the area.

8. Conclusions

The results from the present study show that information overload, internet addiction, and social media addiction, when viewed in isolation, may affect well-being. However, these effects were not observed when other established predictors of well-being were statistically controlled. These results confirm other recent research and suggest that further investigation of the type of internet usage, not just the extent of it, is required. It will also be interesting to see whether a paradigm shift, based on the methodology of mental workload, identifies clearer effects of information overload and internet use than those observed in studies of subjective well-being.

Conflict of interest
The authors of this article declare no conflict of interest.

References

1. Longo, L., Leva M.C. (eds.) Human Mental Workload: Models and Applications. H-WORKLOAD 2017. Communications in Computer and Information Science, vol. 726, pp. 251—263. Springer, Cham. (2017)
2. Longo, L., Leva, M.C. (eds.) Human Mental Workload: Models and Applications. H-WORKLOAD 2018. Communications in Computer and Information Science. Springer, Cham. (2019).
3. Longo, L., Leva, M.C. (eds.) Human Mental Workload: Models and Applications. H-WORKLOAD 2019. Communications in Computer and Information Science. Springer, Cham. (2019).
4. Reid, G.B., Nygren, T.E.: The Subjective Workload Assessment Technique: A Scaling Procedure for Measuring Mental Workload, vol. 52. North-Holland (1988)
5. Stassen, H.G., Johannsen, G., Moray, N.: Internal representation, internal model, human performance model and mental workload. Automatica 26(4), 811--820 (1990)
6. De Waard, D.: The measurement of drivers' mental workload. The Traffic Research Centre VSC, University of Groningen (1996)
7. Hart, S.G.: Nasa-task load index (nasa-tlx); 20 years later. In: Human Factors and Ergonomics Society Annual Meeting. vol. 50. Sage Journals (2006)
8. Smith, A.P., Smith, K.: Effects of workload and time of day on performance and mood. In: Megaw, E. D. (ed.) Contemporary Ergonomics, pp. 497--502. Taylor & Francis, London (1988)
9. Evans, M.S., Harborne, D., Smith A.P: Developing an objective indicator of fatigue: An alternative mobile version of the Psychomotor Vigilance Task (m-PVT). Presented at: H-WORKLOAD 2018: International Symposium on Human Mental Workload: Models and Applications, Amsterdam, The Netherlands, 20-21 September

2018. Longo, L., Leva, M.C. (eds.): H-WORKLOAD 2018, CCIS 1012, pp. 147--159, 2019. Springer Nature Switzerland. (2019)

10. Smith, A.P., Smith, H.N.: Workload, fatigue and performance in the rail industry.In: Longo, L., Leva M.C. (eds.) Human Mental Workload: Models and Applications. H-WORKLOAD 2017. Communications in Computer and Information Science, vol. 726, pp. 251-263. Springer, Cham. (2017)

11. Fan, J., Smith, A.P.: Mental workload and other causes of different types of fatigue in rail staff. In: Longo, L., Leva, M.C. (eds.) Human Mental Workload: Models and Applications. H-WORKLOAD 2018. Communications in Computer and Information Science 1012, pp. 147-159. Springer, Cham. (2019).

12. Cortes Torres, C.C., Sampei, K., Sato, M., Raskar, R., Miki, N.: Workload Assessment with Eye Movement Monitoring Aided by Non-invasive and Unobtrusive Micro-fabricated Optical Sensors. Adjunct Proceedings of the 28th Annual ACM Symposium on User Interface Software & Technology pp. 53-54 (2015).

13. Yoshida, Y., Ohwada, H., Mizoguchi, F., Iwasaki, H.: Classifying Cognitive Load and Driving Situation with Machine Learning. Int. J. Mach. Learn. Comput. 4(3), 210--215 (2014)

14. Wilson, G.F., Eggemeier, T.F.: Mental workload measurement. In: Karwowski, W. (ed.) International Encyclopedia of Ergonomics and Human Factors (2nd ed.), vol. 1, chap. 167. Taylor & Francis (2006)

15. Young, M.S., Stanton, N.A.: Mental workload. In: Stanton, N.A., Hedge, A., Brookhuis, K., Salas, E., Hendrick, H.W. (eds.) Handbook of Human Factors and Ergonomics Methods, chap. 39, pp. 1--9. CRC Press (2004)

16. Young, M.S., Stanton, N.A.: Mental workload: Theory, measurement, and application. In: Karwowski, W. (ed.) International encyclopedia of ergonomics and human factors, vol. 1, pp. 818--821. Taylor & Francis, 2nd ed. (2006)

17. Moustafa, K., Saturnino, L., Longo, L.: Assessment of mental workload: a comparison of machine learning methods and subjective assessment techniques. In: 2017 1st International Symposium on Human Mental Workload: models and applications. vol. CCIS 726, pp. 30--50. Springer International Publishing (June 2017)

18. Hart, S.G., Staveland, L.E.: Development of NASA-TLX (Task Load Index): Results of Empirical and Theoretical Research. Adv. Psychol. 52(C), 139--183 (1988)

19. Tsang, P.S., Velazquez, V.L.: Diagnosticity and multi-dimensional subjective work- load ratings. Ergonomics. 39(3), 358--381 (1996)

20. Toffler, A.: Future shock. New York: Bantam Books (1970)

21. Eppler, M.J., Mengis, J.: The concept of information overload: A review of literature from organisation science, accounting, marketing, and related disciplines. The Information Society, 20(5), 325-344 (2004)

22. Chewning Jr, E. G., Harrell, A. M.: The effect of information load on decision makers' cue utilisation levels and decision quality in a financial distress decision task. Accounting, Organisations and Society, 15(6), 527-542 (2009)

23. Savolainen, I., Kaakinen, M., Sirola, A., Oksanen, A.: Addictive behaviors and psychological distress among adolescents and emerging adults: A mediating role of peer group identification. Addictive Behaviors Reports, 7, 75-81 (2018)

24. Spira, J., Burke, C.: Intel's war on information overload: Case study. Basex. http://iorgforum.org/wp-content/uploads/2011/06/IntelWarIO.BasexReport1.pdf (2009)
25. Guarinoni, M., Belin, A., Oulès, L., Graveling, R., Crawford, J., Lietzmann, J., Kaminskas, K. A.: Occupational health concerns: Stress-related and psychological problems associated with work. Brussels: European Parliament's Committee on Employment and Social Affairs (2013)
26. Schick, A. G., Gorden, L. A., Haka, S.: Information overload: A temporal approach. Accounting Organisations and Society, 15(3), 199-220 (1990)
27. McLeod, S.A.: Selective attention. http://www.simplypsychology.org/attention-models.html (2008)
28. Miller, G.A.: The magical number seven, plus or minus two: Some limits on our capacity for processing information. Psychological Review, 63(2), 81-97 (1956)
29. Davis, R.: A cognitive-behavioral model of pathological Internet use. Computers in Human Behavior, 17(2), 187-195 (2001) doi: 10.1016/s0747-5632(00)00041-8
30. Shapira, N.A., Goldsmith, T. D., Keck, P. E., Khosla, U. M., McElroy, S. L.: Psychiatric features of individuals with problematic internet use. Journal of Affective Disorders, 57, 267-272 (2000)
31. Young, K.S.: Internet addiction: The emergence of a new clinical disorder. Cyberpsychology & Behavior, 1(3), 237-244 (1998) http://dx.doi.org/10.1089/cpb.1998.1.237
32. Caplan, S.E.: Problematic Internet use and psychosocial well-being: development of a theory-based cognitive–behavioral measurement instrument. Computers in Human Behavior, 18(5), 553-575 (2002) doi: 10.1016/s0747-5632(02)00004-3
33. Davis, R. A., Flett, G. L., Besser, A.: Validation of a new scale for measuring problematic internet use: Implications for pre-employment Screening. Cyberpsychology & Behavior, 5(4), 331-345 (2002) doi: 10.1089/109493102760275581
34. Kubey, R. W., Lavin, M. J., Barrows, J. R.: Internet use and collegiate academic performance decrements: Early findings. Journal of Communication, 51(2), 366-382 (2001)
35. Hall, A.S., Parsons, J. Internet addiction: College student case study using best practice in cognitive behavior therapy. Journal of Mental Health Counseling, 23(4), 312-327 (2001)
36. Scherer, K.: College life online: Healthy and unhealthy Internet use. Journal of College Student Development, 38(6), 655-665 (1997)
37. Young, K.S.: Psychology of computer use: XL. Addictive use of the internet: a case that breaks the stereotype. Psychological Reports, 79(3), 899-902 (1996)
38. Whang, L. S., Lee, S., Chang, G.: Internet over-users' psychological profiles: A behavior sampling analysis on Internet addiction. CyberPsychology & Behavior, 6(2), 143-150 (2003)
39. Greenfield, D. N., Davis, R. A.: Lost in cyberspace: The web @ work. CyberPsychology & Behavior, 5(4), 347-353 (2002)

40. Pratarelli, M. E., Browne, B. L.: Confirmatory factor analysis of Internet use and addiction. CyberPsychology & Behavior, 5(1), 53-64 (2002)
41. Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., Stein, D. J.: Problematic Internet use: Proposed classification and diagnostic criteria. Depression and Anxiety, 17, 207-216 (2003)
42. Davis, R.: Psychological implications of technology in the workplace. Cyberpsychology & Behavior, 5(4), 277-278 (2002) doi: 10.1089/109493102760275545
43. Holden, N.: Knowledge management: Raising the spectre of the cross-cultural dimension. Knowledge and Process Management, 8, 155-163 (2001) doi:10.1002/kpm.117
44. Holmes, D. L.: Virtual politics: Identity and community in cyberspace. London: Sage. (2001)
45. Petrie, H., Gunn, D.: "Internet addiction": The effects of sex, age, depression, and introversion. Paper presented at the British Psychological Society Conference, London (1998)
46. Choi, S.B., Lim, M.: Effects of social and technology overload on psychological well-being in young South Korean adults: The mediatory role of social network service addiction. Computers in Human Behavior, 61, 245-254 (2016) doi:10.1016/j.chb.2016.03.032
47. Kwon, M., Kim, D.J., Cho, H., Yang, S.: The smartphone addiction scale: Development and validation of a short version for adolescents. PloS One, 8(12), e83558 (2013) 10.1371/journal.pone.0083558
48. Ellison, N.B., Steinfeld, C., Lampe, C.: The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. Journal of Computer-Mediated Communication, 12, 1143–1168 (2007) doi: 10.1111/j.1083-6101.2007.00367.x
49. Valenzuela, S., Park, N., Kee, K. F.: Is there social capital in a social network site? Facebook use and college students' life satisfaction, trust, and participation. Journal of Computer-Mediated Communication, 14, 875–901 (2009) doi: 10.1111/j.1083-6101.2009.01474.x
50. Jones, Q., Gilad, R., Sheizaf, R.: Information overload and the message dynamics of online interaction spaces: A theoretical model and empirical exploration. Information Systems Research, 15(2), 194–210 (2004)
51. Lee, A. R., Son, S. M., Kim, K. K.: Information and communication technology overload and social networking service fatigue: A stress perspective. Computers in Human Behavior, 55, 51-61 (2016)
52. Soto-Acosta, P., Molina-Castillo, F. J., Lopez-Nicolas, C., Colomo-Palacios, R.: The effect of information overload and disorganisation on intention to purchase online: The role of perceived risk and internet experience. Online Information Review, 38(4), 543-561 (2014) https://doi.org/10.1108/OIR-01-2014-0008
53. Alheneidi, H, Smith, A.P.: Effects of perceptions of information overload, noise and environmental demands on well-being and academic attainment. © Springer Nature Switzerland AG 2020 L. Longo and M. C. Leva (Eds.): H-WORKLOAD 2020, CCIS 1318, pp. 1–10, (2020) https://doi.org/10.1007/978-3-030-62302-9_6

54. Alheneidi, H., Smith, A.P.: Perceptions of noise exposure, information overload and the well-being of workers. ICBEN (2021).
55. Smith, A.P., Izadvar, S.: Effects of the internet, other media and study time on well-being and academic attainment of university students. International Journal of Education Humanities and Social Science, Vol. 3, No. 02, 1-13, (2020)
56. Alavi, S. S., Maracy, M. R., Jannatifard, F., Eslami, M.: The effect of psychiatric symptoms on the Internet addiction disorder in Isfahan's university students. Journal of Research in Medical Sciences, 16(6), 793–800 (2011)
57. Cardak, M. Psychological well-being and internet addiction among university students. The Turkish Online Journal of Educational Technology, 12(3), 134-141 (2013)
58. Casale, S., Lecchi, S., Fioravanti, G.: The association between psychological well-being and problematic use of Internet communicative services among young people. The Journal of Psychology: Interdisciplinary and Applied, 149, 480-497 (2015) doi:10.1080/00223980.2014.905432
59. Akin, A.: The relationships between Internet addiction, subjective vitality, and subjective happiness. Cyberpsychology, Behavior, and Social Networking, 15, 404-410 (2012) doi:10.1089/cyber.2011.0609
60. Chen, S.: Internet use and psychological well-being among college students: A latent profile approach. Computers in Human Behavior, 28, 2219-2226 (2012) doi:10.1016/j.chb.2012.06.029
61. Muusses, L. D., Finkenauer, C., Kerkhof, P., Billedo, C. J.: A longitudinal study of the association between compulsive internet use and well-being. Computers in Human Behavior, 36, 21-28 (2014) doi:10.1016/j.chb.2014.03.035
62. Kutty, N., Sreeramareddy, C.: A cross-sectional online survey of compulsive internet use and mental health of young adults in Malaysia. Journal of Family and Community Medicine, 21(1), 23-28 (2014) doi: 10.4103/2230-8229.128770
63. Mark, G.M., Smith, A.P.: Stress models: A review and suggested new direction. In J. Houdmont & S. Leka (Eds.), Occupational health psychology: European perspectives on research, education and practice Nottingham: Nottingham University Press. Pp. 111-144 (2008)
64. Mark, G., Smith, A.P.: Effects of occupational stress, job characteristics, coping and attributional style on the mental health and job satisfaction of university employees. Anxiety, Stress and Coping, 25, 63-78 (2011)
65. Mark, G., Smith, A.P.: Occupational stress, job characteristics, coping and mental health of nurses. British Journal of Health Psychology, 17, 505-521 (2012)
66. Mark, G., Smith, A.P.: A qualitative study of stress in university staff. Advances in Social Sciences Research Journal, 5(2):238-247 (2018)
67. Mark, G, Smith, A.P.: Coping and its relation to gender, anxiety, depression, fatigue, cognitive difficulties and somatic symptoms. Journal of Education, Society and Behavioral Science, 25(4), 1-22 (2018)
68. Smith, A.P.: A holistic approach to stress and well-being. Occupational Health (At Work), 7(4), 34-35 (2011)
69. Smith, A.P., Wadsworth, E.: A holistic approach to stress and well-being. Part 5: what is a good job?, Occupational Health (At Work), 8(4), 25-27 (2011)

70. Smith, A.P., Wadsworth, E.J.K., Chaplin, K., Allen, P.H., Mark, G.: The relationship between work/well-being and improved health and well-being. Leicester: IOSH (2011)
71. Wadsworth, E.J.K., Chaplin, K., Allen, P.H., Smith, A.P.: What is a Good Job? Current Perspectives on Work and Improved Health and Wellbeing. The Open Health & Safety Journal, 2, 9-15 (2010)
72. Williams, G.M., Smith, A.P.: Using single-item measures to examine the relationships between work, personality, and well-being in the workplace. Psychology: Special Edition on Positive Psychology, 7, 753-767 (2016)
73. Williams, G.M., Smith, A.P. A holistic approach to stress and well-being. Part 6: The Wellbeing Process Questionnaire (WPQ Short Form). Occupational Health (At Work), 9(1), 29-31 (2012)
74. Williams, G.M., Smith, A.P.: Diagnostic validity of the anxiety and depression questions from the Wellbeing Process Questionnaire. Journal of Clinical and Translational Research, 10, (2018)
75. Williams, G.M., Pendlebury, H., Smith, A.P.: Stress and well-being of nurses: An Investigation using the Demands-Resources- Individual Effects (DRIVE) model and Well-being Process Questionnaire (WPQ). Jacobs Journal of Depression and Anxiety, 1:1-8. (2017).
76. Williams, G., Thomas, K., Smith, A.P.: Stress and well-being of university staff: An investigation using the Demands-Resources- Individual Effects (DRIVE) model and Well-being Process Questionnaire (WPQ). Psychology, 8, 1919-1940 (2017)
77. Williams, G.M., Pendlebury, H., Thomas, K., Smith, A.P.: The student well-being process questionnaire (Student WPQ). Psychology, 8, 1748-1761 (2017)
78. Smith, A.P., Firman, K.L.: Associations between the well-being process and academic outcomes. Journal of Education, Society and Behavioural Science, 32(4), 1-10 (2019)
79. Smith, A.P.: Student Workload, Wellbeing and Academic Attainment. In L. Longo and M.C. Leva (eds) H-WORKLOAD 2019. Communications in Computer and Information Science 1107. © Springer Nature Switzerland AG. https://doi.org/10.1007/978-3-030-32423-0_3 Print ISBN 978-3-030-32422-3. Online ISBN 978-3-030-32423-0 (2019)
80. Misra, S., Stokols, D.: Psychological and health outcomes of perceived information overload. Environment and Behavior, 44(6), 737-759 (2011)
81. LaRose, R., Connolly, R., Lee, H., Li, K., Hales, K.D.: Connection Overload? A Cross Cultural Study of the Consequences of Social Media Connection, Information Systems Management, 31:1, 59-73 (2014)
82. Lee, H., Connolly, R., Li, K., Hales, K., LaRose, R.: Impacts of social media connection demands: A study of Irish college students. Available from https://aisel.aisnet.org/amcis2013/SocialTechnicalIssues/GeneralPresentations/6/ (2013)
83. Saunders, C., Wiener, M., Klett, S., Sprenger, S.: The impact of mental representations on ICT-Related overload in the use of mobile phones. Journal of Management Information Systems, 34(3), 803-825 (2017)

84. Sonnentag, S.: Being Permanently Online and Being Permanently Connected at Work: A Demands–Resources Perspective. In Permanently Online, Permanently Connected (pp. 258-267). Routledge (2017)
85. Swar, B., Hameed, T., Reychav, I. Information overload, psychological ill-being, and behavioral intention to continue online healthcare information search. Computers in Human Behavior, 70, 416-425 (2017)
86. Widyanto, L., McMurran, M.: The psychometric properties of the internet addiction test. Cyberpsychology & Behavior: the Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society, 7(4), 443-50 (2004) doi. 443-50. 10.1089/cpb.2004.7.443
87. Fisher, M., Knobe, J., Strickland, B., Keil, F. The influence of social interaction on intuitions of objectivity and subjectivity. Cognitive Science, 41(4), 1119-1134 (2016) doi: 10.1111/cogs.12380
88. Bowling, A.: Mode of questionnaire administration can have serious effects on data quality. Journal of Public Health, 27(3), 281-291 (2005) doi:10.1093/pubmed/fdi031
89. de Boer, A., van Lanschot, J., Stalmeier, P. et al.: Is a single-item visual analogue scale as valid, reliable and responsive as multi-item scales in measuring quality of life?. Qual Life Res 13, 311–320 (2004). https://doi.org/10.1023/B:QURE.0000018499.64574.1f
90. Williams, G.: Researching and developing mental health and well-being assessment tools for supporting employers and employees in Wales (Doctoral dissertation). Cardiff University, Wales (2014)
91. Williams, G., & Smith, A.P. (2016). Using single-item measures to examine the relationships between work, personality, and well-being in the workplace. Psychology: Special Edition on Positive Psychology, 7(6), 753-767 (2016) doi: 10.4236/psych.2016.76078
92. Diener, E., Lucas, R. Personality, and subjective well-being. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), Well-being: The foundations of hedonic psychology (pp. 213-229). New York: Russell Sage Foundation (1999)
93. Williams, G., Smith, A.P.: Measuring well-being in the workplace: Single item scales of depression and anxiety. In M. Anderson (Ed.), Contemporary ergonomics and human factors 2013 (pp. 87-94). Boca Raton, FL: CRC Press (2013)
94. Galvin, J., Smith, A.P.: Stress in UK mental health training: A multi-dimensional comparison study. British Journal of Education, Society & Behavioural Science, 9(3), 161-175 (2015) doi: 10.9734/bjesbs/2015/18519
95. Williams, G., Thomas, K., Smith, A.P.: Stress and well-being of university staff: an investigation using the demands-resources- individual effects (DRIVE) model and well-being process questionnaire (WPQ). Psychology, 8, 1919-1940 (2017) https://doi.org/10.4236/psych.2017.812124
96. Nelson, K. V., Smith, A. P.: Occupational stress, coping and mental health in Jamaican police officers. Occupational Medicine, 66(6), 488-491 (2016)
97. Fan, J., Smith, A. P.: Positive well-being and work-life balance among UK railway staff. Open Journal of Social Sciences, 5(6), 1-6 (2017)
98. Kohn, A. The brighter side of human nature: Altruism and empathy in everyday life. New York: Basic Books (1990)

99. Andreassen, C., Torsheim, T., Brunborg, G., Pallesen, S.: Development of a Facebook addiction scale. Psychological Reports, 110(2), 501-517 (2012)
100. Griffiths, M. Internet addiction: Time to be taken seriously? Addiction Research, 8(5), 413- 418 (1996)
101. Tabachnick, B., Fidell, L. Using multivariate statistics (6th ed.). Boston: Allyn and Bacon (2014)
102. Cohen, J.: Statistical power analysis for the behavior sciences (2nd ed.). St. Paul, MN: West Publishing Company (1988)
103. Alheneidi, H., Smith, A.P.: Effects of internet use on well-being and academic attainment of students starting university. International Journal of Humanities Social Sciences and Education (IJHSSE) Volume 7(5), 20-34 (2020) http://dx.doi.o rg/10.20431/2349-0381.0705003 www.arcjournals.org
104. AlHeneidi, H.: The influence of information overload and problematic internet use on adults' well-being (Unpublished doctoral dissertation). Cardiff University (2019)