'I know how you feel'? A web-based investigation into global trait emotional intelligence and the Alternative Five factor model of personality

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ABSTRACT

The research sought to investigate the relationship between global trait emotional intelligence (EI) and the Alternative Five dimensions of personality. Personality Traits found to have the strongest relations/associations with EI were Aggression-Hostility and Neuroticism-Anxiety, followed by Activity and Sociability. Impulsive Sensation-Seeking was not found to correlate significantly with global trait EI. Regression analyses showed that personality accounted for approximately half of global EI variance in the sample, however Activity did not independently contribute to the model. These results were consistent with previous research in that most aspects of personality were found to correlate with global trait EI. Since previous research into these measures' long forms was supported, these results also support the use of shortened forms of assessment where full forms may be inconvenient.

Analyses into sex differences in global trait EI proved insignificant for all personality variables except Impulsive Sensation-Seeking. This is in contrast to previous research, which has found significant sex differences for global trait EI. The findings further previous evidence that personality and trait EI are obliquely linked; extending this evidence to the Alternative Five has not been investigated previously.

Keywords	Personality	Web-based methods	Alternative five factor	Trait emotional intelligence	ZKPQ

Introduction

The primary aim of the current study is to further the literature upon trait emotional intelligence and personality traits by using web-based methods to investigate the relationship, if any, between global trait emotional intelligence and individual factors from the Alternative Five Factor Model of personality. As a secondary research aim, possible sex effects upon each trait will also be examined.

Background Research

Emotional Intelligence

Emotional intelligence (EI) is defined as the constellation of lower order traits and abilities that enable the individual to understand, manipulate and control the emotions of both themselves and others (Petrides, Pita, & Kokkani, 2007). In recent years, there have been divergent theories of emotional intelligence, which has led to the original concept of being split into two distinct constructs: ability EI and trait EI (Austin, 2004; Qualter, Barlow, & Stylianou, 2011). The primary difference between these constructs is that while ability EI is a measure of affect-related cognitive abilities, trait EI refers to the individual differences in lower order facets of personality.

Ability EI derives primarily from the work of Salovey and Mayer (1990) who proposed an ability that was related to but independent of IQ and other intelligence constructs. Salovey and Mayer described this intelligence as using the "ability to monitor one's own and others' feelings and emotions … to guide one's thinking and actions" (Emotional Intelligence, para. 1). This ability refers to individuals' competencies in affect related abilities such as emotion expression and management, and is most commonly measured using performance based tests that seek to measure cognitive-emotional ability (Petrides, et al., 2007). Despite this common method of measurement and, though not necessarily in opposition to one another, conceptualisations of ability EI vary greatly; for instance, Matthews, Roberts, and Zeidner (2004) described eight distinct conceptualisations of ability EI including temperament (optimism, agreeableness etc.), character, and acquired explicit skills (such as a working knowledge of others' emotions, and conscious use of emotion-management strategies). Alternatively, Goleman (1995), whose book popularised the concept, defined it as any underlying traits of positive cognitive ability (e.g. morality, integrity, self-control etc.) n ot included or measured by traditional cognitive aptitude tests. Despite this, a criticism common to most definitions of the construct is that such explanations are often thought to trivialise certain aspects – particularly individual life experience– whilst maximising the effect of other facets; often, negative affects such as anger are minimised in favour of positive ones such as happiness (Watson, 2000). Furthermore, since authors' definitions of the ability are rarely entirely congruent it is almost impossible to operationalize or reliably measure even after several decades of research (Brody, 2004; Roberts, 2002).

Table 1
Facets of trait emotional intelligence measured by the TEIQue-SF

Facets	High scorers consider themselves to…
Adaptability	… be flexible and accepting of new situations.
Assertiveness	… be outspoken and willing to stand up for their rights.
Emotion expression	… be able to demonstrate their own feelings to other people.
Emotion management (of others)	… be able to manipulate or control other people's feelings.
Emotion perception/recognition (of self /others)	… be capable of recognising the feelings of both themselves and others.
Emotion regulation (of self)	…be able to control their own feelings and actions.
Empathy	… be capable of understanding things from another's perspective.
Happiness	… feel generally satisfied with their life.
Impulsiveness vs. reflectivity	… be conscientious and less likely to act without thinking.
Optimism	…have a positive outlook on their life and future.
Relationship management	…maintain varied and fulfilling interpersonal relationships.
Self-esteem	…hold worth and be confident in their own abilities.
Self-motivation	…be determined and less likely to give up on difficult tasks.
Social awareness	…demonstrate good interpersonal skills and act appropriately around others.
Stress management	…be capable of regulating and dealing with pressure appropriately.

Trait EI on the other hand, can be considered to be a more practical and more easily measured concept since it relies primarily upon self-report measures rather than situation based performance tasks (Mavroveli, Petrides, Rieffe, & Bakker, 2007; Petrides, et al., 2007). Its measurement is more concerned with the individuals' own perception of how adept at each skill they are. For this reason, trait EI is also known as emotional self-efficacy. Like ability EI, definitions of trait EI vary between authors; however, it is considered a compound construct of various different skills within affect-related cognition, a summary of these facets (adapted from Petrides, et al.) can be seen in *Table 1*. In contrast to ability EI, its measures rely upon individuals' experiences and self-perceptions of the traits*.*

 Since trait EI is a part of personality hierarchies rather than cognitive ability, it might be expected that there be some overlap in terms of other measures of personality such as the Big Five (Costa & McCrae, Normal personality assessment in clinical practice: The NEO Personality Inventory, 1992) or the Eysenckian PEN scale (Eysenck, 1979). However, factor analysis by Petrides, et al. (2007) found that although correlated to other taxonomies, trait EI occupied a unique factor space distinct from other personality traits. The findings of that study increase the discriminant validity of the construct and demonstrate how trait EI is obliquely related to major personality taxonomies and not, as can sometimes be seen in the

literature, merely a revision of higher order traits (Matthews, et al., 2004). The validity of trait EI measures is further demonstrated by Saklofske, Austin, and Minksi (2003) who also posit that trait EI is currently a more useful construct than ability EI because it can be measured using less direct measures thereby avoiding reliability and scoring errors.

It might be expected that the two constructs of EI be at least moderately related since they are believed to be partially measuring the same abilities albeit from differing theoretical points of view. Previous research findings have been in contrast to this view and has most commonly found there to be little to no predictive value for ability upon trait EI or vice versa (Gardner & Qualter, 2010; O'Connor & Little, 2003; Warwick & Nettelbeck, 2004). There is, however, extensive research that demonstrates how improving scores on either EI construct can have a positive effect upon various other abilities such as academic performance as well as performance within the workplace (Downey, Mountstephen, Lloyd, Hansen, & Stough, 2008; Parker, et al. 2004; Qualter, Whiteley, Hutchinson, & Pope, 2007). As a result of this discrepancy, it is imperative that an empirical distinction be drawn between ability EI and trait EI, not only because they are conceptually different (cognitive ability vs. compound personality trait) but also because they in themselves have been found to be only very weakly correlated.

The current study seeks to examine EI as a lower order trait only, as opposed to as an ability, by using recognised psychometric measures that are constructed to test it as such. The rationale for this is in part due to the conflicting findings of ability EI research but primarily because the methods for operationalizing trait EI are, in general, considered to be far more robust in terms of psychometric properties compared to the cognitive and practical tests in use to study ability EI (Perez, Petrides, & Furnham, 2005). More specifically, the study examines *global* trait EI – the compound construct of the aforementioned facets – measured using the Trait Emotional Intelligence Questionnaire-Shortened Form (TEIQue-SF) by Petrides and Furnham (2006) which is the combination of all fifteen facets to produce an overall score that is considered representative of the person's general emotional self-efficacy. This global score is of particular use in studies where time is limited but is also highly useful when using short forms of measures (such as the TEIQue-SF) where the small number of items relating to each facet would be unlikely to result in accurate scoring.

Previous research has found significant sex differences in results for trait EI, both at a facet and a global level suggesting that male and female experiences of emotion may be significantly different and that men may be more suited and more capable of coping with or managing certain affect-related cognitions and vice versa. Mikolajczak, Luminet, Leroy, and Roy (2007) found that men scored significantly higher on global trait EI than did women; although on a facet level, women scored significantly higher on emotionality but lower on sociability and self-control. These findings are in accord with previous studies on trait EI such as those of Petrides and Furnham (2000). The findings of these studies also challenge the perceived Western norm that women should be more emotionally expressive in order to form attachments whereas boys are often raised to conform to the 'strong, silent type' who rarely express emotion but freely convey aggression or anger (Chaplin, Cole, & Zahn-Waxler, 2005), the expression of which would lower their score on trait EI measures. However, on a global level, these are in opposition to various findings

that used alternative measures of EI, which often find no gender differences suggesting that the TEIQue may be more sensitive to gender differences than other measures such as the Bar-On EQ-I (Chan, 2003; Slaski & Cartwright, 2002). Sex interactions on global trait EI may account for some variances in a variety of other areas with which EI has previously been found to have an effect, for instance, cognitive intelligence, job performance and drug use (Riley & Schutte, 2003).

The primary research area thought to have a relationship with EI (either ability or trait) is personality. Since previous research into EI and its predictors has focused almost exclusively on the Five Factor Model of personality (FFM) and its various constructs and measures (Avsec & Kavčič, 2011) , it is thought that this study will be of particular interest and use in terms of the conceptualisation of alternative personality constructs, in particular, whether the results of this study resemble those of previous research.

Models of Personality

Perhaps the most highly cited and most influential model of personality is that of Cattell (1986), who was able to condense a lexicon of approximately 4000 trait words (Allport & Odbert, 1936) into just 16 personality factors. From Cattell's work, numerous models of personality have been devised, in particular the Five Factor Model (FFM, also known as the Big Five) which comprises Openness (to experience), Conscientiousness, Extraversion, Agreeableness and Neuroticism (Boyle, 2008; Costa & McCrae, 1992). The primary concern of this study regarding the FFM is the ruthless and overly stringent techniques employed by its most influential studies in order for the results to support the model. This is because, in part due to the researchers' procrustean techniques, the validity and utility of three of its traits (agreeableness, openness, and conscientiousness) are frequently questioned in current research (McKenzie, 1998). Factor-analyses and questionnaire design in studies such as that of Costa and McCrae (1992) have supported the FFM but have also been criticised for adopting theoretical approaches which have disregarded individual experience and a lack of empirical evidence in favour of supporting the model (Block, 1995). As a model, the FFM was not intended to be the be all and end all of personality assessments; alternative measures and models were expected to – and have – superseded measures such as the NEO-PI (Costa & McCrae, Normal personality assessment in clinical practice: The NEO Personality Inventory) and these measures 'need to take intraindividual functioning into account in understanding individual differences' (Costa & McCrae, 1995, para. 21). Therefore, despite the FFM being a widely accepted theory (O'Connor , 2002), an alternative model of personality was sought by various psychologists in the field to explain and identify the primary personality factors. Although there are several current theories that challenge the FFM, it is considered that a model which has inspired far less criticism such as the Alternative Five Factor Model (Larsen & Buss, 2009; Zuckerman, Kuhlman, Teta, Joireman, & Kraft, 1993), which comprises five more biologically based factors than that of the FFM was preferable for the study research on personality and EI.

The Alternative Five Factor Model (AFFM; Zuckerman, et al., 1993) comprises Activity, which includes general activity as well as the need for engaging and challenging work or activities, Impulsive-Senation-Seeking, the willingness to enter unfamiliar or dangerous situations and toa general lack of forethought, Aggression-

Hostiliy, the inclination towards antisocial behaviour such as swearing and other forms of verbal and/or physical aggression, Sociabiltiy, which is the preference and willingness to interact with a lot or unfamiliar people as opposed to social isolation and finally Neuroticism-Anxiety, the inclination towards anxiety and negative affect. Comparison studies have found that the Five Factor Model (FFM) and Alternative Five Factor Model (AFFM) are strongly related on all factors except Openness, which is not represented within the AFFM construct (Zuckerman, et al.). AFFM's Impulsive Sensation-Seeking correlates negatively with FFM's Conscientiousness, Sociability has been found to correlate positively with Extraversion, as might be expected Neuroticism-Anxiety has been found to strongly correlate positively with FFM's Neuroticism and finally, Aggression-Hostility correlates negatively with Agreeableness (Avsec & Kavčič, 2011). It should be noted here that although the majority of the AFFM's factors reflect those of the FFM, they are conceptually different despite encompassing several common facets and can simply be said to correlate with one another.

The AFFM and its relationship, if any, with global trait emotional intelligence has not yet been investigated despite its related measures – the Zuckerman-Kuhlman Personality Questionnaire and its derivatives – having been found to demonstrate construct robustness in various studies and forms (Avsec & Kavčič, 2011; Zuckerman, 2002). Previous research in the area has looked almost exclusively at the Big Five (the Five Factor Model; Costa & McCrae, 1992) and its relationship with trait EI (Larsen & Buss, 2009). Although results have widely supported the theory that trait EI will be correlated with higher order personality traits, it is considered a point of interest as to whether or not these results could be replicated using a different personality model. Replication of previous findings using alternative personality models would further the psychometric robustness of the EI questionnaire TEIQue and trait EI as a concept (Avsec & Kavčič; Petrides, et al., 2007). Based upon the correlation of personality domains between the AFFM and FFM, similar relationships to that of the Big Five and global trait EI are expected from the current study.

Although the majority of previous research on the above topics has been carried out in pen and paper form, there has been an increasing prevalence of web-based study designs (Buchanan & Smith, Using the Internet for psychological research: personality testing on the World Wide Web., 1999). These methods are still relatively new, however, there has been a great deal of research into the validity and reliability of such methods as is detailed below.

Web-based Research Methods

The relative simplicity of questionnaire designs lends itself to internet based data collection and as such, the prevalence of online research has increased as technology has become more advanced and less difficult to navigate – for both the research and potential participants (Wright, 2006). Despite this increase, online methods have been criticised over the years for their perceived sampling biases. Although this is a major concern within any research that claims to have a generalised sample, there is also now increasing personality research demonstrating how the demographics of online samples are highly comparable – and in some cases, preferable – to that of other sampling methods (Buchanan & Smith, Using the Internet for psychological research: personality testing on the

World Wide Web., 1999). A study of particular concern is that of Buchanan, (2002) who found that when testing Big Five taxonomies online, items loaded on alternative factors to that of pen and paper based forms, however other research has found that differences between administration methods are negligible (Cole, Bedeian, & Feild, 2009). In further support of web-based methods, Baltar and Brunet (2012) discussed how social networking sites (e.g. Facebook) have made it increasingly easy for researchers to reach people whom they would not have been able to were they to rely on traditional sampling methods.

A particularly useful sampling method – especially when using social networking sites – is 'snowball' sampling, a referral technique which allows the researcher to begin by recruiting or requesting the participation of a relatively small number of participants who are then asked to recommend the study to others, a task made significantly easier by the use of instant messaging and email pools (Bhutta, 2012). This sampling technique is both time and cost effective, particularly in comparison to other means of recruitment such as mailing campaigns, which can be both expensive and time consuming to the researcher and, though there is research supporting both techniques, often produce lower participant numbers than online sampling methods (Bhutta, 2012; Dykema, Stevenson, Klein, Kim, & Day, 2012). Also, in research such as the current study where time can become a restricting factor, snowball sampling can be extremely useful in gathering a high number of respondents in a short space of time; for instance, Bhutta (2012) was able to gather over 2,700 responses to her survey in just five days by posting requests for participation and referrals in Facebook groups specific to her sample population.

 As a response to the increase in web-based social research, there are now a number of websites available for researchers to create the relevant questionnaires for free (Wright, 2006). Since these sites often automatically return the responses to the researchers with no effort on the part of the participants, response rates are again increased in comparison to traditional or mailing-based samples, particularly on shorter survey forms (Deutskens, Ruyter, Wetzels, & Oosterveld, 2004) . These response and referral rates have been found to be unaffected by monetary or other incentives (Dykema, et al., 2012).

Aims and Hypotheses

It was the aim of the current study to further the research into global trait EI, the lower trait hierarchies of personality and their relationship with higher order traits, and to contribute to the robustness of both the AFFM and global trait EI. It was hoped that from the results it would be possible to infer the strength and direction of the relationship between each higher order personality trait and global trait EI. In addition, as a secondary aim, it was the aim of the study to investigate how and whether sex had any interaction with EI or personality scores.

Based upon findings from previous research regarding trait emotional intelligence and personality, three hypotheses were proposed for the current study. First, it was considered that there would be significant linear relationships between global trait emotional intelligence and the Alternative Five personality traits. Second, if the first hypothesis was supported then those personality traits that showed correlations would, when combined, act as significant predictors of global trait EI. Finally, it was

proposed that there would be significant sex differences across global trait EI data and personality data.

Method

Subjects

127 participants (53 males [41.7%], and 74 females [58.3%]) were opportunistically recruited via the social networking website Facebook and via email. The mean age for all subjects was found to be 35.21 years (males = 35.88, females = 33.79). There were no exclusion criteria except for a lower age limit of eighteen.

Measures

Zuckerman Kuhlman Personality Questionnaire Cross-cultural Shortened Form (ZKPQ- 50-CC; Aluja, et al., 2006). Personality traits were measured using the ZKPQ-50-CC, a shortened version of the Zuckerman Kuhlman Personality Questionnaire (ZKPQ, also known as the Alternative Five Factor Model; Zuckerman, Kuhlman, Teta, Joireman, & Kraft, 1993). The ZKPQ-50-CC features 10 true or false items for each of the original scales which were Aggression-Hostility (Agg-Host), Sociability (Sy), Neuroticism-Anxiety (N-Anx), Activity (Act), and Impulsive-Sensation Seeking (ImpSS). The ZKPQ-50-CC was developed using exploratory and confirmatory factor analyses by Aluja, et al. (2006) and was found to have correlational values between the shortened and original forms of 0.9. The ZKPQ-50-CC has therefore been found to be a satisfactory shortened form of its longer model and its cross-cultural normative data and internal validity reflect that of the original ZKPQ (Aluja, et al., 2006). There are however no normative data for the ZKPQ-50-CC   for   the   current   sample   demographic.

Within the ZKPQ there are an additional 10 Infrequency (Inf) items which seek to assess the individual validity of each participant's responses. These Infrequency items were used in this way to test the validity of the current response set but do not constitute a separate trait scale within the Alternative Five Factor model.

Aluja, Rossier and Zuckerman (2007) demonstrated the equivalent psychometric properties of conducting research using the ZKPQ-50-CC in either pen and paper forms or online data collection. Although the study found very slight differences on certain subscales, it was concluded that there were no significant differences between methods of administration and that online administration was therefore an appropriate means of distribution.

Within the current study, each subscale showed satisfactory to excellent internal consistency. Cronbach's Alpha coefficients ranged from .67 for Agg-Host to .84 for Act.

Trait Emotional Intelligence Questionnaire – Short Form (TEIQue – SF ; Petrides & Furnham, 2006). The TEIQue – SF is a 30 item self-report scale devised by Petrides and Furnham and is based upon the long form Trait Emotional Intelligence Questionnaire (TEIQue; Petrides & Furnham, 2003). The TEIQue and its short form use 7-point Likert scales to measure the 15 facets of emotional intelligence that can be seen above in Table 1. When each subscale score is combined, the scale determines a global trait EI score that takes into account all facets, which is the score referred to in the current study. The TEIQue – SF includes two items for each of the 15 subscales that are most highly correlated with long form scores. Like the long form, the TEIQue – SF shows high internal

consistency for both men (α = .88) and women (α = .89) as demonstrated in various studies by the original authors thus demonstrating the scale's reliability for use as a psychometric test of self –perceived emotional intelligence. Similarly, alpha coefficients for the current study were found to be .89 for both males and females. Despite several items showing low discrimination parameters, it has been found to have high validity across most latent traits when using item-response theory analyses (Cooper & Petrides, 2010). Literature for the TEIQue – SF suggests that as a brief measure of trait emotional intelligence, it is a highly effective substitute for other measures such as the longer forms of the TEIQue.

For non-commercial, academic purposes, all forms of the TEIQue and internal consistency figures can be obtained free of charge from the authors. There are currently however, no readily available normative data representative of a British sample for the TEIQue-SF.

The original questionnaire schedules for both the ZKPQ -50- CC and the TEIQue-SF can be seen in Appendices D and E.

Procedure

Participants were recruited via email pools of various organisations and student bodies (Aberystwyth University and Bangor University) and via the social networking website Facebook. Prospective participants were sent hyperlinks to the research website Qualtrics.com where they were presented with an online information sheet detailing the study's outline and what would be expected from them should they be willing to participate. Since the study was anonymous and conducted online, consent was assumed/obtained using four forced answer statements that were considered an acceptable alternative to a physical signature; dates of birth were also required for identification in the event of withdrawals and to ensure participants were above the age of informed consent. Having given consent, participants were given the opportunity and encouraged to print out or save a copy of the information sheet for their own records before proceeding to given several demographic questions. Plain text forms of the participants information and debrief forms be seen in Appendices B, and C.

Those who agreed to take part were then presented with the ZKPQ-50-CC (Aluja, et al., 2006) and Infrequency items, the order of these questions were randomised for each participant in an attempt to avoid any order effects. Participants were then informed that the next section would be measuring their trait emotional intelligence and were then presented with the TEIQue-SF (Petrides & Furnham, 2006), again, the presentation of items on this questionnaire was randomised. Participants were thanked for their time, reminded of their right to withdraw and given instructions on how to do so. The study conformed to ethical guidelines laid down by the British Psychological Society and was passed by a board of ethics from Aberystwyth University.

Results

Descriptive statistics

Descriptive statistics for each test variable, including infrequency data are given in *Table 2*. Further descriptive statistics regarding sex differences can be seen in *Table 4*. Following normality tests, only the results from the TEIQue-SF scores were found to be normally distributed ($D_{(127)}$ = .06, p >.20) whereas the data from the Alternative Five personality test variables significantly differed from normal distribution. For this reason, non-parametric tests were carried out on all variables. Data distributions from the infrequency variable were also non-normal. No data were removed from the data set since the Infrequency data suggested acceptable reliability of answers.

Table 2
Descriptive statistics for all variables

Variable	Minimum	Maximum	*M*	*SD*
Global trait emotional intelligence	66.00	185.00	140.43	23.06
Personality				
Aggression/Hostility	.00	10.00	4.60	2.48
Activity	.00	10.00	3.51	3.00
Sociability	.00	10.00	4.28	2.73
Impulsive sensation seeking	.00	10.00	4.33	2.57
Neuroticism/Anxiety	.00	10.00	5.26	3.06
Infrequency	.00	6.00	1.46	1.31

N = 127

Inferential statistics

Since the data did not meet parametric assumptions, Spearman correlations as opposed to zero order correlations were carried out on the data, the results of which can be seen in *Table 3*. As is shown, the test demonstrated linear relationships between global trait emotional intelligence (EI) and most personality factors. No significant relationship was found between global EI and Impulsive Sensation-Seeking. Both Neuroticism-Anxiety and Aggression-Hostility scores were found to have strong negative relationships with global trait EI while Sociability and Activity both showed weak to moderate positive relationships. These findings were significant at p < .01.

Table 3 Correlation matrix of all variables

	TeiQue	AggHost	Act	Sy	ImpSS	N-Anx
TeiQue	-					
AggHost	-.412**	-				
Act	.275**	-.064	-			
Sy	.337**	.068	.180*	-		
ImpSS	.170	.120	.235*	.292**	-	
N-Anx	-.635**	.333**	-.266**	-.286**	-.167	-

*p <.05; **p <.01

In order to determine the extent to which the variance in personality scores was able to predict global trait EI scores, a multiple regression analysis was carried out upon the data.   The regression analysis showed that Alternative Five traits accounted for 49% of variance in the global EI scores (F(4, 127) = 31.12; $p < .001$; R^2_{adj} = .49). Since initial correlation analyses found there to be no linear relationship between global trait EI and Impulsive Sensation-Seeking, it was not included in the regression analysis.   However, of the remaining four personality traits included in the analysis, only three traits contributed independently to the criterion variable. The strongest contribution was Neuroticism-Anxiety (β = -.452, $p < .001$) followed by Aggression-Hostility (β = -.264, $p < .001$), the weakest significant contributing factor was Sociability (β = .225, $p < .001$). Activity did not significantly contribute to the model (β = .125, $p < .059$). The test found no collinearity between variables.

Table 4
Descriptive statistics for all test variable by sex

	Male (*n* = 52*)*		Female (*n* = 75)	
Variable	*M*	*SD*	*M*	*SD*
Global trait emotional intelligence	138.33	23.51	141.88	22.78
Personality				
Aggression/hostility	4.60	2.06	4.60	2.74
Activity	3.60	2.64	3.45	3.21
Sociability	3.94	2.63	3.99*	2.54
Impulsive sensation seeking	4.82*	2.54	3.99*	2.54
Neuroticism/Anxiety	4.71	3.00	5.64	3.07

* indicates significant sex difference p < .05
N = 127

In order to evaluate whether sex differences were present in the data, non-parametric tests were carried out to detect possible variances in mean scores. Descriptive statistics by sex can be seen in *Table 4*. Results from Mann-Whitney analyses only reported a significant interaction between participant sex for Impulsive Sensation-Seeking (U $(_{127})$ = 1550.5, Z = .048, p < .05). On a facet level, men scored on average higher than women on facets such as lack of forethought and thrill seeking. No significant differences were found between sexes on any of the other test variables.

Though not strictly part of the investigation, it may be worth noting that when sex is integrated into the previous regression model, the model accounts for 52% of the variance in global EI with sex making a significant weak to moderate contribution to the model (β = .131, p < .05).

Discussion

Relationships of the Alternative Five personality traits with global trait EI

The current study sought to further the research into higher order personality traits and trait emotional intelligence and examine the relationships between the two for linearity, direction and strength of the relationship. The primary hypotheses of this study predicted that scores from the ZKPQ-50-CC would be correlated with global trait EI as measured by the TEIQue-SF, and that the combined contributions of those personality traits would act as significant predictors of variance in EI.

Significant correlations were found between global trait EI and all factors of the AFFM except Impulsive Sensation-Seeking indication that sensation-seeking has little to no effect upon affect-related cognitions or an individual's own perceptions of their ability to fulfil such tasks. This partially supports the first hypothesis, which stated that there would be linear relationships between the two hierarchies of personality and, although only four out of five personality traits were significantly correlated, the null hypothesis can therefore be rejected. These findings are consistent with previous research into the FFM and Big Five, which demonstrates how higher and lower personality traits are obliquely linked (Petrides, et al., 2007; Russo, et al., 2011).

Aggression-Hostility was found to have a strong negative relationship with trait EI and was the second most significant contributor to the model when regression analysis was carried out to analyse the predictory value of personality upon EI. This is in line with previous research into EI and traits that correlate with Aggression-Hostility such as Eysenckian Psychoticism, which has been found to be negatively correlated with trait EI (Ali, Amorim, & Chamorro-Premuzic, 2009) . The findings also support that of Avsec & Kavčič (2011) who found Aggression-Hostility to be negatively correlated with the Big Five's Agreeableness (Costa & McCrae, 1992) which is in turn, positively correlated with trait EI (Mikolajczak, et al., 2007; Petrides, et al., 2010).

Similarly, Neuroticism-Anxiety had strong negative correlations with global trait EI and was the most significant contributor to the regression model in this study indicating that those with particularly anxious dispositions are likely to score very low upon the majority of EI facets and therefore global EI.   In addition, these findings show that despite other factors having some effect, neuroticism is the predominant personality factor in predicting EI,. Previous research has also found this to be the case with other measures of Neuroticism; for instance, the AFFM's Neuroticism-Anxiety is highly correlated with the FFM's Neuroticism trait (Zuckerman, et al., 1993). Research into the FFM's Neuroticism trait has found significant negative correlations with global trait EI and, like the current study, Neuroticism is often found to be the strongest predictor of EI (Petrides, et al., 2010). However, some research into *ability* EI has found little to no significant correlation between Neuroticism and emotional intelligence (Lopes, Salovey, & Straus, Emotional intelligence, personality, and the percevied quality of social relationships., 2003). In the same study, it was found that their measure of trait EI (called self-perceived emotional intelligence) had very low correlational value with the measure used to determine ability EI (Trait Meta-Mood Scale and the Meyer-Salovey-Caruso Emotional Intelligence Test respectively). Again this suggests that trait and ability

EI should be thought of and measured as individual concepts that are only slightly linked, and suggests that while personality factors may be significant contributors to trait emotional intelligence (emotional self-efficacy) their effects upon ability based measures of EI are minimal (Lopes, et al.; Lopes, Brackett, Nezlek, Schütz,, Sellin, & Salovey, 2004).

The analysis in the current study showed that Activity and Sociability were also correlated with global trait EI, although they had only moderate effects and, whilst Sociability did weakly contribute to the regression model, Activity was shown not to be a significant factor. There is no corresponding factor in the Five Factor Model for the Alternative Five Factor Model's Activity factor, however Activity has been found to correlate positively with FFM's Extraversion and negatively with Neuroticism (Zuckerman, et al., 1993). However, since Extraversion has been found to be positively correlated and Neuroticism negatively with EI and though both are significant contributors to EI in regression models (e.g. Lopes, et al., 2003), it is difficult to infer what relationship an AFFM trait correlated with each of them is likely to have with EI. For this reason, the current findings regarding Activity and EI cannot be said to either support or challenge previous research. Sociability on the other hand has been found to be highly positively correlated with Extraversion and Agreeableness (Avsec & Kavčič, 2011; Zuckerman, et al., 1993). It is therefore unsurprising that sociability and EI were found to be positively correlated in the current study, what may be of interest is that its correlational value was weak to moderate whereas previous research on the FFM finds high correlations between Extraversion and EI. This could suggest that EI fewer facets load on Extraversion and Sociability than do Agreeableness and Sociability.

The findings of the current study demonstrate significant linear relationships between four out of five AFFM personality traits and global trait EI, and predicting relationships between 3 out of four traits and EI, this like previous research on EI and the FFM traits, demonstrates that there is an interaction between higher and lower order hierarchies of personality. It should be noted that although the correlational values of Aggression-Hostility and Neuroticism-Anxiety were quite high and therefore may inspire questions as to whether or not they are in fact separate factors to EI, EI has been tested and found to occupy specific space in personality hierarchies that is separate to higher order traits such as these (Petrides, et al., 2007). Nevertheless, since those studies have relied upon the FFM traits, it should also be reiterated that analyses on the current data found no multi-collinearity between variables and the variables can again be assumed to occupy separate factor space.

Interaction of sex upon personality and emotional intelligence traits

The final hypothesis of this study, which was secondary to H_1 and H_2, was that there would be a significant interaction between personality, EI and sex. However, the results from the Mann-Whitney tests showed that none of the factors were significantly affected by sex except for Impulsive Sensation-Seeking. Men were found to score significantly higher on Impulsive Sensation Seeking compared with women. Again, the hypothesis may be partially accepted and the null hypothesis rejected.

Other studies into sex differences on personality such as that of Rahmani and Lavasani (2012) have found that men scored higher on Sensation-Seeking measures than did women and suggested that this may be a result of psychosocial effects such as boys being raised and encouraged to be more willing to take risks than girls, and therefore be more prone to thrill-seeking and impulsivity. These authors also suggest that this kind of disinhibition could have biological and physiological bases. Both Rahmani and Lavasani's and the current study's findings are consistent with previous research, which also finds men, and boys score higher on sensation-seeking scales such as that of the AFFM than women (Butkovic & Bratko, 2003; Zuckerman, 1994).

However, unlike the majority of past research in this area – particularly those studies whicih use some form of the TEIQue – the current study failed to find significant interactions with global trait emotional intelligence (Chaplin, et al., 2005; Petrides & Furnham, 2000). Similarly, past research into sex differences in personality scores have also found significant interactions on the majority of traits, most commonly, differences in Neuroticsism-Anxiety are often found where women score higher than men on both the factor and the majority of its facets (Aluja, et al., 2006). One study by Aluja, Gracia and Garcia (2003) which invesitagted the shortened form of the ZKPQ (used in this study) showed significant sex interactions across all factors of the AFFM and it can therefore be seen as somewhat surprising that the current findings showed no signifcant on traits other than Impulsive Sensation-Seeking . Whilst the current results are in complete contrast to the previous research regarding sex differences on personality scores, the majority of studies in the area – including that of Aluja, Garcia and Garcia – have been carried out on young adults between the ages of 18 and 25 and, although many of the participants in the current study were also in that age bracket, it should be taken into consideration that the mean age for the current sample was approximately 35 years old. This is important to note since it has been suggested by Rahmani and Lavasani (2012) that sex differences in perosnality become less pronounced as people grow into mid and late adulthood and this could therefore be one possible explanation as to why, unlike past research, the current study failed to find significant interactions of sexes upon personality and EI. In support of this idea, research by Srivastava, John, Gosling, and Potter, (2003) states that personality is in constant flux even up to and possibly beyond middle adulthood (i.e. approximately 35 years old) and therefore it is possible that the changing personalities of the elder participants in the current sample skewed the mean score for each sex. It may therefore be of interest in future research to investigate using longitudinal research whether and how age might be a predictive factor for trait scores and how instrumental it may be in influencing sex differences.

Limitations of the current study

Despite there being several significant findings and all three hypotheses being partially proven, the findings of this study ought to be interpreted with caution since, like any study, there were significant limitations to the methods used. As previously mentioned, there have been concerns over the reliability of samples collected via the internet regarding their representativeness of the population at large (Hewson, Yule, Laurent, & Vogel, 2003). It has been argued that such samples are primarily "upper middle-class and well-educated" (Parallax,1996, in Hewson, et al., p. 27) and are therefore undemonstrative of the population at large. This is at least partially

true of the current sample; the majority of whom were either college or university educated (76%) and White British (89%) and therefore despite research which suggests internet samples to be as diverse if not more so than samples recruited via traditional methods (Smith & Leigh, 1997), the findings of the current study may not be representative of the general population. However, it is also worth noting that computer use and ownership is very much increased in recent years – 77% of UK households now own at least one computer (Office for National Statistics, 2011) – and therefore web-based sampling could be expected to be more representative of the public than was apparent during Smith and Leigh's study. Although snowball sampling was used in the current study in an attempt to gather as wide a sample as possible, however, there are intrinsic flaws in such sampling techniques. For example, response rates are impossible to define since forwarded survey links and recommendations from participants are extremely difficult to document or estimate (Bhutta, 2012). That being said, Hampton, Goulet, Marlow and Rainie (2012) found that the average Facebook user has around 269 friends whilst research from Macrì and Tessitore (2011) showed that 50% of users log into the website at least once a day, therefore the number of responses to the current study seems very low. Another possible limitation of the study was the lack of participant gratuities. More responses may have been forthcoming if the study had offered an incentive towards participation; however, previous research has demonstrated no significant difference in response rate between samples offered rewards for participant and those who were not (Dykema, et al., 2012). Snowball sampling was used in an attempt to contact participants who would otherwise have been outside of the researcher's contact or who may have required prior contact to participate thereby eliminating participants' anonymity. A further criticism of this sampling technique is that it is a purposive sampling technique and related findings are therefore of relatively little use in terms of generalizability (Lucas, 2012). Additionally, like volunteer sampling, it is often criticised for being biased towards individuals who are more extraverted, more obedient or who have ulterior motives for taking part. In addition, and more specific to the current design, Heiman (2002) proposed that those who are most likely to take part in survey research are likely to be prone to inactivity and highly extraverted. While it is possible that the sample was biased in some way, it is considered that volunteer biases, though it is impossible to definitively determine from the current study, were not highly influential in the current study since the low results from Infrequency data (mean = 1.52) suggest a high participant reliability.

In an attempt to improve generalizability, criteria for participation were extremely lenient – the only condition being that potential participants must be over the age of eighteen and therefore able to give confirmed consent – and this therefore allowed for a wide range of ages between participants. However, although there was a large age range (66 years), the ages of participants were skewed towards the lower age groups (42% of participants were 21 or younger with only 20% being over the midpoint of 53) and it therefore could be said that the study's findings are non-representative of those in the older age groups. Although, some research demonstrates significant age effects on personality from the FFM (Soto, Gosling, John, & Potter, 2011, Srivastava, et al. 2003), Wilks (2009) found that age differences in trait scores from the FFM are subject to minimal changes. However, as in any research pertaining to age differences that uses a stratified sample as opposed to longitudinal study designs, all of the above studies' conclusions

potentially disregard the individual experiences of the participants and therefore their conclusions may simplify relationships that would in fact be far more reliable if the same participants were used for each age condition. This criticism also applied to the current study in that age may have been a contributing factor upon trait and EI scores, though it was not investigated. However, given the time constraints of the research, a longitudinal study design would have been impossible for the current study.

Conclusion

The aims of this study were to investigate personality and trait EI using measures that have not previously been combined and to increase the construct validity and reliability of the ZKPQ-50-CC and the TEIQue-SF. All three hypotheses were partially supported and, although the results are in contrast to previous sex differences reported in previous research, the results of the correlation and regression analyses showing significant relationships between the majority of personality higher order traits with global trait emotional intelligence are in line with previous research into the current area. The data from the tests themselves are similar to those found previously (Petrides, et al., 2010; Zuckerman, 2002) although it is difficult to discuss in terms of normative data since there is none readily available for the UK for either test. It is therefore uncertain as to whether the study can truly be said to have increased the reliability of such measures however, Cronbach's alpha statistics for the current study were very much in line with that of previous research (Aluja, et al., 2003; Petrides, et al. 2003).

In other research, both personality and EI have been found to positively influence a variety of domains – academic achievement, leadership and job performance and general well-being to name but a few well documented areas (Downey, et al. 2008; Qualter, et al., 2007; van der Zee & Wabeke, 2004) – and, with the growing lack of support for the FFM, research into the relationship between the two ought to perhaps now turn to the more modern alternative constructs such as the AFFM. However, this does not mean that previous research based upon the Big Five (Five Factor Model of personality) should be disregarded since the majority of facets that load on the FFM traits are also part of the AFFM and other emerging theories (Avsec & Kavčič, 2011; (Zuckerman, et al., 1993).

Future research into the effects of age and even nationality (given the majority of the current sample were White British) may provide further insight into the interaction of individual differences and demographics on higher and lower order personality traits. Finally, examining the global trait EI factor at a facet level in relation to sex, age and nationality would also aid our understanding of how such factors may produce more in depth and perhaps more accurate results in terms of individual differences and their effects on lower order traits. In summary, the study and its findings have shown that the traits from the Alternative Five Factor Model of personality have good predictive value upon global trait emotional intelligence and are similar in effects to traits from the Five Factor Model used in previous research. It has also found there to be insignificant interaction of sex with both higher and lower order personality traits. Future research could further these results, particularly if further studies' analyses examined the interaction of other demographics such as age and nationality and perhaps controlled for these variables in order to isolate the interactions of sex and inter-factor relationships.

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