On the Social Malleability of Traits

Variability and Consistency in Big 5 Trait Expression Across Three Interpersonal Contexts

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Abstract. The current study investigated the effects of social context on Big 5 trait expression, and the moderating influence of social context on gender differences in personality. A short Big 5 instrument assessed trait expression in three contexts: with parents, with friends, and with work colleagues. Findings indicated significant cross-context variation in all five traits, while also showing cross-context within-trait correlations. These cross-context correlations found that Conscientiousness was the most stable of the Big 5 traits and that Extraversion the least stable across the three contexts assessed. Gender effects were found only at the trait-in-context level, suggesting a role for social context in moderating personality gender differences.

Keywords: big five, social context, variability, consistency, gender

Introduction

The literary depiction of a personality that varies by social context is common in autobiography, novels, and cinema. A classic fictional plot may portray the protagonist as a conservative and quiet office worker by day and a radical, courageous hero by night. These dramatic descriptions of personality traits being contextually variable may symbolically reflect a real phenomenon. There is a growing body of research on personality variability which has shown it to be an individual difference measure with predictive power and has also considered the specific ways in which personality variability manifests in particular traits, behaviors, and contexts.

Personality variability can be indexed to give an overall numerical quotient of a person's inconsistency across social contexts. Such indices have shown that a consistent personality across contexts predicts positive affect (Baird, Le, & Lucas, 2006), less psycho-neuroticism (Block, 1961), more life satisfaction (Suh, 2002), self-esteem (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997), role satisfaction (Donahue, Robins, Roberts, & John, 1993), lower depression (Lutz & Ross, 2003), lower state anxiety (Diehl, Hastings, & Stanton, 2001), more authenticity (Sheldon et al., 1997), and better physical health (Cross, Gore, & Morris, 2003).

This index-based research has found that personality variability is predictive of key states and behaviors, but does not indicate *how* variability manifests in particular traits and contexts. Sheldon et al. (1997) was one of the first studies to report variability effects in specific Big 5 traits across life contexts (student, employee, child, friend, and romantic partner). Significant within-trait cross-context differences were found: Extraversion was found to be highest in the friend role,

Neuroticism highest in the student role, Agreeableness and Conscientiousness highest in the worker role, and Openness highest in the partner role. Each trait, however, had substantial intercontext correlations, showing a consistency effect alongside the variability effect.

Donahue and Harary (1998) investigated contextual trait ratings in readers of a popular magazine. A total of 262 participants completed a 35-item Big 5 Inventory (BFI) five times, once to describe their general self-image and then for work, romantic partner, and friend roles as well as a role of the participant's choosing. A trait-specific pattern of variation was found; Extraversion was highest in a sibling role, Agreeableness highest in the friend role, Conscientiousness highest in the worker role, Neuroticism highest in the daughter/son role, and Openness highest in the boyfriend/girlfriend role. Trait-specific intercontext correlation coefficients in this study ranged from .12 to .98, with a mean correlation of .65, showing a varying but ubiquitous core of trait consistency concurrent alongside the variability effects found.

Recent research has used both behavioral, diary, and questionnaire measures to investigate contextual variability in personality. Woods and Roberts (2006) had 149 participants complete an 87-item adjective-based Big 5 measure three times, corresponding to general identity, romantic partner role, and a role within a university group of their choice. They found all traits except Neuroticism had significant differences between means: Extraversion and Agreeableness were highest in the romantic partner role, Conscientiousness was highest in the university group role, and Intellect (Openness) was highest in the general identity condition.

Heller, Watson, Komar, Min, and Perunovic (2007) used a behavioral rating diary approach to compare the Big 5 in friend and student roles. They found Extraversion, Agree-

ableness, and Openness to be higher in the friend role, but Conscientiousness to be higher in the student role. Moskowitz and Zuroff (2004) used a similar diary-based "event-sampling" methodology to investigate social variability in behavior, in which participants rated all social interactions they engaged in for a 20-day period on the two dimensions of dominance/submissiveness and agreeable/quarrelsome. Analysis then quantified the behavioral variability for each person on three indices: flux (the standard deviation from the mean on the dimension), pulse (how variable the intensity of the behavior is), and spin (the variability of how the two-dimensions dominance/submissiveness and agreeable/quarrelsome interact). Variability on these parameters correlated with the Big 5 traits: Neuroticism predicted spin, Extraversion correlated positively with flux in agreeableness/quarrelsomeness, and Agreeableness predicted less flux and spin in quarrelsome behavior (Moskowitz & Zuroff, 2005).

The research of Fleeson (2001) also uses an event-sampling approach in which participants self-report on their behavior five times a day for 13 days. Findings from this research show that while behavior shows a substantial amount of contextual modulation, a stable central tendency is found in all Big 5 traits when multiple behaviors over a week are averaged. Within Fleeson's "density distributions" model of traits, contextual adaptability is not seen as a threat to trait influence; substantial social malleability and a central tendency of consistency can coexist harmoniously.

Gender is a variable that has received little attention in relation to contextual personality inconsistency. Research has looked at gender differences at the level of personality consistency index, and the findings have been ambiguous. Sheldon et al. (1997) found greater consistency across roles among women than men, but Donahue et al. (1993) found no gender difference in consistency. Suh (2002) found that women were more consistent in one study but not in the second study.

Research that considers gender as a dependent or independent variable in relation to trait-specific or behavior-specific variability is limited. Moskowitz, Suh, and Desaulniers (1994) looked at the influence of gender on variation in "agency" and "communion" in social behaviors, measured using event sampling over 20 days. The work contexts were "with boss," "with co-worker," and "with supervisee." They found that context was a more salient variable than gender. People were more dominant in supervisor roles and more submissive in supervisee roles irrespective of being male or female. Women were more communal than men regardless of social context.

Rationale for Current Study and Hypotheses

The current study investigated the effects of social context and gender on the expression of the Big 5 traits in a British sample. Participants were asked to rate personality descriptors corresponding to being in three social contexts: *with parents*, *with friends*, and *with work colleagues*. It was hypothesized that trait scores would vary significantly across the three social settings in all Big 5 traits, and that each trait would show a unique cross-context variation pattern. Based on the most similar previous study (Donahue & Harary, 1998), it was possible to make specific role/trait predictions: Extraversion, Openness, and Agreeableness should be highest with friends and lowest with parents; Neuroticism should be highest with parents and lowest at work; Conscientiousness should be highest at work and lowest with parents. Testing these predictions would assess the extent to which American intraindividual variability effects generalize to a British sample.

It was also hypothesized, following the findings of Sheldon et al. (1997) and Donahue and Harary (1998), that for each trait ratings in a social context would correlate with ratings for the same trait in the other two contexts. A subsidiary aim attached to this hypothesis was to determine whether the size of cross-context correlations varied by trait, and therefore whether some traits are more socially malleable than others. There is evidence that some of the Big 5 traits are more stable *over time* than others, as demonstrated by test-retest coefficients that vary by trait (Roberts, Walton & Viechtbauer, 2006) and age-based changes in cross-sectional data that vary by trait (Srivastava, John, Gosling, & Potter, 2003); but there has been no attention paid to the *relative cross-context stability* of the Big 5 traits. Because of the lack of precedent in the literature, no hypothesis was made regarding outcome.

Gender differences were also explored because of the lack of explicit consideration of gender in relation to trait-specific variability in previous research. Based on the literature, it was hypothesized women would show higher Extraversion and Agreeableness, while men would be higher on Openness and Emotional Stability (Costa, Terracciano, & McCrae, 2001; Srivastava et al., 2001). Given Moskowitz et al.'s (1994) finding that social context affected behavior independent of gender, it was hypothesized that these gender differences would show across all three social contexts assessed.

Method

Participants

A total of 347 participants were drawn from two sources: a university near London and a University of London college aimed at higher education for older adults. Participants were recruited from departments of psychology, criminology, architecture, construction, health policy, health science, and computer science. Their ages ranged from 18 to 55, with a mean age of 27 and a standard deviation of 7.75.

Procedure

Participants were asked to fill out a short questionnaire but were not informed of the hypotheses of the study when filling out this questionnaire to minimize demand and/or acquiescence effects. The questionnaires were given out in paper copy for participants to fill out in their own time. Participants were given a consent form to sign and asked to give their age, gender, and course currently being studied as well as a code identifiable to themselves but not to others. Participants were assured of confidentiality, of data protection, and of the possibility of withdrawing their data at a later date if they so desired. Participation was voluntary and no course credit was offered for completion of the questionnaire.

Measures

The The Ten-Item Personality Inventory – 3 Contexts (TIPI-3C)

The Ten-Item Personality Inventory, or TIPI (Gosling, Rentfrow, & Swann, 2003) is a very brief measure of the five-factor model of personality. Items consist of a pair of trait adjectives, which are rated on a 7-point Likert scale ranging from 1 *(disagree strongly)* to 7 *(agree strongly)*. The TIPI has good convergent validity with other widely used five-factor model scales (Gosling et al., 2003; Muck, Hell, & Gosling, 2007), and has demonstrated good test-re-

test reliability (mean $r = .72$ across traits; Gosling et al., 2003). It has also been shown to have predictive validity in various forms of research (e.g., Chamorro-Premuzic, Bennett & Furnham, 2007; Hesse, Schleiwe, & Thomsen, 2005; Hodson & Costello, 2007; Spieler et al., 2007), and has been translated into German, Dutch, French, Farsi, Italian, Norwegian, Swedish, and Spanish.

The TIPI was modified for the current study, with permission of the original author (Gosling, 2008, personal communication), and in its modified form is referred to as the Ten Item Personality Inventory – 3 Contexts, or TIPI-3C. The modification involved adapting the questionnaire so that it has three columns to be filled out instead of one, corresponding to the following interpersonal contexts: *with parents, with friends,* or *with work colleagues.* The instructions were also adapted to fit this change. See Appendix A for the TIPI-3C questionnaire and scoring key.

Results

Questionnaires in which one or more of the three contexts were left blank were omitted from the final analysis, so that within-trait means in the final sample were directly comparable, being based on exactly the same contributing participants. 42 participants were removed from the final analysis because of incomplete questionnaires, 40 of whom were students who did not work and so left the work column blank, and two of whom left the parent col-
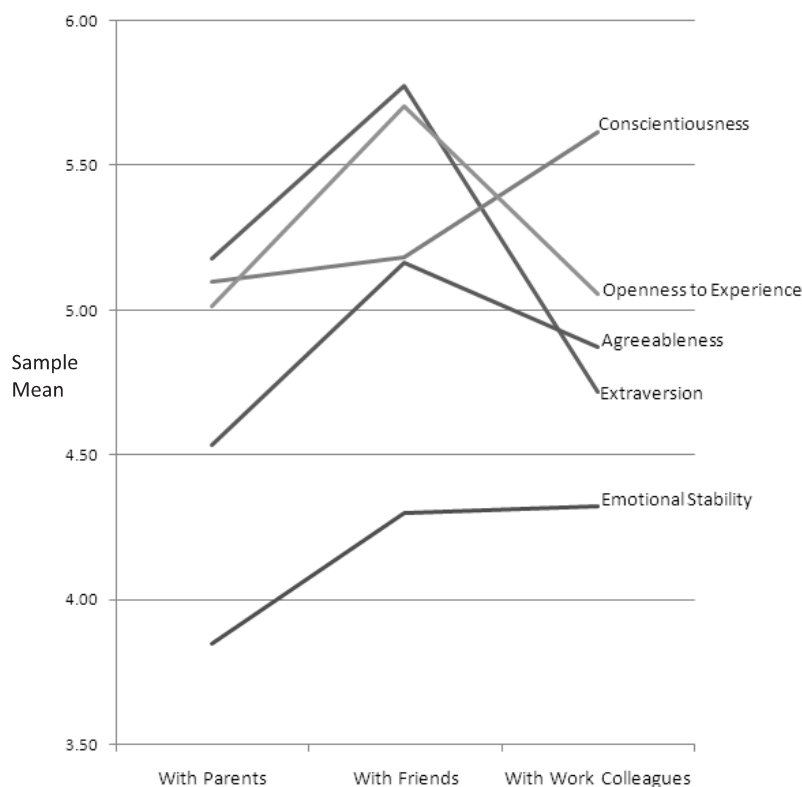

Figure 1. Variation effects of the Big 5 traits across "with parents," "with friends," and "with colleagues" contexts.
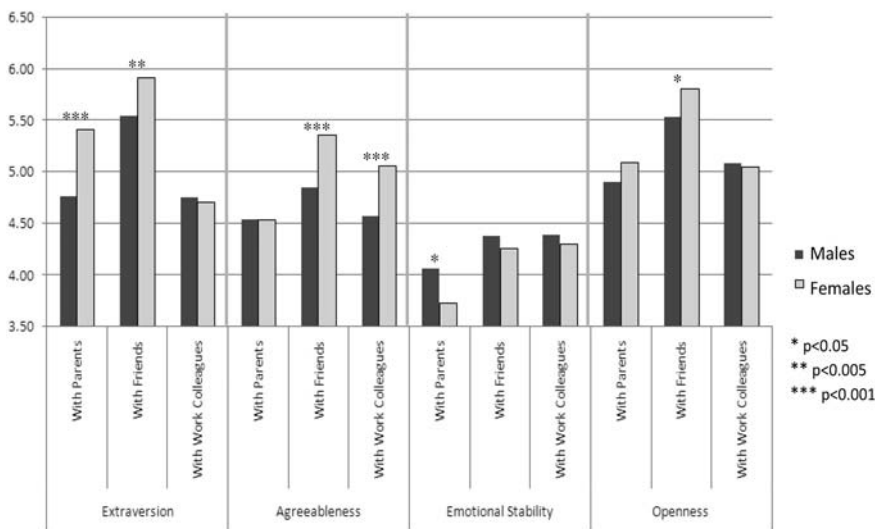
Figure 2. Contextual trait score profiles for males (*N* = 112) and females (*N* = 193) in Extraversion, Agreeableness, Emotional Stability and Openness.

umn blank. 305 participants submitted fully completed questionnaires.

Cross-Context Variability Effects

Means for the five traits across the three contexts for the whole sample are shown in Figure 1. The graph shows systematic variability across the three social contexts for means of all Big 5 traits:

– The Extraversion mean is highest with friends (5.78), followed by parents (5.18), and then at work (4.72).
– Conscientiousness (5.62) is rated highest with work colleagues, followed by friends (5.19), and then with parents (5.10).
– Openness is highest with friends (5.71), followed by work colleagues (5.06), and lowest with parents (5.02).
– Agreeableness is highest with friends (5.17), followed by work colleagues (4.88) and parents (4.54).
– Emotional Stability is lowest with parents (3.85), and higher for friends (4.3) and work colleagues (4.33).

A mixed MANOVA was conducted on the data, with trait and context as repeated measures and gender as a between-subject factor. This showed that the cross-context variability effects in Figure 1 were highly significant. The effect of context had a significant main effect, $F(2, 303) = 238.68$, $p < .001$, and trait also had a significant main effect, $F(4, 301) = 87.03$, $p < .001$. The interaction effect of context and trait was also highly significant, $F(8, 297) = 129.07$, $p < .001$, which emphasizes that the Big 5 traits had significantly different patterns of contextual variation.

    Paired-samples *t*-tests between contexts within each trait showed significant differences at the $p < .001$ level between all contexts in Extraversion and Agreeableness. For Openness, Conscientiousness, and Emotional Stability, one pairing for each did not show a significant difference, with the remaining differences between significant at $p < .001$:

For Openness, the difference between parents and work was not significant; for Conscientiousness, the difference between friends and parents was not significant; and for Emotional stability, the difference between friends and work was not significant.

Gender Effects

The mixed MANOVA demonstrated a significant effect of gender on context and trait in combination, $F(8, 294) = 2.46$, $p < .01$, but no effect on just context *or* trait. This suggests that it is only at the level of *contextualized trait* that gender differences were manifest. Figure 2 illustrates this; it profiles all the contextual means for men and women in the four traits in which a significant difference was found, and it is apparent that gender differences are context-specific. *t*-tests showed that Extraversion was significantly higher for women than men when with parents ($t[303] = 3.86$, $p < .001$), and with friends ($t[303] = 2.94$, $p < .005$), but not at work. Women were significantly higher in Agreeableness than men when with friends ($t[303] = 3.82$, $p < .001$) and at work ($t[303] = 3.42$, $p < .001$), but not in the parent setting. Openness with friends was significantly higher among women than men ($t[303] = 2.05$, $p < .05$), but there were no significant differences in the other two settings. Emotional Stability with parents also emerged as significantly lower among women ($t[303] = 1.88$, $p < .05$), but there were no differences in Emotional Stability in the other contexts.

Cross-Context Consistency: Within-Trait Correlations

Bivariate correlations between paired contexts (parents–friends, friends–work and work–parents) were calculated within each trait (see Table 1). All these cross-context

Table 1. Intercontext correlations for all 5 traits (*N* = 305)

Trait	Contexts correlated	*r*
Extraversion	Parents-Friends	0.34***
	Friends-Work Colleagues	0.41***
	Parents-Work	0.18**
Agreeableness	Parents-Friends	0.34***
	Friends-Work Colleagues	0.60***
	Parents-Work	0.21**
Openness	Parents-Friends	0.45***
	Friends-Work Colleagues	0.49***
	Parents-Work	0.36***
Emotional Stability	Parent-friend	0.51***
	Friends-Work Colleagues	0.61***
	Parents-Work	0.39***
Conscientiousness	Parents-Friends	0.68***
	Friends-Work Colleagues	0.54***
	Parents-Work	0.44***

**$p < .01$, one tailed; ***$p < .001$, one tailed.

Figure 3. Average Intercontext correlations of the Big 5: an index of cross-context social stability of the traits (*N* = 305).

Discussion

The cross-context variability found in the Big 5 trait means supports the hypothesis that the majority of people adapt their personality to "fit in" to social situations – that they do so in ways that are sufficiently systematic to lead to varying trait means across key life contexts. In the "with-parents" setting people are in general less open, less agreeable, more neurotic, and less conscientious than either of the other two settings of work and friends. This suggests that the "with-parents" setting is not conducive to positive personality expression for the majority. This may be due to the high number of younger adults in the sample, for whom financial, social, and physical separation from parents is not yet complete.

The patterns of difference support most of the trait-specific predictions made on the basis of Donahue and Harary (1998). If the within-trait rank orders of the means in the three contexts (i.e., highest, middle, lowest) are compared with the rank order of the equivalent means from Donahue and Harary (1998), in all five traits 11 of the 15 ranks match. This high level of congruence between the studies shows convergent validity between the TIPI-3C and the Big 5 Inventory (John & Donahue, 1997) in the assessment of contextual personality traits, while demonstrating a similar, but not identical, pattern of social personality variability in American and British samples.
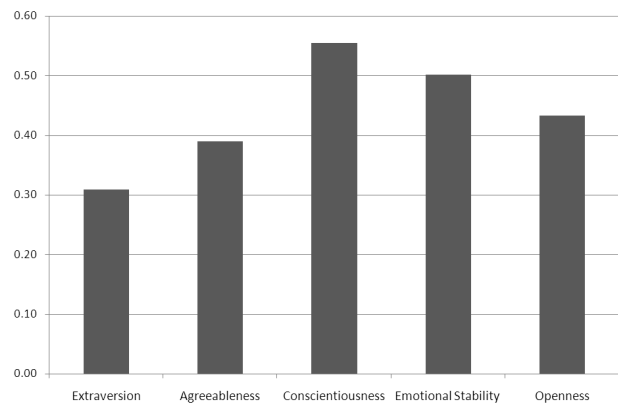
Positive correlations were found between paired con-

correlations for the five traits were significant at $p < .01$ or higher, suggesting that despite the significant differences between trait expression across contexts, there is also a core of correlative consistency across the three settings for all of the five traits. The cross-context correlations for each trait were averaged to give a mean correlation as an index of cross-context stability for the trait in question. These average cross-context correlations for each trait are shown in Figure 3.

Extraversion shows the least stability across contexts, with an average cross-context correlation of $r = .31$, followed by Agreeableness (aver. $r = .39$), Openness (aver. $r = .43$), then Emotional Stability (aver. $r = .50$). The highest cross-context correlation is shown by Conscientiousness (aver. $r = .55$). A Steiger's *z*-test was used to search for significant differences between these average correlations. The *z*-scores and significance levels are shown in Table 2. Conscientiousness is significantly more correlated across contexts than Extraversion and Agreeableness, while Emotional Stability is significantly more correlated than Extraversion.

Table 2. Steiger's *z*-scores for differences between average cross-context correlations for the Big 5

	Agreeableness	Conscientiousness	Emotional Stability	Openness to Experience
Extraversion	$z = 1.09$	$z = 3.50**$	$z = 2.70**$	$z = 1.65$
Agreeableness		$z = 2.42*$	$z = 1.62$	$z = .57$
Conscientiousness			$z = .80$	$z = 1.85$
Emotional Stability				$z = 1.05$

*$p < .05$, two tailed, **$p < .01$, two tailed.

texts for each trait. This suggests that while there is significant cross-context variability, there is a also a core of correlative consistency. This simultaneous mix of consistency and variability can be interpreted as personality traits giving *parameters of behavior within which social variation is possible*. While individuals may modulate their personality traits depending on who they are with, there seems to be a basic dispositional core around which variability is organized. Such a view fits with Fleeson's view of traits as distributions of behavior around a fixed central tendency:

> "Generally, everyone routinely acts in a wide range on a given dimension of behavior, yet different people's ranges of behaviors are centered on different portions of the dimension, and each individual's center remains very stable across large periods of time." (Fleeson, 2004, p. 86)

It was found that the Big 5 traits differ in the extent to which they are contextually invariant. Conscientiousness comes out as the most consistently expressed across social contexts, with an average intercontext correlation of $r = .55$. This suggests that the extent to which a person is directed, organized, and self-disciplined manifests more stably across the three social situations assessed (at work, with parents, with friends) than other facets of personality. Extraversion emerges as the least consistent trait across these contexts, with an average intercontext correlation of $r = .31$, which points toward the possibility that the extent to which a person is outgoing and socially dominant is more contextually malleable than the other traits measured.

With regards to gender, it was hypothesized that women would be lower in Emotional Stability and Openness, but higher in Extraversion and Agreeableness (Costa et al., 2001; Srivastava et al., 2001). In fact, women were significantly higher in Extraversion and Agreeableness only in two of the three contexts measured (see Figure 2). Women were lower in Emotional Stability, but only significantly in one setting: with parents. Openness did not emerge as higher among men – in fact women were significantly more open than men in the friends context. These findings suggest that *gender differences in personality traits are contextually specific*, that is, they are perhaps products of varying social expectations and social roles on the personalities of men and women, rather than innate or genetic differences (Block, von der Lippe, & Block,1973). This fits with the interactive theory of gender identity, which postulates that gender-related behavior is influenced by proximal causes and is context dependent (Deaux & Major, 1987).

Limitations and Further Research

The current study has provided several novel findings in relation to personality variability; these, however, must be tempered by an acknowledgment of the inherent limitations of the method. One of the key problems with self-report data is that how people report their behavior may not represent their actual actions (Baumeister, Vohs, &

Funder (2007). Thus, in this study, reports of intraindividual variability may reflect self-perceptions or role stereotypes that are not actually anchored in, or only partially representative of, variable behavioral patterns. Indeed some researchers (Donahue et al., 1993) refer to personality variability data gained through self-report as "self-concept differentiation," emphasizing that the data emerge from a self-schematic representation of personality, not from personality as a behavioral phenomenon. A further issue is that the format of the TIPI-3C may create an expectation effect for differences across the three context columns. A study assessing and comparing both behavioral ratings or diary ratings in contexts and the TIPI-3C could establish if this was indeed the case. Heller et al. (2007) suggest that research into contextual effects on personality should include methods that bypass the self-concept by using other-report or behavioral observation (e.g., Schneiderman, 1980), though they add that well-designed self-report studies must continue, too.

There are a number of avenues for future research that can build on the findings from the current study and address its limitations. In order to confirm how robust the mean-level differences are, trait-specific variability patterns need to be assessed again in comparable populations, while research using different demographics is essential in order to enhance generalizability. In order to establish whether the differing cross-context consistencies of the Big 5 traits are specific to the three contexts used in the current study, the TIPI-3C could be further adapted to measure within-subject differences in alternative triads of social contexts, such as "with a close friend," "at a party," or "with strangers." Intercontext correlations from across these settings could be compared with those from the current study to see if the same ordering of trait consistency is found. The surprising social instability of Extraversion could be further investigated by seeking correlates of cross-context Extraversion variability, for example, need for social approval (Larsen, Martin, & Ettinger, 1976) or self-monitoring (Snyder, 1987).

A further avenue of future enquiry would be to look at the relationship of personality-in-context to particular outcome variables such as job performance or stress. Hunthausen et al. (2003) investigated whether the Big 5 traits are more predictive of job performance if participants are asked to fill in the questionnaire specific to their personality at work. They found that work personality was more predictive of job performance than personality "in general," suggesting that a consideration of social context in Big 5 assessment may improve the predictive power of questionnaires. Context may also be worth considering when exploring the antecedents of personality traits. For example, research has found a link between parental attachment and adult personality (Hagekull & Bohlin, 2003; Nakamura-Tani, 2005; Raggatt, 2006), but does this relationship get stronger if personality is rated specifically in the "with parents" context? Future research with the TIPI-3C could address such a question.

Conclusion

The current study has extended American research on the social malleability of the Big 5 traits to a British sample, while also providing novel findings on relative trait stability across contexts and on gender differences by context. It was found that, in a diverse British sample, the Big 5 traits are to an extent socially malleable, and that people adapt their personality in ways sufficiently systematic to emerge as variable trait means across contexts. However, positive intratrait correlations give evidence of a stable trait center that creates behavioral parameters for personality expression but does not fix it. Gender differences in traits appear to be moderated by context, for those traits that show gender differences only do so in select contexts, and not across all contexts. Furthermore, the Big 5 traits differ in how stable they are across the three assessed social contexts, a finding that points to the possibility that these well established traits may not be equally dispositional and immutable in their effects on behavior.

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Appendix A – The TIPI-3C

Below are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Dis-agree strongly	Dis-agree moder-ately	Dis-agree a little	Neither agree nor dis-agree	Agree a little	Agree moder-ately	Agree strongly
1	2	3	4	5	6	7

The column "with my parents" describes how you are when you are with your parents, the middle column "with my friends" describes how you are when you are with your friends, and the right hand column "with my work colleagues" describes how you are when you are with your work colleagues. Please fill out all three columns if you can.

	With my parents	With my friends	With my work colleagues
Extraverted, enthusiastic			
Critical, quarrelsome			
Dependable, self-disciplined			
Anxious, easily upset			
Open to new experiences, complex			
Reserved, quiet			
Sympathetic, warm			
Disorganized, careless			
Calm, emotionally stable			
Conventional, uncreative			

Scoring: Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness; 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R.