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The Company You Keep: Personality and Friendship Characteristics

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Running Head: Individual differences in friendship characteristics

Abstract

Studies on personality and friendship have often focused on similarities between friends, while differences in friendship patterns have received less attention. We used data from the British Household Panel Survey data (N=12,098) to investigate how people's personalities are related to various characteristics of their three closest friends. All personality traits of the Five Factor Model were associated with several friendship characteristics with effect sizes corresponding to correlations from r = -.06 to r = .09. Openness was an especially prominent and idiosyncratic trait; individuals with high openness were more likely to have friends who live further away, are of the opposite sex and another ethnicity, and whom they meet less often. Agreeableness, and to some extent extraversion, were related to more traditional friendship ties. Thus individuals with high agreeableness had known their friends for a longer time, lived close to them, and had more stay-at home people and kin among their friends. We conclude that personality is relevant for the social patterning of close friendship relations.

keywords: friendship, personality, Big Five Model, social ties, UK

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Main text (exc. Reffs, acknls etc.): ~3378

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Friendship is a fundamental part of human sociality (Baumeister & Leary, 1995; Seyfarth & Cheney, 2012; Helm, 2013); the “company we keep” affects the support given and received throughout our lives (Börsch-Shupan et al. 2013; van Kalmijn 2003; Stevens & van Tilburg 2010). We instinctively find our friends' survival important for our own survival (Beckes, Coan, & Hasselmo, 2013), and the importance of friends is a recurring theme in fiction and philosophy (Helm, 2013). Findings from neurosciences imply that threats targeting our friends are processed similarly to threats targeting ourselves (Beckes et al., 2013). Various benefits to health, endurance, happiness and longevity stem from connectedness and dense social networks (see Hawkley & Cacioppo, 2010; Johnson & Dunbar, 2016; Li & Kanazawa 2016); for instance, loneliness in adolescence is associated with depression and cardiovascular diseases later in life (Goosby et al., 2013), while support from close friends buffers against depression after a divorce (Linn et al., 2013).

Motivation to form friendships – emotionally close and enduring social bonds not directly related to mating – is present in many mammal species (Seyfarth & Cheney, 2012). Friendships facilitate cooperation, access to mates, defense against aggression, and information exchange in both close dyads and larger coalitions (de Scioli and Kurzban 2009). While kin can be included among close friends (Curry, Roberts, & Dunbar, 2013), ties to non-kin friends are qualitatively different from kin relations (Steward et al. 2007; Rotkirch et al. 2014) and emphasize reciprocity, trust and emotional support (Hruschka 2010). In contemporary advanced societies, with low fertility and high rates of migration, friendship with non-kin may play an increasingly important role for our everyday lives.

Whom we become friends with and how friendships are maintained has been extensively studied by psychologists, especially among children and youth (e.g. Rose & Rudolph 2006; Hall 2010). Most existing studies have concentrated on homophily and

friendship selection between dyadic friendships, while differences and variation in friendship characteristics have received less attention (see Selfhout et al. 2010 and Wrzus et al. 2016 for discussion). Friends tend to resemble one another in characteristics such as gender, age, education, and attitudes, so that “birds of a feather flock together” (McPherson, Smith-Lovin, & Cook, 2001). Homophily between friends who are not kin has been shown to exist even on a genetic level (Fowler, Settle, & Christakis, 2011). However, homophily is not the only important feature in friendship networks, which is why it is important to consider variation in friendship characteristics as well (see Selfhout et al. 2010 and Wrzus et al. 2016).

Since friendships involve trust-based, long-term relations, researchers suggest that homophily between friends may be adaptive for it increases trust in reciprocal relationships (Massen & Koski 2014). Homophily with regards to age and gender should facilitate cooperation at crucial parts of the life course, such as finding and keeping a mate and raising children. However, homophily is only one possible perspective when considering how personality is related to friendship dynamics (Rivera, Soderstrom & Uzzi 2010). Social bonding and cooperation in a dyad may benefit from complementary traits of the individuals forming the dyad. Friendship formation has been suggested to be shaped also by attraction to kin (Kummer 1971) and attraction to rank (Seyfarth 1977). Thus, in addition to homophily, *variations* in friendships are interesting and worthwhile to investigate in their own right.

Personality is part of many life choices that connect people, including career preferences (Barrick, Mount, & Gupta, 2003), residential locations (Jokela, 2009), taste in music (Chamorro-Premuzic & Furnham, 2007), and leisure activities (Laakasuo et al, 2014). It is thus not surprising that personality influences friendship formation as well. Asendorpf and Wilpers (1998) found that conscientiousness was associated with how much time students spend keeping in touch with their families, whereas extraversion was related to the number of

peers that students spent time with. Another social network study focusing on friendship selection found that people tend to become friends with friends of friends, and that homophily in agreeableness and openness explained friendship formation (Selfhout et al., 2010). Similar observations have been made also among other primates (Massen & Koski, 2014).

Zarbatany, Conley and Pepper (2004) studied how the needs for and experiences of friendship varied with some personality traits among adolescents. These authors found that individuals with higher needs for connection or social prominence also had highly effective friendships, and stressed that the core function of close friendships is not homogenous. A related study found that individuals with Machiavellian traits both rated friendships as less important and tended to form low-quality friendships (Lyons & Aitken, 2010). Socially skilled and pro-social children form more and longer lasting friendships than aggressive and manipulative children do (Parker & Seal, 1996), while highly intelligent individuals appear to have fewer friends and to find it more difficult or less rewarding to interact with friends compared to individuals with normal levels of intelligence (Janos, Marwood & Robinson, 1985; Li and Kanazawa 2016). Previous studies have also highlighted how friendship characteristics affect personality, and vice versa. For instance, conflict ridden friendships apparently make people more emotionally stable in the long run (Mund & Neyer, 2014).

Our study aims to extend previous research by investigating how the five main personality traits are associated with a range of friendship characteristics, including contact frequency and residential proximity with friends. The purpose of this analysis is to not only focus on similarities between friends but to provide broader insight on the social patterns of close friendship associated with personality traits. To our knowledge, this is the first big data study, exploring the associations of friendships among adults using the Big Five personality traits, run with a nationally representative data.

Method

Participants and Design. Participants were from the British Household Panel Survey (BHPS; Taylor, Brice, Buck, & Prentice-Lane, 2010), a longitudinal survey of a nationally representative sample of over 5000 British households with annual follow-ups. The original sample included 10,264 individuals aged 16– 97 in 1991 (M=44.4, SD=18.3). New participants have been included in the sample over the years if they are born to an original sample member, if they have moved into a household in the original sample, or if a member of the original sample has moved into a new household with one or more new people. In addition, the sample was enriched with additional recruitment of participants at waves 9 and 11, from Scotland and Wales, and from Northern Ireland, respectively, extending the sample to cover the whole UK. The most recent, 18th, follow-up of the BHPS was carried out in 2008–2009, after which the study has become part of the larger Understanding Society study (http://www.understandingsociety.org.uk/). Data collection has been carried out following the Ethical Guidelines of the Social Research Association, and all participants gave their informed consent. The current sample included 12,098 participants (M_{age}=46, SD_{age}=18; 55% women) who provided data on own personality and characteristics of their friends (1 to 3 friends reported by each participant, resulting in a total of 33,971 friends). All participants with data on personality and friendships were included in the analysis. Besides missing data, no participants were excluded from the analysis. With our large sample we had sufficient statistical power to observe even small associations. For example, a logistic regression would require over 18 000 observations to have 80 per cent statistical power in detecting a probability difference between 50 per cent and 51 per cent in an outcome associated with a difference of one standard deviation in a personality trait (assuming R^2=0.15 with the other variables in the model).

Materials.

Personality of participants was assessed in the 15th study wave (in 2005–2006) with a 15-item version of the Big Five Inventory (BFI; (John, Naumann, & Soto, 2008)), with three items assessing each of the five dimensions rated on a 7-point scale: extraversion (talkative; outgoing; reserved (R, reverse coded); Cronbach α=0.54), neuroticism (worries a lot; gets nervous easily; relaxed, handles stress well (R); α=0.68), agreeableness (sometimes rude to others (R); has a forgiving nature; considerate and kind; α=0.53), conscientiousness (does a thorough job; tends to be lazy (R); does things efficiently; α=0.51), and openness to experience (original, comes up with ideas; values artistic and aesthetic experiences; has an active imagination; α=0.67).

Friendship characteristics were reported by the participants in the 16th wave (2006–2007) for up to three closest friends. The instructions for this section stated: “Here are a few questions about your friends. Please choose the three people you consider to be your closest friends starting with the first friend. They should not include people who live with you but they can include relatives” and the participants were asked to report (a) friend’s sex; (b) relative status (1=non-relative, 2=relative); (c) age; (d) how long participant has known the friend (1=less than a year, 2=one to two years, 3=three to ten years, 4=ten years or more); (e) how often participant sees the friend or gets in touch by visiting, writing, or telephone (4=most days, 3=at least once a week, 2=at least once a month, 1=less often); (f) how many miles away the friend lives (1=less than one mile, 2=less than five miles, 3=between five and fifty miles, 4=over fifty miles); (g) employment status of the friend (full-time employment, part-time employment, unemployed, full-time education, full-time housework, retired); (h) ethnic group of the friend (White, Asian, Black, Chinese, Mixed). These measurements have not been repeated, excluding the possibility of longitudinal analysis of the studied traits.

Results

Descriptive statistics of the participants and their friendship characteristics are presented in Tables 1 and 2, respectively. The majority of close friends in this data lived less than five miles from each other and saw each other weekly or daily. 74 per cent of the friends mentioned were not relatives and the most typical age difference between friends was two years or less.

Participants reported on average 2.8 friends, with 86 per cent reporting three friends, 8 per cent two friends, and 6 per cent one friend. Participants with lower extraversion (OR=0.93; 0.89, 0.97), lower agreeableness (OR=0.94; 0.93, 0.98), and lower openness (OR=0.89; 0.85, 0.92) were more likely to report only one or two friends instead of the three friends suggested by the survey questionnaire. Emotional stability and conscientiousness were not associated with the number of reported friends.

Table 1. Characteristics of the participants

Characteristic	n (%) or Mean(SD)
Female sex	6691 (55.3)
Age†	46.6 (17.9)
Race/Ethnicity	
White	10554 (87.2)
Black	53 (0.4)
Asian	123 (1.0)
Other/Unknown	1368 (11.3)
Employment status	
Employed	7247 (59.9)
Unemployed	830 (6.9)
In education	609 (5.0)
Stay-home	816 (6.7)
Retired	2524 (20.9)
Other	72 (0.6)
Personality	
Extraversion†	10.5 (3.5)
Emotional stability†	10.0 (4.0)
Agreeableness†	13.4 (3.0)
Conscientiousness†	12.8 (3.2)
Openness to experience†	10.4 (3.6)
† Mean (standard deviation)	

Table 2. Characteristics of the friendships

Characteristic	n (%) or Mean(SD)
Same sex	30756 (80.6)
Same race/ethnicity	31663 (83.4)
Are relatives	9807 (26.4)
Friend's age†	44.2 (16.8)
How long have known each other	
Less than 1 year	871 (2.3)
1-2 years	2298 (6.1)
3-10 years	9649 (25.4)
10 years or more	25116 (66.2)
How far away lives	
Less than 1 mile	11065 (29.1)
Less than 5 miles	11086 (29.2)
5-50 miles	10679 (28.1)
Over 50 miles	5191 (13.7)
How often see each other	
Less often than monthly	2510 (6.6)
Monthly	7503 (19.7)
Weekly	14796 (38.9)
Daily	13191 (34.7)
Employment status	
Employed	24668 (65.1)
Unemployed	1938 (5.1)
In education	2491 (6.6)
Stay-home	2196 (5.8)
Retired	6580 (17.4)
Age difference	
No more than 2 years	15257 (40.6)
More than 2 years younger	13128 (34.9)
More than 2 years older	9195 (24.5)

† Mean (standard deviation)

To study the effects of personality on friendship characteristics, we ran a series of binary logistic, ordinal logistic, and multinomial logistic regressions, adjusted for sex, age, ethnic group, and employment status of the participants, and also adjusting for the age of their friends. In each model we included all the dimensions of the Big Five Model. Odds ratios are reported for standardized personality traits (M = 0; SD=1). Standard errors were calculated using robust estimator with participants as the clustering variable to take into account the non-independence of the observations.

Extraversion was associated with seeing one's friends more often, having friends who live closer, and having non-relatives as close friends (**Table 3)**[1]. Extraverts were also more likely to have friends of about the same age and friends who are in education, but less likely to have stay-at-home or retired friends. Emotional stability was associated with having younger and same-sex friends, as well as with seeing friends more often and having friends who are not relatives. Individuals with high agreeableness were more likely to have relatives as friends, and to have known their friends for a longer time. Their friends were also more likely to be stay-at-home persons or retired and to live nearby. Conscientious individuals were less likely to have unemployed or student friends or to have friends of the same age, and were also somewhat more likely to have relatives and same-sex individuals as friends.

The most idiosyncratic pattern of friendships was observed for individuals with high openness to experience. They had statistically significant associations with all the friend characteristics we measured. Higher openness to experience was associated with having friends living further away and meeting friends less often, and with having friends who are less likely to be relatives, but more likely to be of the opposite sex and another ethnic group. These friends were also more likely to be in working life or students and of the same age as

1 We report the associations as odds ratios and their confidence intervals. P-values have not been reported, because it was not feasible to include them in the table, and because p-values would provide little information beyond the confidence intervals in such a large sample.

the participant (Table 3). To detect a possible kin effect on friendship behavior, we ran the same regressions by including only non-kin friendships; results remain essentially the same (Supplementary Table 1).

To further illustrate the effect sizes associated with openness to experience, Table 4 shows the predicted probabilities of friend characteristics for low (1SD below the mean) and high (1SD above the mean) levels of openness to experience calculated from the models in Table 3 (for similar results for all personality traits, see Supplementary Table 3). Note that the differences in absolute probabilities are affected not only by the magnitude of the odds ratios but also by the base rate of the friend characteristic (i.e., smaller absolute differences for very low and high probabilities).

Table 4. Probabilities of friend characteristics for low and high openness to experience.

	Openness to experience	
	Low	High
Same sex	82 ± 0.3	80 ± 0.3
Same race	88 ± 0.1	87 ± 0.1
Relative	29 ± 0.4	25 ± 0.4
Known for ≥10 years	69 ± 0.5	66 ± 0.4
Lives ≥5 miles away	37 ± 0.5	47 ± 0.5
Sees at least weekly	37 ± 0.5	31 ± 0.4
Employment status		
Employed	65 ± 0.4	68 ± 0.4
Unemployed	6 ± 0.2	4 ± 0.2
Student	4 ± 0.2	6 ± 0.2
Stay-home	7 ± 0.2	5 ± 0.2
Retired	19 ± 0.3	17 ± 0.3
Age difference†		
Friend younger	39 ± 0.5	32 ± 0.5
Friend older	25 ± 0.4	25 ± 0.4

Values are probabilities (and standard errors) for low (1SD below the mean) and high (1SD above the mean) openness to experience derived from regression models shown in Table 3.

Table 3. Associations between personality and relationships with 1-3 closest friends (n=12,098 individuals reporting on a total of 33,971 friends)

	Extraversion	Emotional stability	Agreeableness	Conscientiousness	Openness
1. Same sex	1.00 (0.98, 1.03)	**1.06 (1.03, 1.09)**	0.99 (0.96, 1.02)	**1.05 (1.02, 1.08)**	**0.93 (0.90, 0.96)**
2. Same ethnic group	1.07 (0.94, 1.21)	1.11 (0.98, 1.26)	1.07 (0.94, 1.23)	0.92 (0.82, 1.04)	**0.78 (0.68, 0.89)**
3. Relative	**0.93 (0.90, 0.96)**	**0.95 (0.92, 0.98)**	**1.09 (1.05, 1.13)**	**1.04 (1.00, 1.08)**	**0.90 (0.87, 0.93)**
4. How long known†	0.98 (0.95, 1.02)	1.02 (0.99, 1.06)	**1.06 (1.03, 1.10)**	1.02 (0.98, 1.05)	**0.93 (0.90, 0.96)**
5. How far lives†	**0.91 (0.88, 0.93)**	1.00 (0.97, 1.02)	**0.93 (0.90, 0.95)**	1.01 (0.98, 1.04)	**1.24 (1.20, 1.27)**
6. How often sees†	**1.16 (1.13, 1.19)**	**1.04 (1.01, 1.07)**	**1.08 (1.05, 1.12)**	1.00 (0.97, 1.03)	**0.86 (0.84, 0.89)**
7. Employment status‡					
Employed	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Unemployed	0.99 (0.93, 1.06)	**0.93 (0.87, 0.99)**	1.00 (0.93, 1.07)	**0.88 (0.82, 0.94)**	**0.84 (0.78, 0.90)**
In education	**1.12 (1.03, 1.21)**	0.98 (0.91, 1.06)	1.00 (0.92, 1.08)	**0.73 (0.67, 0.80)**	**1.23 (1.13, 1.34)**
Stay-home	**0.97 (0.92, 1.02)**	**0.86 (0.81, 0.90)**	**1.22 (1.15, 1.29)**	1.00 (0.95, 1.07)	**0.85 (0.80, 0.90)**
Retired	**0.92 (0.88, 0.96)**	1.02 (0.98, 1.07)	**1.06 (1.01, 1.11)**	1.03 (0.98, 1.07)	**0.91 (0.87, 0.95)**
8. Age difference$					
Friend younger	**0.82 (0.80, 0.85)**	**1.11 (1.08, 1.15)**	**1.06 (1.02, 1.10)**	**1.16 (1.12, 1.20)**	**0.83 (0.80, 0.86)**
Friend older	**0.93 (0.90, 0.96)**	**0.91 (0.89, 0.94)**	1.02 (0.99, 1.06)	**1.19 (1.15, 1.23)**	**0.92 (0.89, 0.96)**

Values are odds ratios (and 95% confidence intervals) of binary logistic regressions unless otherwise noted. Coefficients above 1.00 indicate a positive association, coefficients below 1.00 indicate a negative association. All models adjusted for sex, age, ethnic group, and employment status of the person, and the age of the friends. Personality traits are mutually adjusted, that is, included in the same model together. † Ordinal logistic regression. ‡ Multinomial logistic regression. $ Multinomial logistic regression with reference category being age difference no more than 2 years. If odds ratios are converted to correlation coeffcients, all effects correspond to correlations from -.09 to .06., indicating small effect sizes. For estimated effect sizes presented in Cohen's d and standard correlations see Supplementary materials (Tables 2A and 2B).

Supplementary Tables 4–5 show interactions with gender and age for each personality trait and friendship characteristic. Gender differences were found across more than two personality traits only for the propensity to have same-sex friends, which extrovert men were more likely to have and conscientious, agreeable and open men less likely to have compared to women with similar personality traits. With age, three personality traits - extroversion, openness and conscientousness – were differently related to the likelihood of having younger, older and retired friends. Thus scoring high on extroversion and openness at age 60 increased the likelihood of having friends of a different age as oneself, while conscientiousness decreased this likelihood, compared to individuals age at 30. [2]

Discussion

We studied personality and the characteristics of close friends in a large British sample. Results suggest that personality traits are related to minor, but systematic and statistically significant *differences* in friendship characteristics (ORs around 0.77 – 1.24; corresponding correlations -.09 – .06). While previous studies of personality and friendship have often focused on similarities between friends, our findings indicate that personality is related to meaningful differences in friendship characteristics as well.

However, not all personality traits were equally strong predictors of differences in friendship characteristics. Openness to experience was associated with all the included characteristics of friends, while extraversion and emotional stability also played substantial roles in friendships, but only in six or seven out of eight dependent variables. Individuals with high openness to experience seem to form friendships that are less traditional: their friends live further away, are more recent acquaintances, and they keep less contact with them. They also have more friends who differ from themselves with respect to kinship, gender, and

2 As a disclaimer, one should be careful in interpreting the analyses provided in the supplementary analyses due to high chance of false positives stemming from multiple statistical tests that were conducted without clear hypotheses.

ethnicity. People scoring high on openness are thus less likely to favor trait homophily in friends, with the notable exception of age: they were more likely to have friends of the same age as themselves. High extraversion and high emotional stability were, by contrast, associated with seeing friends more often, and extraversion also with living closer to friends – characteristics which are traditionally associated with close friendship.

That individuals with high openness to experience are the least likely to have friends who live close by, is in line with previous research showing that openness might be related to lower stability in friendship patterns (e.g. Selfhout et al., 2010). Presumably individuals with high openness to experience acquire more friends who live far away, since they are known to migrate often (Jokela, 2009), or they may find it easier to form friendships online (Correa, Hinsley, & de Zúñiga, 2010). That openness to experience was linked to more ethnic and gender variation among friends is also in line with the well-known fact that openness is related to more liberal values and less racist or xenophobic attitudes (Sibley & Duckitt, 2008).

There are cognitive constraints on how large social networks humans can have (Dunbar, 2003). Our inner circle of significant others contains five people on average, and the more of them are kin, the less room there is for non-kin close others (Dunbar & Spoors, 1995). In this study, 26 per cent of the reported friends were relatives of the participants. More agreeable and conscientious, and less extraverted, emotionally stable, and open individuals had more relatives as friends. This heightened “kin attraction” among close friends for some personality traits is in line with the study by Asendorpf and Wilpers (1998), who found that agreeableness is associated with the frequency of keeping contact with relatives.

Favoring relatives as friends is interesting from an evolutionary perspective. Low emotional stability and high conscientiousness have previously been shown to decrease the number of children in contemporary Western humans (Jokela et al., 2011). According to our

results, these same personality traits are involved in investing in close relationships with kin. The pattern of lower own reproduction and more investment in kin could indicate life history choices emphasizing inclusive fitness, i.e., the enhancement of one's own reproductive success in future generations by allocating resources to close kin rather than to non-kin peers.

Our findings show that individuals with lower extraversion, agreeableness, and openness report fewer than three close friends. The different associations between personality traits and characteristics of close friends may reflect different individual strategies in compiling social networks. High openness is associated with having non-kin friends who live far away and who are rarely met with. This indicates, that such individuals solve the quantity/ quality trade-offs in friendships by investing less in larger number of friendships rather than more to a few close ones (for similar trade-offs in gender relations see: Vigil 2007; David-Barrett et al. 2013; for persistence in social styles across time, see Saramäki et al. 2014). However, this remains a hypothesis for further research. Previous research on friendships suggests that emotional intelligence and "dark triad" measures are associated with friendship formation (e.g. Abell et al., 2014; Lyons et. al., 2010). Future studies could also include the dark triad or related Honesty-Humility (HEXACO) measures to gain deeper understanding of patterns in friendship characteristics (Jones & Paulhus, 2014; Ashton & Lee, 2009).

With the large, representative sample of 12,000 people and 33,000 friends, our findings provide a solid insight for studying human friendships in adulthood above and beyond the interest in similarities among friends. Our study also has its limitations. While our study was not strictly cross-sectional (friendship characteristics were reported a year later), we did not have repeated measurements of personality or friendship characteristics. Thus, we could not examine changes in personality and friendships over time. Therefore we cannot take into account how life events can shape personality traits and vice versa (e.g. Maclean,

Johnson & Griffiths, 2011) or how personality traits may influence friendships and friendships may influence personality traits (Wrzus et al., 2016). Another important limitation is that the data used here included information of only up to three close friends. We therefore could not study all friends considered close, or how the number of close friends varies by personality. This restriction may have introduced reporting bias if personality was systematically related to the order in which people think of their closest friends[3]. For example, people with high extraversion might be more likely to list their friends in order of residential proximity, biasing this association upward. Our results only reflect friendships in a wealthy, post-industrial society, where people have many options to choose whom they affiliate closely with in adulthood. Personality and friendship behavior has not been investigated outside Western populations very much; it would be worthwhile to explore how personality in close social networks varies between different cultures.

In conclusion, this study expands knowledge regarding individual differences in friendship characteristics with regards to the five main personality traits. Openness to experience seems to be associated with explorative and complementary friendship styles, while agreeableness and to a lesser degree extraversion are related to more traditional friendship ties, stressing stability and proximity of friends. Social bonding and cooperation can benefit from both dyadic similarity and complementarity, and personality is one factor shaping this social patterning of close friendships. While previous studies of personality and friendship have often focused on similarities between friends, a growing body of research investigates how individual differences relate to friendship characteristics more broadly (Asendorpf & Wilpers, 1998; Li & Kanazawa, 2016, Rivera, Soderstrom & Uzzi 2010; Zarbatani, Conley and Pepper 2004; Wrzus et al., 2016).

3 Provided that this is indeed a bias, and not an actual measurement of emotional closeness

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