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Ilmarinen, Ville-Juhani

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Running Head: Similarity-attraction effects in friendship

Similarity-attraction effects in friendship formation: honest platoon-mates prefer each other but
dishonest do not

Ville-Juhani Ilmarinen

Institute of Behavioural Science, University of Helsinki, Finland

Jan-Erik Lönnqvist

Swedish School of Social Science, University of Helsinki, Finland

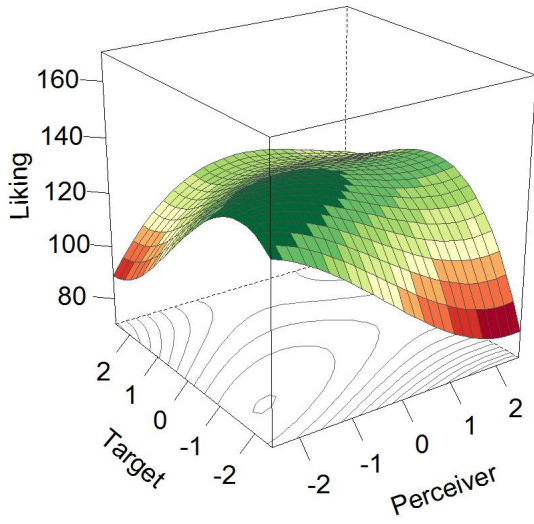
Sampo Paunonen

University of Western Ontario, Canada

Correspondence concerning this paper should be sent to Ville-Juhani Ilmarinen, Institute of Behavioural Science, PO BOX 16, 00014 University of Helsinki, Finland. Email: ville-juhani.ilmarinen@helsinki.fi.

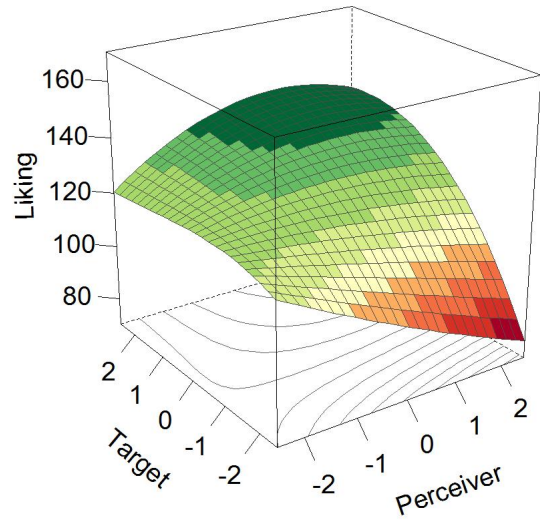
Manipulativeness

a.

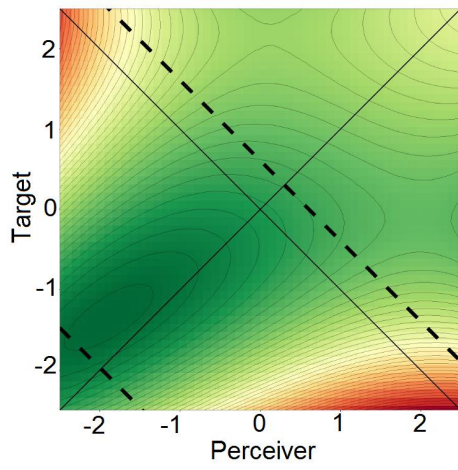


Egotism

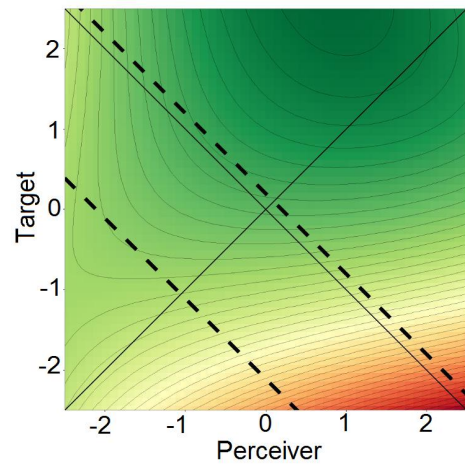
b.



c.



d.



*Highlights (for review)

- Similarity-attraction hypothesis was tested for FFM traits and for two dark personality traits
- Homophily was found for Manipulativeness and Egotism, but not for any of the FFM traits
- Homophily-effects were robust only at the "bright" ends of these dark trait dimensions

Abstract

Friends tend to be similar on many characteristics, including personality traits. Yet, a real-world similarity-attraction effect based on actual personality traits is not supported by current research. One reason for this apparent contradiction could be that dark personality traits have been absent from this literature. In a sample ($N = 181$) of military cadet freshmen, we investigated homophily (“love of the same”) based on the traits identified by the Five-Factor Model (FFM) and two dark personality traits, Manipulativeness and Egotism. We did not find homophily based on the FFM traits. However, platoon-mate dyads with similar levels of trait Manipulativeness or Egotism were more likely to mutually like each other. Furthermore, response surface analyses revealed that homophily for these two traits occurred only at the low, or bright, end of these traits. Our results support arguments derived from evolutionary theory that argue for the importance of trait honesty in friendship formation.

1. Introduction

Homophily can be defined as an attraction people feel for each other caused by similarity in their personal characteristics. The process can be observed when two people who are similar on some personality traits are drawn to each other and begin a relationship. Although this similarity-attraction effect based on attitudes and personality was celebrated as an important finding several decades ago (e.g., Byrne, 1961; Newcomb, 1956), the current state of research does not completely support the claim that such similarities serve as a major basis for real-life interpersonal attraction. A meta-analysis (Montoya, Horton, & Kirchner, 2008) that aggregated 460 similarity-attraction effects from 313 studies showed that *perceived similarity* was indeed associated with attraction in both experimental and real-world settings. However, the link between *actual similarity* and attraction was pronounced only in experimental conditions, especially in studies wherein the partners were previously unacquainted, and not in studies of real-life relationships. Nonetheless, several recent studies on real-life friendships have, contrary to the results of the meta-analysis by Montoya et al. (2008), suggested that friends are, in fact, similar at least regarding some of their personality characteristics (e.g., Cohen, Panter, Turan, Morse, & Kim, 2013; Lee et al., 2009; Paunonen & Hong, 2013) and that friendship formation depends on initial personality similarity (Selfhout et al., 2010). But the particular personality traits to reveal homophily have tended to vary from study to study – in terms of the Five-Factor Model (FFM; John, Naumann, & Soto, 2008) of personality structure, the results have been inconclusive: statistically significant homophily effects in friendship dyads have been reported for Openness, Extraversion and Agreeableness (Selfhout et al., 2010), Openness (Lee et al., 2009), and no FFM traits (Van Zalk & Denissen, 2015), with effect

sizes ranging from near zero for all traits (Van Zalk & Denissen, 2015) to around $r = .25$ for Openness (Lee et al., 2009).

Because friends tend to be similar in many other characteristics like age, race, sex and social status (e.g., Bahns, Pickett, & Crandall, 2012) it is hard to accept the complete absence of personality based similarity. One reason that the empirical evidence for similarity-attraction effects based on personality traits is lacking could be that the relevant research has almost exclusively focused on the FFM traits. We suggest that dark traits; that is, interpersonally antagonist, selfish and exploitive personality traits in the subclinical range (Paulhus, 2014) that are not well embodied by the FFM could add to the understanding of the real-life consequences of personality similarity. Giving preliminary support to this view, friends tend to be similar in terms of Honesty-Humility (HH), a trait included in the six-factor HEXACO model (e.g., Lee et al., 2009) of personality structure (Cohen et al., 2013; Lee et al., 2009). Low scores on HH reflect a dark personality (Ashton & Lee, 2007).

We investigated homophily based on both FFM and dark personality traits. The dark traits were selected from the Supernumerary Personality Inventory (SPI: Paunonen, 2002). The SPI consists of ten personality traits – Conventionality, Seductiveness, Manipulativeness, Thriftiness, Humorousness, Integrity, Femininity, Religiosity, Risk-taking and Egotism – argued to capture personality space beyond the FFM (Paunonen & Jackson, 2000). These traits have in other domains been shown to have incremental predictive power over FFM traits (see for example, Hong, Koh, & Paunonen, 2012; Paunonen, Lönnqvist, Verkasalo, Leikas, & Nissinen, 2006). Traits included in the SPI comprise three higher order factors (Machiavellian, Traditional, and Masculine-Feminine: Paunonen, Haddock, Fosterling, & Keinonen, 2003). The Machiavellian factor represents the dark

personality and comprises of Manipulativeness, Egotism, Seductiveness, and low Thriftiness. These Machiavellian traits overlap with other conceptualizations of the dark personality – e.g., with the Dark Triad and the HH factor (de Vries, de Vries, de Hoogh, & Feij, 2009; Lee, Ogunfowora, & Ashton, 2005; Veselka, Schermer, & Vernon, 2012). In the present research setting, in which the participants were prospective military officers in a military environment, Seductiveness and Thriftiness were considered irrelevant (all-male sample with identical uniforms and equipment) and our focus was thus on the five FFM traits and two dark personality traits – Manipulativeness and Egotism.

Paunonen and Hong (2015) recently suggested that some of the effects of personality traits may not be uniform across the entire trait continuums. We expected particularly those individuals who scored low on dark personality traits to be attracted to similar others. These individuals are non-exploitative even in situations in which exploitation would not be punished (Ashton & Lee, 2007; Ashton, Lee & de Vries, 2014; Hilbig, Zettler, Leist, & Heydasch, 2013; Zhao & Smillie, 2015). This would presumably be beneficial in long-term relationships, such as friendships, because of the reduced need to monitor the exchange of favors and the ensuing development of mutual trust (Cole & Teboul, 2004; Ferrin, Bligh, & Kohles, 2008). However, manipulative and exploitative individuals, who covertly seek and take advantage of situations in which exploiting is not punished (Ashton et al., 2014) are unlikely to form long lasting interpersonal relationships that would be beneficial to both partners. Thus, if friendships are formed based on similarities in dark personality traits, as some studies suggest (Cohen et al., 2013; Lee et al., 2009), this should primarily or exclusively occur at the bright end of such traits – that is, in dyads of individuals scoring low on Manipulativeness or Egotism.

2. Method

2.1 Participants

Participants were 185 male cadets (mean age 21.9 years) registered in the officer training program at the National Defence College in Helsinki, Finland, for six months. The cadets were members of 12 different platoons. Platoon mates live, work, and study in the same facilities for the duration of their training. Each platoon consisted of 14 to 21 cadets (mean=16.8).

2.2 Procedure

Participants were seated on every-other chair in large lecture hall in one session lasting less than 2 hours. Each cadet was given a self-report questionnaire booklet and a sealed envelope. After completion of the self-reports, the cadet was instructed to open the sealed envelope. Inside the envelope was a list of the cadet's platoon mates and another questionnaire. The cadets were instructed to rate each of their platoon mates (13 to 20 peers per rater) on the list using the second questionnaire's items. Thus, the cadets did not, when completing the self-reports, know that they would be rated by their peers.

2.3 Personality Measures

The FFM personality traits (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience) were measured by the Finnish translation (Paunonen, Haddock, Forsterling, & Keinonen, 2003) of the NEO Five-Factor Inventory (Costa & McCrae, 1992). Each trait-measure contains 12 items, and each item is responded to on a 5-point rating scale.

Our measures of dark personality traits, Manipulativeness and Egotism, were taken from the Finnish translation of the Supernumerary Personality Inventory (SPI; Paunonen, 2002).

Each SPI scale contains 15 items, and each item is responded to on a 5-point rating scale. For all analyses, personality trait-scores were standardized to enhance interpretability.

2.4 Likeability Measure

Each participant received a questionnaire that instructed him to rate each of his platoon members on the following item: “He is a person with whom you would like to spend time”. Cadets were asked to indicate their likeability ratings using visual analogue scales (see Paunonen et al., 2006). The likeability scale consisted of a line with the numbers 0, 10, 20, ..., 100 evenly spaced beneath. The midpoint of the scale (50) was labeled with the verbal anchor “Average for the group,” the left side of the scale was labeled “Below the group average,” and the right side of the scale was labeled “Above the group average.” The cadets were instructed to put a slash through the line indicating his preference about spending time with the peer. All platoon mates were to be rated on the same line and no ties were allowed. Each likeability score was derived as the distance from the origin of the scale to the rating slash (range 0 to 231 mm; $M = 129.4$ mm, $SD = 55.9$ mm).

2.5 Statistical analyses

Only dyads that had reciprocated likeability ratings (both members rated each other) and had provided self-reports on all personality trait measures could be included. As a result, four participants were dropped from the dataset. (These four scored lower in Conscientiousness, $p < .01$, but otherwise showed no difference from participants for whom all data were available.) In total, there were 1368 sets of dyad ratings (perceiver cadet rating target cadet).

The statistical analysis of similarity-effects was conducted within a social relations model (SRM: Kenny, Kashy, & Cook, 2006) to account for the nestedness of the data. Preliminary

variance component analysis indicated that there was little or no between-platoon variance in the likeability ratings (intra-class correlation = .00); thus, the platoon variance component was dropped from subsequent analyses.

Polynomial regression and response surface analysis (RSA) have been argued to be the current state-of-the-art for studying dyadic combinations of personality traits and social outcomes (Nestler et al., 2015; for a review of the problems associated with difference scores, see Edwards, 2001). RSA utilizes the parameter estimates from polynomial regression by constructing, testing and depicting linear combinations that summarize the associations between the personality traits of persons A and B, and the social outcome in question (Edwards & Parry, 1993; Shanock, Baran, Gentry, Pattison, & Heggstad, 2010). In the present SRMs, the likeability rating Z of target i by perceiver j , who both are members of the dyad ij , was constructed as a full quadratic regression:

$$z_{ij} = b_0 + b_1x + b_2y + b_3x^2 + b_4xy + b_5y^2 + t + u + v + e \quad (1)$$

where x and y are trait scores of target i and perceiver j , t is target variance, u is perceiver variance, v is dyad variance and e is residual. From the hereby obtained b -parameters, four a -parameters were constructed as linear combinations: Two for the slope ($a1 = b1 + b2$) and curvature ($a2 = b3 + b4 + b5$) along the line of similarity (LOS; $y = x$), and two for the slope ($a3 = b1 - b2$) and curvature ($a4 = b3 - b4 + b5$) along the line of dissimilarity (LODS; $y = -x$). To facilitate interpretation of dyadic and individual effects, these linear combinations are typically plotted in three-dimensional space. Dyadic combinations of traits are depicted on the horizontal plane (xy plane) and vertical (z axis) fluctuations of the surface reflect the social outcome. The surface is depicted as a function of the a -parameters, which are tested for statistical significance (for more detailed interpretative guidelines, see Edwards & Parry, 1993; Nestler et al., 2015; Shanock et al., 2010).

The parameter a_4 (i.e., the curvature along the LODS) is of special interest – homophily is indicated if a_4 is an invert U-shaped parabola that peaks close to the LOS and declines as a result of increasing dissimilarity. However, in RSA based on quadratic regression (Equation 1), the curvature along the LODS is assumed to be of similar magnitude across the entire response surface. To relax this assumption, and to identify the area within the xy -plane within which homophily is robust (i.e., to identify the boundaries of the “area of significance”, see Bauer and Curran, 2005), the regression equation was extended to include the third-degree cubic terms (Nestler et al., 2015). These terms were only added for estimating the area of significance for a_4 and were not interpreted per se (on a related note, only when a_4 in the quadratic model is statistically significant is it warranted to investigate the area of significance). The equation for polynomial regression of third degree is

$$z_{ij} = b_0 + b_1x + b_2y + b_3x^2 + b_4xy + b_5y^2 + b_6x^3 + b_7x^2y + b_8y^2x + b_9y^3 + t + u + v + e \quad (2)$$

Furthermore, to examine the boundaries of a_4 significance, y was substituted with $-x + d$ to give lines that are perpendicular to LOS and parallel to LODS but at the algebraic distance d from LODS:

$$z_{ij} = b_0 + b_2d + b_5d^2 + b_9d^3 + (b_1 - b_2 + b_4d - 2b_5d + b_8d^2 - 3b_9d^2)x + (b_3 - b_4 + b_5 + b_7d - 2b_8d + 3b_9d)x^2 + (b_6 - b_7 + b_8 - b_9)x^3 + t + u + v + e \quad (3)$$

Here $(b_3 - b_4 + b_5 + b_7d - 2b_8d + 3b_9d)$ represents the quadratic term (steepness of the homophily parabola) that varies as a function of d (location on the trait continuum). If d equals 0 ($y = -x$, LODS), the quadratic component reduces to $(b_3 - b_4 + b_5)$ which equals a_4 at LODS. The standard error (important for estimating the upper and lower boundaries of significance) of the curvature also varies as a function of d and is given by Equation 4

$$SE_{a4d} = \sqrt{\begin{aligned} &Var_{b3} + Var_{b4} + Var_{b5} + d^2Var_{b7} + (-2d)^2Var_{b8} + (3d)^2Var_{b9} - 2cov_{b3,b4} + 2cov_{b3,b5} \\ &- 2cov_{b4,b5} + 2dcov_{b3,b7} - 4dcov_{b3,b8} + 6dcov_{b3,b9} - 2dcov_{b4,b7} + 2dcov_{b4,b8} \\ &- 6dcov_{b4,b9} + 2dcov_{b5,b7} - 4dcov_{b5,b8} + 6dcov_{b5,b9} \\ &- 4d^2cov_{b7,b8} + 6d^2cov_{b7,b9} - 12d^2cov_{b8,b9} \end{aligned}} \quad (4)$$

Various trait score combinations of two people (x and y) are locations on the xy-plane from which the distance to the LODS is given by $d = (x + y)/2^{1/2}$. For example, the line that crosses the point where x and y both are 1 gives $d = 1.41$ etc.

All analyses were run with R 3.1.0 (R Core Team, 2014). For polynomial regression SRMs the lme4 package (Bates, Maechler, Bolker, & Walker, 2014) was used and a RSA package (Schönbrodt, 2015) was used for plotting the results. Likelihood ratio testing was used to test the significance of the fixed effects (b-parameters). Because of the arbitrary degrees of freedom involved in cross-classified multilevel models such as SRMs, z-test was used to test response surface parameters.

3. Results

Random and fixed effects from all estimated models are presented in Table 1. The null model showed that there was target-, perceiver-, and dyad-variance in the likeability ratings (ICCs of .30, .05, and .30, respectively). That almost a third of the variance was attributed to the dyad supports the validity of the likeability measure as an indicator of the strength of the dyad members' friendship bonds.

The polynomial regression analyses were run one trait at a time. The regression parameters and the response surface parameters are shown at the top and bottom of Table 1, respectively. The a4 parameter of both Manipulativeness and Egotism was significant and negative,

indicating that the more similar the dyad was in Manipulativeness or Egotism, the more the dyad members liked each other. Furthermore, a_1 and a_3 were also significant and positive for Egotism, indicating a target-effect for Egotism (Egotists are liked more) but no perceiver-effect.

We next examined the boundaries of significance for the observed homophily in Manipulativeness and Egotism. The area of significance was the area within which the a_4 -parabola given $d(a_3 - a_4 + a_5 + db_7 - 2db_8 + 3db_9)$ was significant. Because this technique is sensitive to Type-I errors, a more conservative significance-level (Bonferroni correction $.05 / 2 = .025$); as suggested by Bauer and Curran, 2005), was selected. Homophily based on Manipulativeness was significant from trait-scores -2.81 to 0.43. Estimates for a_4 at these locations were -20.10 and -6.00, respectively, indicating that similarity was more strongly associated with liking at the low end of the Manipulativeness continuum. This pattern is demonstrated in Figures 1a and 1c. Homophily based on Egotism was significant from trait scores -1.49 to 0.14, at which points the a_4 -estimates were -6.29 and -5.32, respectively. Similarly to Manipulativeness, Egotism was associated with liking only at the low end of the Egotism continuum. However, within this area, homophily based on Egotism was constant, as indicated by almost identical a_4 -estimates at the lower and upper boundaries. The response surfaces for Egotism are depicted in Figures 1b and 1d.

There was no evidence of homophily based on the FFM traits. However, for Extraversion, a_1 and a_3 were both significant and positive, indicating that extraverted targets were rated as more likeable independent of the rater's Extraversion. The opposite effect was observed for Neuroticism; those scoring high on this trait were rated as less likeable, independent of the rater's Neuroticism.

4. Discussion

We investigated actual personality similarity and mutual liking among military cadet platoon-mates. The results revealed homophily for two dark personality traits, Manipulativeness and Egotism, but not for any of the FFM traits. As expected, similarity attracted only at the low (or bright) end of the Manipulativeness and Egotism trait continuums.

The result that cadets with similar levels of trait Manipulativeness and Egotism were more likely to mutually like each other is in line with previous studies that have found friends to be similar on the Honesty-Humility trait of the HEXACO model of personality structure (Cohen et al., 2013; Lee et al., 2009). Furthermore, estimating the areas of significance showed that the observed homophily was significant only at the honest end of Manipulativeness continuum, and at the non-egotist end of the Egotism continuum. Evolutionary explanations of human behavior tend to grapple with the question of how honesty, as opposed to dishonesty, could persist in a population in the face of manipulative, insincere others willing to accept the honest individual's cooperation yet offering nothing in return. Our results support the idea that partner choice is a key factor in explaining the evolution of altruistic or co-operative behavior (Nesse, 2007) – i.e., honesty could persist because honest people choose to interact with other honest people. Such interactions will have the advantage of lower monitoring costs (Cole & Teboul, 2004) which, by facilitating the development of trust (Ferrin et al., 2008), will make the interaction even more advantageous, for instance by helping overcome conflicts of interest (Balliet & Van Lange, 2013).

In contrast to our results, some previous research has found friends to be similar also regarding some of the FFM traits (Lee et al., 2009; Selfhout et al., 2010). Given that the FFM traits are highly heritable (John et al., 2008), results also differ from the more general notion that friends tend to be rather similar in regards to heritable attributes (Rushton & Bons, 2005). One reason for

this and other discrepant findings in work on similarity-attraction effects could be that the mechanisms that lead to similar people befriending each other are likely to vary from one context to another. In contexts such as the present one, in which every military cadet in a platoon has more or less the same opportunities to befriend anyone else in the platoon (platoon mates generally cannot self-select or drift into different activities), similarity of friends is less likely to result from the propinquity effect (Wimmer & Lewis, 2010), which refers to similar people selecting similar activities (e.g., occupations, hobbies etc.) and as a result of this befriending each other (Kossinets & Watts, 2009). This process does not involve similarity-attraction, but results merely from proximity that is preceded by personality-based selection of activities and environments. Propinquity effects could in some samples show up by way of people with similar FFM traits being friends. Future research should try to distinguish personality similarity based on propinquity from similarity based on attraction – to permit the making of such a distinction, personality-based self-selection of participants into their particular environments would have to be taken into account. On a related note, as a limitation of the present research, participant self-selection into the military cadet training program may have restricted personality variance – people do not randomly end up as military cadets, psychology students, engineers, or Google employees. Examining naturally evolving social networks in various life domains (e.g., occupations, education, hobbies) that differ regarding the strength of personality-based selection effects could help understand the mechanisms underlying homogeneity (Wimmer & Lewis, 2010).

In evaluating the generalizability of the present findings, other limitations that should be considered are our young all-male sample and our reliance on only one type of relationship measure (e.g., sociometric nominations or measures of relationship satisfaction would have been valuable additions). Despite these limitations, our results generally support personality approaches

that go beyond the FFM. Among these are approaches that include the Dark Triad constructs (Paulhus & Williams, 2002), the HEXACO factors (Lee et al., 2005), and the Supernumerary Personality Inventory traits (Paunonen, 2002). Our results not only show that such trait content is meaningfully associated with real-life behavior, but is so in the context of a behavior process that is generally regarded as both highly important and highly puzzling – friendship formation. Although everyone can agree that friendships form and are maintained, the underlying process remains in want of a satisfactory evolutionary explanation (see e.g. Nesse, 2007). Our results showing that partner selection occurs for similar others low on manipulateness or egotism may provide an important part of such an explanation.

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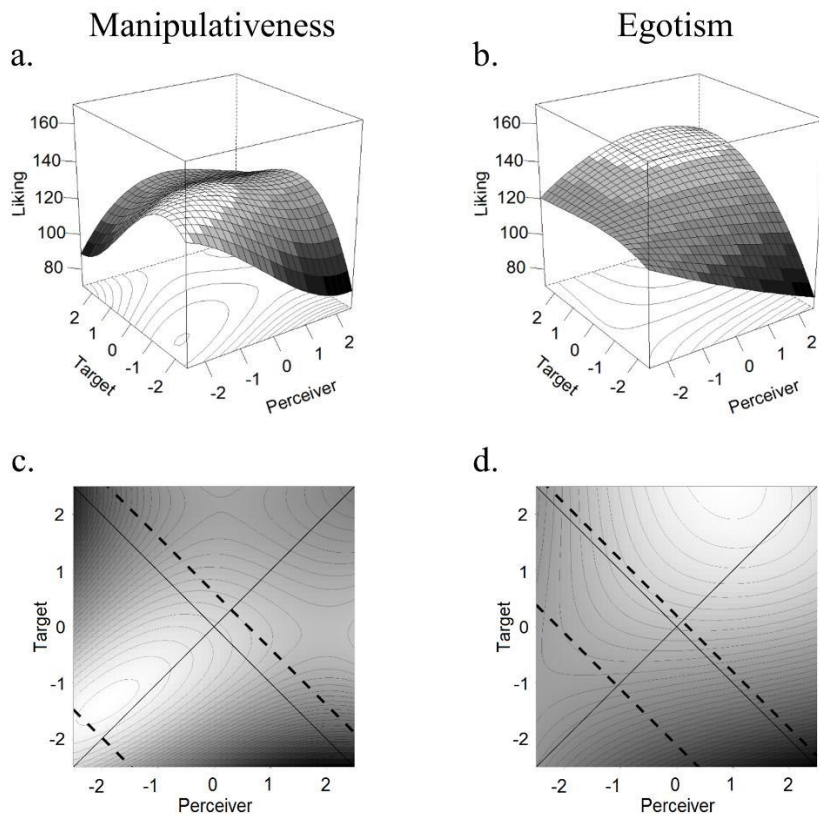
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Table 1

Fixed Effects Estimates (Top), Variance Estimates (Middle), and Response Surface Parameters (Bottom) for Models of the Predictors of Liking within Military Cadet Dyads

	Null	E	N	O	A	C	MAN Quadratic	Cubic	EGO Quadratic	Cubic
Fixed effects (Standard Error)										
Intercept	129.17	130.02	130.79	129.39	130.14	131.30	133.08	133.51	132.43	132.46
Polynomial regression parameters										
b1 (target)		9.90** (2.55)	-9.42** (2.67)	0.35 (2.64)	3.70 (2.55)	3.44 (2.53)	-1.01 (2.48)	-3.96 (4.13)	8.37** (2.43)	8.18* (3.17)
b2 (perceiver)		1.27 (1.38)	0.76 (1.45)	-2.55† (1.36)	-0.44 (1.32)	0.15 (1.31)	-1.51 (1.29)	-2.79 (2.21)	0.36 (1.31)	0.91 (1.77)
b3 (target ²)		-0.19 (1.80)	-0.51 (1.56)	-1.40 (1.70)	0.52 (1.68)	-0.35 (1.77)	-2.95 (1.79)	-3.39† (1.83)	-2.34† (1.29)	-2.01 (1.50)
b4 (target * perceiver)		1.76 (1.11)	1.13 (1.12)	2.36* (1.07)	0.46 (1.10)	-0.99 (1.15)	2.94** (1.11)	3.12** (1.12)	3.17** (1.02)	2.49* (1.15)
b5 (perceiver ²)		-0.88 (0.97)	-1.21 (0.83)	1.17 (0.87)	-1.56† (0.86)	-2.01* (0.91)	-1.13 (0.92)	-1.35 (0.94)	-0.87 (0.70)	-0.91 (0.92)
b6 (target ³)								1.32 (1.14)		0.19 (0.56)
b7 (target ² * perceiver)								-0.68 (0.65)		-0.54 (0.46)
b8 (target * perceiver ²)								-0.85 (0.64)		-0.48 (0.46)
b8 (perceiver ³)								0.69 (0.58)		-0.00 (0.30)
Random effects (Intercept variance between social units)										
Dyad	937.7	933.1	938.4	931.1	939.1	938.7	930.0	926.7	925.3	923.1
Perceiver	143.7	141.9	139.7	136.0	138.4	135.7	139.2	138.5	142.0	142.6
Target	948.4	852.5	852.6	955.0	928.9	931.6	931.0	922.9	845.6	844.7
Residual	1095.4	1098.5	1097.5	1098.1	1098.2	1098.2	1098.5	1098.5	1098.3	1098.2
Response surface parameters (Standard Error)										
a1 (b1 + b2)		11.17** (3.04)	-8.66** (3.17)	-2.20 (3.06)	3.26 (2.99)	3.59 (2.96)	-2.52 (2.91)	-6.75 (4.92)	8.72** (2.88)	9.09* (3.81)
a2 (b3 + b4 + b5)		0.69 (2.44)	-0.59 (2.15)	2.13 (2.23)	-0.58 (2.26)	-3.35 (2.36)	-1.15 (2.34)	-1.62 (2.38)	-0.04 (1.85)	-0.42 (2.34)
a3 (b1 - b2)		8.64** (2.75)	-10.18** (2.89)	2.91 (2.87)	4.15 (2.75)	3.28 (2.72)	0.50 (2.70)	-1.17 (4.44)	8.01** (2.64)	7.27* (2.78)
a4 (b3 - b4 + b5)		-2.83 (2.25)	-2.85 (2.03)	-2.59 (2.13)	-1.50 (2.11)	-1.37 (2.22)	-7.03** (2.23)	-7.87** (2.26)	-6.37** (1.74)	-5.41* (2.17)

Notes. E = Extraversion, N = Neuroticism, O = Openness to Experience, A = Agreeableness, C = Conscientiousness, MAN = Manipulativeness, EGO = Egotism
 * p < .05, ** p < .01



Figures 1a-1d. Three-dimensional (top) and two-dimensional (bottom) response surfaces of dyadic Manipulativeness and Liking (left), and dyadic Egotism and Liking (right). In panels a and b, the liking-surface fluctuates as a function of dyad members' individual trait-scores (depicted as standard deviations from the mean on the vertical and horizontal axes). In panels c and d, in which the contour lines similarly indicate liking as a function dyad members' individual trait-scores, the area in which homophily is significant ($p < .025$) is indicated by the dashed lines. Dyads located in the lower (panels a and b) and darker areas (all panels) of the figures score lower on liking.