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The Big Five Personality Traits and Individual Satisfaction With the Team

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Relationships between team composition in terms of team members' Big Five personality traits and individual satisfaction with the team after project completion were researched. Questionnaires were filled out by 310 undergraduate students ($N = 68$ teams) working on an engineering design assignment. Individual satisfaction with the team was regressed onto individual, dissimilarity, and interaction scores. A positive main effect was found for individual agreeableness and emotional stability and for dissimilarity in conscientiousness. A moderation of the main effect of dissimilarity was found for extraversion: Satisfaction with the team is negatively related to dissimilarity to the other team members only for members low in extraversion.

Keywords: *Big Five; personality; dissimilarity; satisfaction*

It is important for researchers and, eventually, managers to know how satisfied team members are with their team because knowing this holds important consequences for the team member's future work in that specific team or for his or her future teamwork in general. One can imagine, for example, that dissatisfying experiences with teamwork negatively influence a person's attitude toward teamwork, resulting in, for example, decreased effort when employed in future teams. In their study on group potency, Lester, Meglino, and Korsgaard (2002) reported significant correlations between group satisfaction and group effort ($r = .63$) and between group effort and the final performance rating($r = .61$). Considering this in light of the fact that teamwork becomes increasingly dominant in organizations and education, team mem-

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ber satisfaction with a team presents itself as an important variable to study. If team member satisfaction with a team were to be determined by personality, it would hold important consequences for team composition. Satisfaction with the team, however, is an outcome variable that has largely been ignored in team personality research so far (Milliken & Martins, 1996). Therefore, the objective of this study is to answer the research question, How does team composition in terms of personalities of the team members influence the satisfaction individual team members feel about working in his or her particular team?

The emergence of the Five-Factor Model of personality (Norman, 1963), or the "Big Five" (Goldberg, 1990), provided a clear conceptual and measurement framework for research into personality (Robertson & Callinan, 1998). Its five factors—extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience—have been found to consistently describe personality for various samples (Hofstee, Kiers, De Raad, Goldberg, & Ostendorf, 1997; McCrae & Costa, 1997). Geared with this common frame of reference and measurement, work and organizational psychologists set out to discover the predictive validity of personality for various outcome variables (e.g., job performance, job satisfaction, turnover) in various contexts. To study effects of personality on outcome variables, (a) individual personality has been related to individual outcomes (for meta-analyses, see Barrick & Mount, 1991; Hurtz & Donovan, 2000; Judge, Heller, & Mount, 2002; Judge & Ilies, 2002; Salgado, 1997, 2003; Tett, Jackson, & Rothstein, 1991; Tett, Jackson, Rothstein, & Reddon, 1999), and to study the effects of team composition in terms of personality, (b) aggregated or team personality variables have been related to team outcomes (Barrick, Stewart, Neubert, & Mount, 1998; Barry & Stewart, 1997; Graziano, Hair, & Finch, 1997; Kichuk & Wiesner, 1998; Mohammed & Angell, 2003; Mohammed, Mathieu, & Bartlett, 2002; Neuman, Wagner, & Christiansen, 1999; Van Vianen & De Dreu, 2001).

On the basis of the team context of our study, one might be inclined to expect our analytical approach to personality to be similar to the one described under (b), but we propose, in fact, another way to study the relationship between team composition in terms of personality and individual satisfaction with the team. By aggregating individual team-member personality scores to the team level, the differences between individual team members are lost, and the team itself actually becomes the entity of study. Hence the use of the term *team personality*. However, working in a team is all about the interaction between individual team members with their more or less similar personal characteristics. So when the effect of team composition in terms of personality on individual outcomes is to be studied, we believe one should

focus on the personality of the individual team member and the degree of similarity or dissimilarity between his or her personality and that of the other team members. Therefore in this study, we investigate the relationship between, on one hand, individual team member personality and the dissimilarity between individual team member personality and co–team members' personalities, and on the other hand, individual team member satisfaction with the team. This makes the contribution of this study to the scientific literature on the effects of team composition in terms of personality twofold. First, we look at an important yet underexposed outcome variable of teamwork: individual team member satisfaction with the team. Second, we operationalize team composition in terms of personality at the individual level, which is a novel approach to studying the effects of the Big Five personality traits in a team context.

In the remainder of this introduction, we first discuss the variables in our study: individual satisfaction with the team and the Big Five personality traits. Thereafter, we discuss the analysis of the effect of team composition in terms of personality on outcomes in previous research and present the perspective we adopt in this study based on the personality trait–based interactionist model (Tett & Burnett, 2003). Finally, we present the study hypotheses.

Individual Satisfaction With the Team

Individual satisfaction with the team has not been the subject of study before, and that is why we present a definition of it. The satisfaction felt with the team can relate either to the team members or the team's composition or to the way team members worked together during the project. Both parts of satisfaction with the team are reflected in the extent to which team members are willing to work in the same team again (which resembles team viability; Barrick et al., 1998; Hackman, 1987). If both the team (mates) and the cooperation within the team have been experienced as pleasant, team members will be satisfied and willing to work with the same team on similar projects in the future. However, if one of the two is experienced as less pleasant, the situation in which the teamwork takes place will determine whether a team member is willing to work with that same team again. For example, in a hobby team, satisfaction will likely be determined much more by having a good time with like-minded people, whereas in a work team, effective work processes leading to a good performance may be more important in determining a team member's satisfaction. As a result, individual satisfaction with the team will be captured most completely when it encompasses an aspect that

relates to the team members, an aspect that relates to the work process, and an aspect that relates to the team's viability. Although satisfaction with the team can be assessed during any stage of the teamwork, the most complete assessment of it can be given only in hindsight, after a team has finished its work. Thus defined, individual satisfaction with the team becomes a particularized aspect of job satisfaction that regards the coworkers (cf. Bischop & Scott, 2000; Locke, 1976).

To position our research, it is important to make a distinction between several constructs from the team literature and individual satisfaction with the team. One can think of group potency (Shea & Guzzo, 1987), team efficacy (Lindsey, Brass, & Thomas, 1995), group cohesion (Mullen & Copper, 1994), team commitment (Bischop & Scott, 2000), and team viability (Hackman, 1987). Team efficacy, group potency, group cohesion, and team commitment are related to motivational processes in teamwork, whereas individual satisfaction with the team is a statelike outcome of working in a team. Furthermore, team viability exclusively concerns the team's capability to function together as a team in the future, which is only one aspect of satisfaction with the team. So individual satisfaction with the team differs conceptually from group potency, team efficacy, group cohesion, and team commitment in that it is an outcome instead of a process-related characteristic of teamwork and from team viability in that it is a broader concept.

The Big Five Personality Traits

Based on factor analysis, the Five-Factor Model of personality distinguishes five factors that together describe a person's personality. The premise of the model is that the factors remain stable and consistent across time and situations and that each factor predisposes a person to behave in a certain way (Robertson & Callinan, 1998). These so-called Big Five personality traits can be described as follows. *Extraversion* refers to the extent to which a person is outgoing and talkative and is associated with behaviors such as being sociable, gregarious, assertive, and active (McCrae & Costa, 1985). Highly extravert people are often perceived as being dominant and therefore as leaders (Barry & Stewart, 1997). *Agreeableness* refers to the extent to which a person is cooperative and friendly. Highly agreeable persons display behaviors such as being courteous, flexible, trusting, good-natured, forgiving, softhearted, and tolerant (McCrae & Costa, 1985). *Conscientiousness* refers to the extent to which a person is self-disciplined and organized. Associated behaviors are being careful, thorough, responsible, organized, planful, hardworking, achievement oriented, and persevering (McCrae & Costa, 1985). *Emotional stability* refers to the extent to which a person is calm,

poised, and secure. The opposite is known as *neuroticism*, which is associated with behaviors such as being anxious, depressed, angry, embarrassed, emotional, worried, and insecure (McCrae & Costa, 1985). Finally, *openness to experience* describes the extent to which a person is imaginative and curious. Highly open people can be described as being cultured, original, broad-minded, intelligent, and artistically sensitive (McCrae & Costa, 1985). Measurement of the Big Five can be accomplished using specially developed scales (Costa & McCrae, 1992; Hendriks, Hofstee, & De Raad, 1999) or using (a combination of) scales from other well-known personality measures (e.g., Gough, 1988). Despite some differences in factor labeling, factor analysis and content analysis consistently replicate the underlying five-factor structure (John, 1990; Mount & Barrick, 1995).

Analyzing the Effects of Team Composition in Terms of Personality

Recently, team personality researchers (Mohammed & Angell, 2003) and other theorists (McGrath, 1998; Kozlowski & Klein, 2000) have begun to acknowledge the inadequacy of the present team personality research to capture the complete range of effects team composition in terms of personality has on team outcomes. They attribute this failure to incomplete methods of analysis: Conclusions are based either on correlational results or on tests of effects of specific personality trait variables without controlling for the effects of personality variables for which no effect was predicted. The inadequacy lies in the fact that looking at isolated traits does not reflect effects of personality as a whole. As improvement, it was recommended that all five traits should be considered simultaneously when testing for effects of specific traits on team outcomes (McGrath, 1998; Kozlowski & Klein, 2000). As we agree with this recommendation, we include all five personality traits in our analyses.

Although considering all traits simultaneously is analytically already one step forward, we think that it will still be insufficient to capture the complex pattern of interactions taking place between the different personalities of team members when this is done using aggregated elevation and/or variability team personality scores. As stated earlier, we think a more comprehensive solution lies in operationalizing personality in teams on the individual level by placing the individual team member in the context of the team, which is what we do in this study. Such an approach is in line with Tett and Burnett's (2003) personality trait–based interactionist model, which is meant to be a comprehensive model that aims to capture the effects of individual personality on job performance. Although job performance is not the outcome vari-

able of interest in this study, we think that the model can also be applied to study satisfaction with the team. Concerning job performance, Tett and Burnett stated that job performance is the valued part of the work behavior, and this value is determined by, for example, the organizational goals or the manager. However, employees themselves also evaluate their work behavior and its outcomes. Because the degree of satisfaction is a specific outcome of such an individual evaluation, we think the model can be applied equally well to study individual satisfaction with the team as an outcome.

The Tett and Burnett (2003) model posits that individual personality traits have a main effect on work behavior, which in turn has a main effect on job performance—in our study, individual satisfaction with the team. Tett and Burnett expected these main effects to be moderated by five situational features (three of which are work related and two of which are reward related), which evoke differential levels of personality trait activation. For our study, the work-related social situational feature they proposed as a moderator is particularly of interest. It encompasses the social environment a person has to work in and the "trait-relevant cues" (p. 503) arising from it. Clearly, when working in a team, the social environment a person has to work in and from which trait-relevant cues arise is created by the other team members. So on the basis of the Tett and Burnett model, we expect that individual team member personality predicts individual satisfaction with the team but that this relationship may be moderated by the social environment: In this study, the social environment is operationalized as personality trait dissimilarity between an individual team member and the other team members.

Hypotheses

The lack of studies that report on the relationships between the Big Five and individual satisfaction with the team prompts us to take an exploratory approach to hypothesizing on these relationships. We elaborate on relationships we expect to exist between individual satisfaction with the team and (a) individual personality traits, (b) trait dissimilarity between an individual team member and the other team members, and (c) the interaction between both, each time ending with trait-specific hypotheses.

It is easily conceivable that an individual's personality predisposes him or her to like or dislike teamwork. People high on extraversion, agreeableness, and emotional stability can generally be expected to like working in a team. A team offers extraverts the means to be assertive, to talk, and to socialize (Neuman et al., 1999). Agreeable persons can cooperate, be courteous, and be friendly in a team. Emotionally unstable people will feel insecure in a team environment. In addition, they are high on negative affectivity (Judge

et al., 2002), which in general makes them judge things more negatively. Influences such as those described above will probably increase individual satisfaction with the team for team members high on extraversion, agreeableness, and emotional stability. Molleman, Nauta, and Jehn (2004) indeed found that individual team member emotional stability was positively related to individual team member task satisfaction. Furthermore, Judge and his colleagues (2002) found significant positive relationships between extraversion (.25), agreeableness (.17), neuroticism (–.29), and job satisfaction (the negative relationship found between neuroticism and job satisfaction would have been positive if emotional stability were used) in their meta-analysis on a group of 163 independent samples.

Although Judge et al. (2002) found a positive relationship between individual conscientiousness and job satisfaction (.26), we do not expect to find such a relationship with regard to satisfaction with the team. Individual conscientiousness is consistently positively related to individual performance (see, e.g., Barrick & Mount, 1991; Salgado, 2003), but in a project, team performance is dependent on the team, not the individual team member. This is supported by the finding that in teams, the team level of conscientiousness is a positive predictor of team performance (Peeters, Van Tuijl, Rutte, & Reymen, in press). The effect of individual conscientiousness on satisfaction will therefore most likely be dependent on the team someone works with, perhaps through the team's effectivity. Indeed, Molleman et al. (2004) found that the individual level of conscientiousness did not predict individual team member task satisfaction, but the team level of conscientiousness did.

In speculating about effects of openness to experience on individual satisfaction with the team, opposite effects can be expected. On one hand, imagination, curiosity, originality, and broad-mindedness may aid the team in arriving at a high-quality concept for its design. On the other hand, team members who are highly open may remain curious, original, and broad-minded throughout the project, resulting in ever-new suggestions on how to build the design, which in fact hampers the completion of the selected design in the end phase of the design project. The satisfaction open team members may experience in the conceptual phase of the project may be negated by their negative experiences (regarding not being able to keep implementing new conceptual ideas) in the finalizing stages of the project. This line of reasoning is supported by results from Molleman et al. (2004), who found no relationship between individual team member openness and individual task satisfaction, and by results from Judge et al. (2002), who found no significant relationship between openness and job satisfaction (.01) in their meta-analysis. This makes our first hypothesis the following:

Hypothesis 1: Individual extraversion, agreeableness, and emotional stability are positively related to individual satisfaction with the team.

With regard to effects of dissimilarity between an individual team member and the other team members (cf. Tsui, Egan, & O'Reilly, 1992) on team outcomes, scholars discern between (a) *complementary fit* and (b) *similarity fit* (e.g., Neuman et al., 1999; Tett & Burnett, 2003). Complementary fit occurs when each team member brings in his or her unique qualities, the combination of which leads to positive outcomes (e.g., Belbin's [1981] team role theory). Similarity fit occurs when team members possess characteristics that are similar and, through reduction of uncertainty because of comparison with similar others in the social environment (Festinger, 1954), this similarity leads to positive outcomes (Byrne, 1971). Both types of fit received scientific support (for an overview, see Byrne, 1997; Milliken & Martins, 1996).

Although effects of similarity on a number of personality characteristics have been researched, this has not been done for the relationship between individual Big Five traits on individual outcomes of teamwork. We think that for the relationship between the Big Five personality traits and individual satisfaction with the team, a similarity fit expectation may hold best. If team members are dissimilar in personality, they will join the team with different, possibly even conflicting, expectations or goals. Team members will act on their individual expectations and/or goals, and if team members are dissimilar, they will thus display differential behavior regarding, for example, effort, goal setting, scheduling, and communication. For instance, one might expect highly extravert team members to devote a lot of time to social interaction, whereas more introverted team members may prefer to diminish this kind of interaction to a necessary minimum. If differences in personality traits lead to such implicit or explicit differences in individual goals or to the unsharedness of approaches followed within the team, this may pose a threat to the team's effectiveness. The detrimental effect of conflicting individual goals within a team on team effectiveness has already been demonstrated in previous research (e.g., Alper, Tjosvold, & Law, 1998; Van Vijfeijken, Kleingeld, Van Tuijl, Algera, & Thierry, 2002). This negative effect may easily translate into dissatisfaction with the team. Therefore, we generally expect to find a negative effect of dissimilarity in personality on satisfaction with the team.

More specifically, we expect these effects of dissimilarity in personality to be more salient for traits that relate to behavior that will frequently be displayed to complete the project (extraversion and conscientiousness) because the reason work teams are assembled is to complete the team task. We elaborate this expectation for both traits separately. To finish their project, team

members often are highly interdependent (Guzzo & Dickson, 1996), among other things, because of distributed expertise (Salas, Dickinson, Converse, & Tannenbaum, 1992; Sundstrom, De Meuse, & Futrell, 1990). This makes interaction of vital importance: Team members have to communicate about ideas, work approaches, individual contributions, progress, and problems that are encountered. They have to be assertive in taking actions toward project completion (cf. Van Vianen & De Dreu, 2001). In view of the fact that these are all behaviors that are related to extraversion, dissimilarity in extraversion may be expected to negatively affect team effectiveness and, as a consequence, team members' satisfaction with the team. Furthermore, as projects usually have a hard, fixed deadline, it is equally important for project teams to set goals, schedule time, and assert effort toward timely completion of the team task. These are all behaviors typically associated with conscientiousness, so dissimilarity in conscientiousness may also have a negative effect on project team effectiveness (cf. Peeters et al., in press) and, likewise, on a team member's satisfaction with the team.

Openness to experience may also have been important with regard to task completion of the project teams in the study. But as with individual openness, effects can work either way. Dissimilarity in openness may be expected to be beneficial as this may foster team effectiveness and thus satisfaction with the team. (Highly open team members may come up with many conceptual ideas, whereas less open team members may stick to the selected idea in the end phase of the project.) But these differences may also result in disagreement or conflict between team members regarding work approaches and thus lower satisfaction with the team. The fact that these effects may outbalance each other is to some extent supported by Molleman et al. (2004), who did not find an effect of team-level openness to experience on individual team member task satisfaction. This makes our second hypothesis the following:

> *Hypothesis 2:* Dissimilarity in extraversion and conscientiousness between an individual team member and the other team members is negatively related to individual satisfaction with the team.

For traits for which dissimilarity is of influence on individual satisfaction with the team (extraversion and conscientiousness), a moderation of effects by the individual level of that trait may be expected to occur. To start with extraversion, we expected dissimilarity in extraversion to be negatively related and individual extraversion to be positively related to satisfaction with the team. This would mean that the most satisfied team members would be those who are highly and similarly extravert. However, in a team with such members, socializing may gain the upper hand over completing the task

(Barry & Stewart, 1997; Mohammed & Angell, 2003). Furthermore, in a team composed of too many highly extravert and thus dominant individuals, members may likely engage in conflict regarding team issues (Mazur, 1973), for instance, leadership (Barry & Stewart, 1997; Mohammed & Angell, 2003). This expectation is partly empirically supported by Barry and Stewart (1997), who showed that intermediate levels of extraversion within a team lead to high team performance. We therefore propose the following hypothesis:

> *Hypothesis 3a:* Dissimilarity in extraversion has a negative effect on individual satisfaction with the team for members low in extraversion but not for members high in extraversion.

The moderation for conscientiousness may be different. As we elaborated in the preamble to our first hypothesis, individual conscientiousness has been found to be a positive predictor of individual performance, and the team level of conscientiousness is a positive predictor of team performance. Moreover, Molleman et al. (2004) found that the team level of conscientiousness is positively related to individual team member task satisfaction. Combining this with our expectation that dissimilarity to other team members' conscientiousness is negatively related to satisfaction with the team, high individual conscientiousness may be, probably in part through team effectiveness, positively related to satisfaction in teams in which team members are similarly conscientious. This makes our final hypothesis the following:

> *Hypothesis 3b:* Dissimilarity in conscientiousness has a negative effect on individual satisfaction with the team for members high in conscientiousness but not for members low in conscientiousness.

Method

Participants and Procedure

All participants were members of student project teams (Sundstrom, 1999) that completed an engineering design assignment during a 1-, 6-, or 13-week period at a Dutch university of technology. The student teams completing the 1- or 6-week assignment were multidisciplinary teams that had to design and build a robot that had to perform a specific task. They faced similar constraints in that the resources were predefined and the deadline was hard. The student teams completing the 13-week assignment were teams composed of students of engineering that had to redesign a specific part of an

organization and give precise instructions for the implementation of the pro-
posed changes. These teams also faced a hard deadline. All teams had to
report to their instructors on similar parts of their project: the results of their
problem analysis, (selection of) concept ideas, and the elaboration of the
selected concept. The research was introduced to them via a presentation in
which they were told that we were interested in how design processes and
outcomes in teams varied as a function of the team's composition because
team members differ in various ways (teamwork approach, personal goals,
subject of study, willingness to invest effort). At the end of the presentation,
the students were asked to volunteer as participants in our research. They
could indicate whether they appreciated feedback about their personality
scores and the results of the study. If appreciated, this information was sent to
them after completion of the research.

In total, 68 teams were included in the research (1-week assignment team
$n = 11$, 6-week assignment team $n = 14$, and 13-week assignment team $n =
43$). Team size ranged from 3 to 7 members, and mean team size was 5.33.
The respondents filled out a personality questionnaire before they started
working on their assignment. The team members indicated their individual
satisfaction with the team in a questionnaire that they filled out at the end of
the assignment, before their project was evaluated and graded. So for the
majority of teams, satisfaction with the team was rated after working
together from 1.5 to 3 months. The written instruction on the questionnaire
stressed the importance of filling it out individually. The research leader
repeated this instruction orally. She stayed with the respondents during the
filling out of the questionnaire and saw to it that instructions were actually
followed. Three hundred ten respondents filled out both questionnaires, 257
(82.9%) of whom were male and 53 (17.1%) female. Teams were included
only if the personality questionnaire was filled out by all ($n = 58$) or by all
minus 1 team member ($n = 10$). Eleven teams (13.9%) did not meet our crite-
ria for inclusion. Of the teams included, 33 (48.5%) were all male; of the
remaining 35 (51.5%) of the teams, an average of 66.6% of the members
were male.

Measures

The Big Five personality traits were measured using a self-report of the
extensively validated Five-Factor Personality Inventory (Hendriks et al.,
1999). Each trait was measured by 20 items (10 positively and 10 negatively
formulated), which were scored on a 5-point scale varying from *not at all* (1)
to *completely* (5). Examples of items on the Big Five dimensions measured
are, for extraversion, "makes friends easily" (positive); for agreeableness,

Table 1
Items of the Satisfaction With the Team Scale

To what extent do you agree with the following statements?
  1. Taken as a whole, I was satisfied with the composition of our design team.
  2. Taken as a whole, things went pleasantly within our design team.
  3. If I ever had to participate in a similar project again, I would like to do it with this team.

"orders people around" (negative); for conscientiousness, "does unexpected things" (negative); for emotional stability, "keeps a cool head" (positive); and for openness to experience, "is full of ideas" (positive).

Satisfaction with the team was measured by three newly formulated items, which were based on the definition of satisfaction with the team we presented in the introduction (Table 1). All items were scored on a 5-point Likert-type scale varying from *strongly disagree* (1) to *strongly agree* (5). As we constructed a new scale, confirmatory factor analysis was performed on these three items (principal axis factoring). As expected, all items loaded on the same factor, with a common variance of 82.72% and an eigenvalue of 2.48.

Operationalizing Individual Personality in a Team Context

As we study effects of team composition at the individual level, our operationalizations differ from those used in previous team composition research with analyses conducted at the team level. In the latter, individual trait scores are usually aggregated to elevation and diversity or variability scores at the team level to assess the effects of trait elevation (team mean scores, e.g., Barrick et al., 1998; or proportions of high-scoring team members, e.g., Neuman et al., 1999) and trait diversity (team variance scores, e.g., Van Vianen & De Dreu, 2001) or standard deviation scores (e.g., Mohammed & Angell, 2003). The way we operationalize elevation and diversity on the individual level is discussed below.

The operationalization of individual team member personality is straightforward: It is the score of a team member on each of the five traits. The higher this individual trait score, the more the trait presents itself in that person.

To operationalize dissimilarity between an individual team member and the other team members, a person's personality has to be positioned in relationship to that of his or her team colleagues. It has to be what Kozlowski and Klein (2000) call a "configural" concept. It is derived from attributes of the individual team members, but it has meaning on the level of the team.

Because the focus of our study is on effects of personality, in our case, the configural concept has to reflect the differences in personality traits between team members. To express these differences or dissimilarity in personality, we deploy a demographic similarity equation, previously used by Wagner, Pfeffer, and O'Reilly (1984) and Zenger and Lawrence (1989), to establish dissimilarity for age and tenure between a single team member and each of the other team members. We think the use of such an equation for our study purposes is mathematically justified because the assumptions underlying the age and tenure measures (ratio scales) are more restrictive than the ones underlying personality measures (ordinal or interval scales). Translating the demographic similarity equation used by Zenger and Lawrence (1989) to measure personality dissimilarity in teams, personality trait dissimilarity within a team is defined as

$$\text{trait } D_i^G = \left[1/n - 1 \sum_{j \neq i \in G} (x_i - x_j)^2 \right]^{1/2},$$

where trait D_i^G is the extent to which a team member i within team G differs from his or her team mates j with respect to the trait in question, n is the number of members within team G, and x is the score on the personality trait in question. For each team member, the trait D_i^G is computed for each of the five traits. Zero trait D_i^G scores indicate perfect similarity, whereas high trait D_i^G scores (maximum ≈ 4.0) indicate dissimilarity.

Finally, the interaction terms are computed by standardizing both the individual trait scores and trait D_i^G scores and by multiplying these per trait. We labeled these interaction terms Individual Trait Score * Trait D_i^G Score.

Data Analysis

The descriptive statistics (range, mean, standard deviation, and coefficients alpha) of the variables are presented in Table 2. At item level, the respondents used the full answer range (1 to 5) for each of the individual measures, so no range restriction occurred. As can be seen, the coefficients alpha of each scale is well above satisfactory levels. The correlations between all study variables are presented in Table 3.

To test our hypotheses, hierarchical linear modeling was applied and significance of outcomes was determined one-tailed with an alpha of .05. In Model 1, the team members' individual trait scores for each of the five personality traits were entered. In Model 2, the trait D_i^G scores for each of the five personality traits were added. Finally, the interaction terms Individual

Table 2
Descriptive Statistics for all Research Variables ($N = 310$)

Variable	Range	M	SD	α
Individual				
Extraversion	1.90 to 4.90	3.81	0.51	.90
Agreeableness	2.45 to 4.95	3.70	0.41	.84
Conscientiousness	1.95 to 4.55	3.42	0.52	.89
Emotional stability	2.50 to 4.90	3.97	0.46	.88
Openness to experience	2.55 to 4.70	3.74	0.40	.86
Dissimilarity				
Extraversion D_i^G	0.10 to 2.07	0.66	0.32	
Agreeableness D_i^G	0.08 to 1.48	0.52	0.25	
Conscientiousness D_i^G	0.09 to 1.77	0.63	0.31	
Emotional stability D_i^G	0.07 to 1.53	0.57	0.27	
Openness to experience D_i^G	0.06 to 1.36	0.52	0.26	
Individual satisfaction with the team	1.00 to 5.00	3.96	0.91	.88

Trait Score*Trait D_i^G Score for each of the five personality traits were added in Model 3. The significance of Model 1 was tested against the empty model; the significance of Models 2 and 3 was tested against the previous model. To control for effects of team size, gender, and duration of the assignment, their effect on individual satisfaction with the team was tested separately, and Models 1 through 3 were also tested controlling for these variables. Neither of these variables uniquely added to the variance explained nor significantly predicted individual satisfaction with the team. For reasons of parsimony, we therefore report only results without the control variables here. To conclude the tests, significant interactions were plotted following Aiken and West's (1991) simple slope procedure. Using centered scores for the predictor variables, the regression equations were rearranged into simple slopes of individual satisfaction with the team on the individual level of a personality trait ($M + 1\ SD$; $M - 1\ SD$), given the conditional values of the trait D_i^G scores for that personality trait ($M + 1\ SD$, $M - 1\ SD$).

Results

Table 4 shows the results of the hierarchical linear modeling of individual satisfaction with the team. Entering the individual trait scores (Model 1) resulted in a marginally significant model ($\chi^2(5) = 9.58$, $p \leq .10$, $\Delta R^2_{ind} = .03$, $\Delta R^2_{team} = .02$). Adding the trait D_i^G scores (Model 2) added significantly to the variance explained ($\chi^2(5) = 12.60$, $p \leq .05$, $\Delta R^2_{ind} = .03$, $\Delta R^2_{team} = .03$). Adding

Table 3
Correlations Between all Study Variables ($N = 310$)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Team size	—												
2. Gender	-.10*	—											
3. Assignment period	.08	-.01	—										
4. Individual extraversion	-.07	.05	.09	—									
5. Individual agreeableness	.01	.03	-.05	-.02	—								
6. Individual conscientiousness	.04	.23**	.19**	.00	.25**	—							
7. Individual emotional stability	-.02	-.28**	-.05	.43**	.21**	.03	—						
8. Individual openness to experience	-.04	-.04	.03	.44**	-.16**	.05	.45**	—					
9. Extraversion D_i^G	-.02	-.03	-.02	-.24**	.03	.04	-.05	.03	—				
10. Agreeableness D_i^G	.14**	-.07	.02	-.06	-.20**	-.05	-.01	.13*	.17**	—			
11. Conscientiousness D_i^G	.00	.02	-.15**	.04	.00	-.12*	.06	.02	.06	.25**	—		
12. Emotional stability D_i^G	.07	.06	.15**	-.14**	-.05	.00	-.24**	-.03	.17**	.00	-.08	—	
13. Openness to experience D_i^G	.01	-.08	-.05	-.04	-.03	-.03	.02	-.07	.36**	.07	-.02	.07	—
14. Individual satisfaction with the team	.07	-.10*	-.03	.07	.15**	.09	.17**	.07	-.09	-.11*	-.16**	.00	.00

$*p \le .05$ (one-tailed). $**p \le .01$ (one-tailed).

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Table 4

Hierarchical Linear Modeling of the Individual Trait Scores, the Trait D_i^G Scores, and the Interaction Between Individual Trait Scores and Trait D_i^G Scores With Dependent Variable Individual Satisfaction With the Team ($N = 310$)

| Variable	Model 1	Model 2	Model 3
Individual			
Extraversion	.09	.05	−.09
Agreeableness	.15	.16	.27*
Conscientiousness	−.01	−.04	.05
Emotional stability	.19*	.21*	.36**
Openness to experience	−.15	−.13	−.01
Trait D_i^G			
Extraversion		−.39**	−.27
Agreeableness		.04	−.08
Conscientiousness		−.52**	−.58**
Emotional stability		.22	.14
Openness to experience		.13	.11
Individual*Trait D_i^G			
Extraversion			.07*
Agreeableness			−.04
Conscientiousness			−.05
Emotional stability			−.05
Openness to experience			−.05
−2*log likelihood	717.98	705.38	694.06
χ^2	9.58	12.60*	11.32*
df	5.00	5.00	5.00
ΣR^2_{ind}	.03	.06	.11
ΣR^2_{team}	.02	.05	.10

Note: Intraclass correlation = .48. Unstandardized beta coefficients are shown for all variables. Each model was tested against the previous model.

*$p \leq .05$ (one-tailed). **$p \leq .01$ (one-tailed).

the Individual Trait Score*Trait D_i^G Score interaction terms (Model 3) also resulted in a significant increase of the variance explained ($\chi^2(5) = 11.32$, $p \leq .05$, $\Delta R^2_{ind} = .05$, $\Delta R^2_{team} = .05$). Because Model 3 is the full model, we limit our discussion of the results to this model.

In Model 3, 11.0% of the variance in individual satisfaction with the team is explained at the individual level, and 10.0% of the variance is explained at the team level. With respect to Hypothesis 1, the results show that as expected, individual agreeableness ($b = .27$, $p = .03$) and individual emotional stability ($b = .36$, $p = .01$) are significantly and positively predicting

Figure 1
Interaction Between Individual Extraversion*Extraversion D$_i^G$
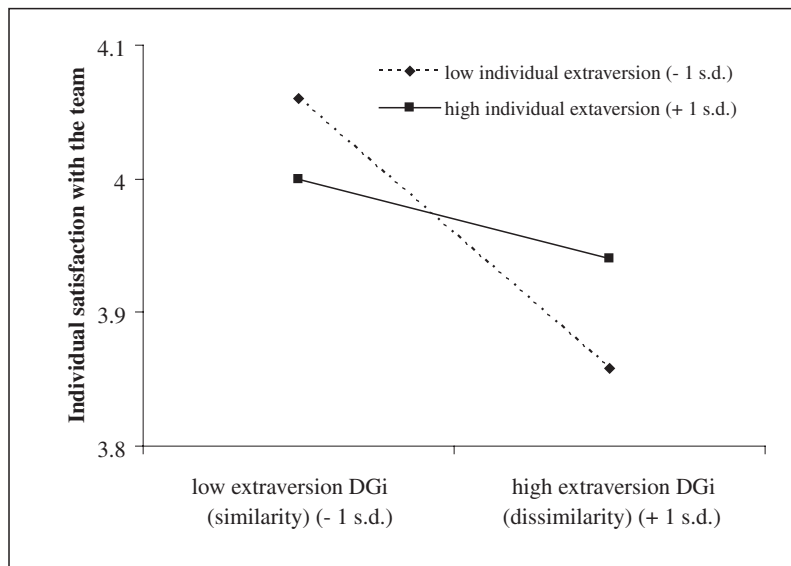
individual satisfaction with the team. We also expected to find a positive main effect of extraversion, but this is not supported by our results ($b = -.09$, *ns*). So the more agreeable and emotionally stable team members are, the more satisfied they are with their team.

With respect to Hypothesis 2, the results show that conscientiousness D$_i^G$ ($b = -.58$, $p = .001$) is a significant negative predictor of individual satisfaction with the team, but although results tend in the predicted direction, extraversion D$_i^G$ ($b = -.27$, $p = .08$) is not. So the more dissimilar team members are from their teammates with respect to conscientiousness, the less satisfied they are with their team.

When testing the moderation of effect for dissimilarity in extraversion (Hypothesis 3a) and conscientiousness (Hypothesis 3b), we find a significant interaction only for Individual Extraversion*Extraversion D$_i^G$ ($b = .07$, $p = .01$) and not for Individual Conscientiousness*Conscientiousness D$_i^G$ ($b = -.05$, $p = .09$). We plotted this interaction for extraversion in Figure 1. In line with Hypothesis 3a, extraversion D$_i^G$ has a stronger negative relationship with individual satisfaction with the team for individuals low in individual extraversion (represented by the dotted line) than for those high in extra-

version (represented by the solid line). So the negative effect of dissimilarity in extraversion is moderated by individual extraversion: The negative effect of dissimilarity in extraversion on individual satisfaction with the team is the strongest for team members low in individual extraversion.

Discussion

We set out to answer the research question, How does team composition in terms of the personalities of the team members influence the satisfaction individual team members feel about working in their particular team? In answer to this question, we found effects for individual personality, dissimilarity to other team members' personality, and the interaction between both. Results show that a team member's satisfaction with his or her team increases if he or she is more agreeable and emotionally stable, is more similarly conscientious, and is similarly and less extravert. We expected similarly and highly conscientious individuals to be most satisfied with their team, but results did not support this expectation. Apparently, dissimilarity to other team members' conscientiousness has such a disruptive effect on satisfaction with the team that the individual level of conscientiousness is of only minor influence.

It is interesting to note that the differences in effects for specific traits generally coincide with a distinction between the so-called task-related traits (those that aid in completing the team task) and the team-related personality traits (traits that facilitate smooth team functioning) (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005; Mohammed et al., 2002). Mohammed et al. (2002) label conscientiousness task related and agreeableness, extraversion, and emotional stability team related (based on Costa & McCrae, 1992; Hough, 1992; McCrae & Costa, 1989; Mount, Barrick, & Stewart, 1998). In their study, Mohammed and colleagues found different effects of these sets of traits on team performance. In our study, the team-related traits agreeableness and emotional stability have a main effect on satisfaction with the team. The task-related personality trait conscientiousness affects satisfaction with the team through the similarity to other team members. Such a differential effect of cues coming from the task and from the team was indeed proposed by Tett and Burnett (2003). Our findings thus provide additional support for the differentiation between task- and team-related personality traits.

The only trait for which findings somewhat deviated from this categorization is extraversion. There was no positive main effect of individual extraversion, but the interaction shows that highly extravert team members are

about equally satisfied with their team, whether they are similar or dissimilar to others. This finding is somewhat in line with effects found for the other team-related traits. The fact that we find an effect of dissimilarity for this trait, as well, may be ascribed to the fact that extraversion may not be important merely for smooth team functioning. It may also be vital for task completion, as we argued in the introduction.

Limitations, Implications, and Future Research

With regard to our conclusions, we have to point out some limitations. First of all, our research was conducted among student project teams completing a design assignment. Results may be different for professional design or project teams. Second, personality scores were established using self-report. One might argue that all team members should rate the personality of their teammates to establish convergence between their impressions of all team members' personalities. Because much research evidence has already established this convergence (e.g., Albright, Kenny, & Malloy, 1988; Bernieri, Zuckerman, Koestner, & Rosenthal, 1994; Funder, Kolar, & Blackman, 1995), we do not expect such an extension of personality measurement to change our results dramatically. Third, the effects we found are generally somewhat small. We think this may be attributed to the fact that individual perceptions of satisfaction with the team are influenced by factors other than the individual's personality, for instance, by implicit or explicit expressions of team evaluations made by the other team members (cf. Molleman et al., 2004; Salancik & Pfeffer, 1977; Umphress, Labianca, Brass, Kass, & Scholten, 2003). Although the way an individual deals with this influence may be affected by his or her personality, the effect of others on perceptions of satisfaction may largely present itself independent from personality. Finally, we focused our research on the average dissimilarity between a team member and his or her teammates on a single personality trait. Of course, other forms of dissimilarity could be thought of, too, for instance, the team member who differs most from the other team members (cf. Barrick et al., 1998; Neuman & Wright, 1999). Looking at effects of this kind may offer an interesting direction for future research. It may also be interesting to study effects of cross-trait interactions on individual satisfaction with the team (cf. Witt, Burke, Barrick, & Mount, 2002).

These limitations notwithstanding, our results hold theoretical, analytical, and practical implications. Theoretically, the application of the personality trait–based interactionist model (Tett & Burnett, 2003) proved to be worthwhile in this instance of team composition research, which is a first step toward an enlargement of the model.

Analytically, we have used an individual operationalization of team composition in terms of personality. This allowed us to look at the effect of dissimilarity between individual team members for a specific trait and at the interaction effect of an individual personality trait score and a trait D_i^G score for each of the Big Five traits, both of which have not been considered in earlier team composition personality research. We consider this to be an important strength of our study. Another analytical advantage is the fact that we have tested the effects of all personality trait operationalizations simultaneously and thus considered personality as a whole. This strengthens the credibility of the pattern of effects we have found. The pattern that has emerged suggests that the inclusion of an individual trait dissimilarity operationalization is especially fruitful with respect to effects of personality traits that are important for task completion. In future research, it might be interesting to find out whether such a pattern also emerges for other outcome variables of teamwork. At this point, we have to emphasize the fact that we focused on project teams that performed a specific kind of task. For other kinds of teams, however, the relationships between personality and satisfaction with the team might be quite different, depending on the objective of those teams (e.g., in hobby teams, completing a task may be subordinate to having a good time together). If so, other personality traits may become important during the interaction between team members. Mohammed et al. (2002) demonstrated that team-related personality traits predict contextual performance, which concerns interpersonally oriented behaviors that support the social and motivational context in which a team operates (Borman & Motowidlo, 1993) and emphasizes moral and personal concern (Conway, 1999). If the objective of a team were of a more contextual nature, one might expect to find interaction effects for the team-related personality traits. Additional research is needed to support this expectation.

Practically, if people have to work in teams, the members of which have to work together repeatedly, one would like them to hold a positive attitude toward teamwork. Therefore, being satisfied with the team one works in might be an important condition. According to our results, the personality of team members can be used as a criterion for team composition that has members satisfied with their team. But considering the fact that this study is the first of its kind, we feel more research is necessary in this respect to propose recommendations in this direction. Moreover, in common practice, work or project teams often do not remain stable in their composition, because of a number of causes. A more feasible alternative to manipulating team composition is therefore to train members to become aware of each other's personality and to deal with the negative effects dissimilarities in team member personality have on teamwork.

To end where we started, we feel it is important to stress the value of individual satisfaction with the team as a variable in team effectiveness research. Seen from an organizational effectiveness perspective, individual satisfaction with the team is important because it is related to the effort and performance of team members (Lester et al., 2002). Seen from a more human perspective, for a large number of people, work is nowadays an important determinant of life fulfillment. Therefore, employees become more demanding of their work environment, which includes people they have to work with. Satisfaction outcomes are important indicators of how employees perceive their work environment. Considering both reasons in light of the fact that work is increasingly performed within teams, highly satisfied team members may provide organizations with happy, hardworking employees (Fisher, 2003).

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