The Impact of Personality on Training-Related Aspects of Motivation: Test of a Longitudinal Model

Jens Rowold

A model that proposed dispositional influences on training-related aspects of motivation was developed. More specifically, the model predicted influences of the Big Five personality variables on motivation to learn and transfer motivation, while controlling for general attitudes toward training. The model was tested empirically, drawing on a sample of ninety-four employees from call centers who participated in a training program. Results indicated that motivation to learn was predicted by extraversion and agreeableness, and transfer motivation was predicted by motivation to learn, extraversion, and emotional stability. The impact of extraversion on transfer motivation was partially mediated by motivation to learn. In sum, the importance of dispositional factors in training research was explored and clarified. Implications for theory and practice are discussed.

Both scientists and practitioners are interested in understanding and enhancing the effectiveness of organizational training programs. Traditionally, training research has mainly focused on the role of training design characteristics and training context. In addition, the role of trainees’ individual differences in the training context has been explored (Holton, 1996). Empirical research showed that trainees’ general cognitive ability (Ree & Earles, 1991), self-efficacy (Gist, Stevens, & Bavetta, 1991), personality (Colquitt, LePine, & Noe, 2000), and other individual characteristics influence training effectiveness. The study examined here focused on the role of trainees’ personality in the process of developing their pretraining and posttraining motivation. Prior research demonstrated that both pre- and posttraining motivation are crucial for the
effectiveness of training programs (Colquitt et al., 2000). The study of training and motivation theory has generated a new model that describes the influence of personality on training-related motivation. The test of this model provides new insights for training theory.

Not only from a theoretical point of view but also for practitioners, the question of how to boost motivation for training is important. For effective training and development, it seems important to ensure high degrees of trainees’ motivation to learn and to transfer as early as possible (Goldstein & Ford, 2002; Seyler, Holton, Bates, Burnett, & Carvalho, 1998) within all kinds of organizations and training programs. For example, if significant influences on training motivation were identified, these factors could be used for the design of trainee selection, pretraining interventions, training, and posttraining interventions. These steps can help to motivate trainees and foster training outcomes such as better levels of performance (Cannon-Bowers, Salas, Tannenbaum, & Mathieu, 1995; Salas & Cannon-Bowers, 2001).

This article first describes different training-related aspects of motivation. It then discusses potential effects of personality variables on the development of these training-related aspects of motivation and develops a theoretical model. Several hypotheses related to this model are proposed and tested in the empirical part of the article.

Training-Related Aspects of Motivation

According to Salas and Canon-Bowers (2001), “We need to continue gaining a deeper understanding of training motivation because it is crucial for learning and has direct implications for the design and delivery of training. . . . Longitudinal studies are also needed” (p. 480). At several points within the training process, aspects of training motivation are important. At least three main training-related aspects of motivation have been distinguished (Holton, Bates, & Ruona, 2000; cf. Warr & Bunce, 1995).

First, following Noe (1986), motivation to learn is defined as the desire of the trainee to learn the content of a specific training program. In their meta-analytic path analysis, Colquitt et al. (2000) demonstrated the importance of motivation to learn in the training context. This aspect of motivation is important for key outcomes of training such as skill acquisition, posttraining self-efficacy, and transfer. However, motivation to learn is but one aspect of training motivation (Ford, Kozlowski, Kraiger, Salas, & Teachout, 1997). In addition to training-related aspects of motivation prior to the training (that is, motivation to learn), posttraining motivation is another important variable within the training process. That is, motivation to transfer contributes to effective training (Seyler et al., 1998). In other words, participating in training will yield higher posttraining job performance only if trainees are highly motivated to apply the training content after they have returned to their respective workplaces. Both motivation to learn and
motivation to transfer are part of state-of-the-art models of training effectiveness (Cannon-Bowers et al., 1995; Holton, 1996). Thus, these two constructs are fundamental for understanding the motivational processes of training. Finally, each employee has certain attitudes toward training in general before training actually occurs. Following Warr and Bunce (1995), *attitudes toward training* are defined as subjective (cognitive and emotional) attitudes employees have toward training in general, before an actual program takes place. In contrast, *motivation to learn* refers to a particular training event in the near future. Employees might form general attitudes toward training due to experiences like school, prior training, organizational information policies, or human resource practices (Alexander, Helms, & Curran, 1987).

Consider an employee who is scheduled to begin an organizational training program. As the start of the training approaches, this employee’s motivation to learn within this program is influenced by information that is provided by the employer (brochures and briefings, for instances). Empirical research has demonstrated that the framing of training is significantly related to trainees’ subsequent level of training motivation (Tai, 2006). In addition, an employee’s general attitude toward training might bear on his or her motivation to learn within a specific program. In contrast to motivation to learn, attitudes toward training are not specific to a single program; rather, they apply to training activities in general. Also, attitudes toward training have been found to be important precursors to motivation to learn prior to a specific training program (Warr & Bunce, 1995).

Based on the assumption that both the training process and the development of training-related aspects of motivation are longitudinal in nature, this study distinguished different aspects of training-related motivation (attitudes toward training, motivation to learn, and transfer motivation) that are separated in time but nevertheless interrelated. All three motivational constructs are viewed as temporal states and are affected by other personal and work-related variables. These assumptions are consistent with the theoretical (Cannon-Bowers et al., 1995; Holton, 1996) and empirical (Tharenou, 2001; Warr & Bunce, 1995) literature on training. Throughout this article, the focus is on the development of training-related aspects of motivation. Although this perspective has been called for in the past (Goldstein, 1991; Goldstein & Ford, 2002; Salas & Cannon-Bowers, 2001; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991), empirical research is virtually nonexistent. This study is aimed at addressing this gap in the empirical literature.

**The Big Five Personality Variables**

From a theoretical point of view, it is interesting to know which factors influence the development of training motivation (Noe & Schmitt, 1986; Salas & Cannon-Bowers, 2001). Thus, this study focused on dispositional explanations for the development of three aspects of training-related motivation. Over the past two decades, the impact of personality variables on training proficiency
(Barrick & Mount, 1991), performance motivation (Judge & Ilies, 2002), and training motivation (Colquitt et al., 2000) has gained considerable interest among both researchers and practitioners. Kanfer (1990) strongly advocated the use of the Big Five factor model of personality to advance the current body of motivational research within industrial/organizational psychology. Dispositional factors such as the Big Five are viewed as more distal, traitlike variables that influence the more proximal, statelike motivational variables such as motivation to learn (Mount & Barrick, 1995).

The Big Five taxonomy of personality describes the factors of introversion, instability, agreeableness, conscientiousness, and openness to experience. Persons characterized as introverted are less talkative, assertive, outgoing, and shyer than extraverts. Instability, or neuroticism, often labeled by the positive pole of the trait emotional stability, is the tendency to exhibit poor emotional adjustment in the form of stress, anxiety, and depression. Agreeableness is characterized by attributes such as being courteous, cooperative, and trusting. Finally, persons characterized as conscientious are described as careful, thorough, organized, and planful.

Despite the importance of the Big Five personality variables (Barrick & Mount, 1991), no model had been proposed yet that explicates the differentiated role of the Big Five within the training process (Colquitt et al., 2000). Thus, consistent with the theoretical perspectives on the training process (Cannon-Bowers et al., 1995; Holton, 1996) and within the taxonomy of the Big Five personality variables (Kanfer, 1990), a model was developed that described the hypothesized influences of the Big Five on the development of training-related aspects of motivation. This new model was then tested, drawing on data from a call center context.

The Theoretical Model

The theoretical model with its causal paths is illustrated in Figure 1. In the upper part of the model, relationships among the different training-related aspects of motivation are presented. The lower part of Figure 1 illustrates the influence of personality variables on aspects of motivation. We turn to each part in the following sections.

Relationships Between the Different Aspects of Trainees’ Motivation. In order to account for different training-related aspects of motivation described, three aspects of motivation (general attitudes toward training, motivation to learn, and transfer motivation) were included in chronological order in the model. This study is not the first to propose several distinct aspects of pretraining motivation. According to prior research, general attitudes toward training were significantly related to specific pretraining motivation (Warr & Bunce, 1995). These results were replicated by Naquin and Holton (2002). However, both constructs were assessed at a single point in time in these two studies. Thus, their results may be inflated. Because of these limitations and
the limited number of studies in this area, further research seems warranted. Data assessment at multiple points in time should be implemented in order to reflect the longitudinal nature of the training process. Thus, within this study, general attitudes toward training were assessed at an early point in time (T1, chronologically distant to the respective training program), and motivation to learn was assessed at a later point in time (T2, close to the respective training program). In sum,

**HYPOTHESIS 1.** *General attitudes toward training will be positively related to motivation to learn.*

The influence of general attitudes toward training may not be limited to motivation to learn. More specifically, attitudes toward training may bear not only on subsequent (pretraining) motivation to learn but also on (posttraining) transfer motivation. For example, Naquin and Holton (2002) found that attitudes toward training showed a significant relationship with both motivation to learn and transfer motivation. Due to the single-source and single-point-in-time bias in their study, these results should be viewed with caution.

**HYPOTHESIS 2.** *Attitudes toward training will be positively related to transfer motivation.*

The positive relationship between motivation to learn and transfer motivation has been proposed by Holton (Holton, 1996; see also Ruona, Leimbach, Holton, & Bates, 2002). Similarly, Tannenbaum et al. (1991) proposed, and found support for, a significant relationship between motivation to learn and transfer motivation. This positive relationship was confirmed by Naquin and Holton (2002). However, because the research base is limited,
additional research might be warranted. Also, this study controlled for the influence of personality characteristics and thus provides a stronger test for the following hypothesis:

**HYPOTHESIS 3.** *Motivation to learn will be positively related to transfer motivation.*

**Influences of Personality on Aspects of Trainees’ Motivation.** The importance of the Big Five personality variables has been established through several meta-analyses (Barrick & Mount, 1991; Mount, Barrick & Stewart, 1998). For example, conscientiousness showed a consistent relationship with job performance. In addition, the Big Five personality dimensions were significantly related to training proficiency (Barrick & Mount, 1991) and performance motivation (Judge & Ilies, 2002). However, little is known about the role of the Big Five personality variables in the development of training motivation. In general, theoretical work proposed a direct influence of personality characteristics on different training-related aspects of motivation (Locke, 1997). For example, Holton’s human resource development evaluation research and measurement model (Holton, 1996, 2005) predicts relationships between personality characteristics and motivation to learn. In addition, strong empirical support for the relationship between personality and training proficiency (Barrick & Mount, 1991) as well as for the relationship between training proficiency and training motivation existed (Colquitt et al., 2000). Thus, it might be concluded that personality characteristics also relate to aspects of training motivation. However, no empirical research existed that explored the simultaneous impact of all of the Big Five personality variables on training-related aspects of motivation assessed at multiple points in time. Consequently, we next examine the role of these personality variables and their potential effects on aspects of training motivation within the framework of the proposed model. It should be noted that in this study, personality assessment was assessed not prior to but at the same time as motivation to learn. As a consequence, no relationships between personality variables and attitudes toward training were proposed.

**Introversion.** In general, introversion is negatively associated with training proficiency (Barrick & Mount, 1991). In addition, meta-analytic results provide evidence for a negative relationship between introversion and performance motivation (Judge & Ilies, 2002). In the training context, Naquin and Holton (2002) found significant relationships between extraversion and both motivation to learn and transfer motivation.

From a theoretical perspective, it was stated that training design moderates the relationship between introversion and training motivation (Mount & Barrick, 1995). That is, introverts prefer learning on their own (for example, through self-study or reading books), and extraverts prefer learning in groups (for example, training groups and role playing). Because most organizational training programs implement methods that rely on trainees’ active participation
(as in role play), the empirical results noted, which showed that introversion was negatively related to both training proficiency and motivation, were not surprising. In this study, training methods that extraverts would prefer, such as role play, were implemented. Therefore, it could be expected that extraverts were more motivated to learn and to transfer.

Within call centers, where employees interact frequently with customers, characteristics that are congruent with high extraversion are appropriate and help employees to perform well (Bakker, Demerouti, & Schaufeli, 2003). For example, selling products on the telephone is one typical task in call centers. From job descriptions, it was apparent that characteristics that were supposed to be necessary for successful selling (such as being talkative, assertive, and active) were identical to characteristics that have been associated with extraversion. Thus, because this study was located in a call center context, extraverts might be hypothesized as being highly motivated to learn and to transfer what they have learned because the training content and the skills learned in training are congruent with their personality. As we focused on introversion rather than on extraversion in our personality assessment, we hypothesized that introversion would be negatively associated with both motivation to learn and transfer motivation:

**HYPOTHESIS 4.** Introversion will be negatively related to both (4a) motivation to learn and (4b) transfer motivation.

**Instability.** Within the process of training and transfer, trainees have to master difficult and novel situations on many occasions. For example, transferring newly acquired skills to the daily work routine often implies challenges. Theory suggested that unstable employees were less likely to be goal oriented and persistent in pursuing work-related goals (Kanfer & Heggestad, 1999). Thus, trainees high on instability would fail to master these challenges, resulting in low states of motivation. Empirical research supports this notion. In their meta analysis on performance motivation, Judge and Ilies (2002) reported significant negative correlations between neuroticism and performance motivation. In addition, in their cross-sectional study, Naquin and Holton (2002) found a significant negative relationship between neuroticism and three aspects of training-related motivation (attitudes toward training, motivation to learn, and transfer motivation). Thus,

**HYPOTHESIS 5.** Instability will be negatively related to both (5a) motivation to learn and (5b) transfer motivation.

**Agreeableness.** Agreeable employees are valued by call centers (Dormann & Zijlstra, 2003). Because this study was located within call centers and being courteous was highly emphasized in the training program under focus, it might be argued from theory that agreeable employees exhibit higher degrees of training and transfer motivation than employees low on agreeableness.
This is because the training program would help employees to perform in ways that are congruent with their personality (Kanfer, 1990). Meta-analytic results on the relationship between agreeableness and performance motivation were inconclusive (Judge & Ilies, 2002). However, more relevant to this study was the work of Naquin and Holton (2002), where agreeableness showed a significant positive relationship to transfer motivation. Based on our theoretical arguments, we proposed:

**HYPOTHESIS 6.** Agreeableness will be positively related to both (6a) motivation to learn and (6b) transfer motivation.

**Conscientiousness.** Theoretical work suggested a positive relationship between conscientiousness and different aspects of training-related motivation (Kanfer, 1990; Locke, 1997). Conscientious employees might value training as a chance to organize their knowledge and develop their skills. Thus, it might be hypothesized that employees who score high on conscientiousness are highly motivated to learn and to transfer. In their meta analysis, Colquitt et al. (2000) found a positive correlation between conscientiousness and training motivation. Similarly, Colquitt and Simmering (1998) reported a positive association between conscientiousness and motivation to learn. This personality trait was also found to correlate with transfer motivation in the Naquin and Holton (2002) study. Based on this strong theoretical and empirical support, we proposed:

**HYPOTHESIS 7.** Conscientiousness will be positively related to both (7a) motivation to learn and (7b) transfer motivation.

**Openness to Experience.** This Big Five personality trait is associated with attributes such as being creative, cultured, curious, and broad minded. Personality theory suggests that employees who are open to experience value training as an opportunity to learn new skills (Goldstein & Ford, 2002; Kanfer, 1990). Also, the conceptual similarities between openness to experience and training motivation have been highlighted in theoretical work (McCrae & Costa, 1989). In Barrick and Mount’s meta analysis (1991), openness to experience was related to measures of training proficiency. In their cross-cultural study, Lievens, Harris, Van Keer, and Bisquert (2003) reported a significant relationship between openness and training performance. The first empirical study to explore the relationship between openness to experience and aspects of training-related motivation (Naquin & Holton, 2002) found positive relationships between these constructs. Thus,

**HYPOTHESIS 8.** Openness to experience will be positively related to both (8a) motivation to learn and (8b) transfer motivation.
The Mediating Role of Motivation to Learn. The model outlined in Figure 1 implies a mediating role of motivation to learn. That is, in addition to the proposed direct impact of the independent variables (attitudes toward training and the Big Five personality variables) on the dependent variable (transfer motivation), motivation to learn partially mediates these relationships. The rationale for this partially mediating role of motivation to learn is included within the temporal sequence of the different training-related aspects of motivation. In addition, recent models of training effectiveness support such a mediating role of motivation to learn (Cannon-Bowers et al., 1995; Colquitt et al., 2000; Holton, 1996). In fact, one of the main results of Colquitt et al.’s meta-analytic path analysis was the mediating role of motivation to learn for many relationships between trainee characteristics and training outcomes. However, on the side of personality variables, their analyses included only conscientiousness. Thus, research including all of the Big Five seems warranted:

Hypothesis 9. Motivation to learn will mediate the relationship between (9a) introversion, (9b) instability, (9c) agreeableness, (9d) conscientiousness, and (9e) openness to experience and transfer motivation.

Model Summary. In sum, these nine hypotheses built the rationale for the model described in Figure 1. The proposed hypotheses were in line with theoretical approaches to motivation in the training context (Cannon-Bowers et al., 1995; Holton, 1996; Kanfer, 1990). The literature reviewed revealed that isolated relationships, which were included in the model, had already been explored empirically. However, several limitations should be noted. First, the number of studies for most of the proposed relationships was small. Thus, further empirical research seemed warranted. Second, these empirical investigations included only a limited set of the variables described above. Third, these studies were typically cross-sectional in nature. Thus, causal inferences from these studies were not possible. Fourth, to our knowledge, no study has been conducted that assessed several training-related aspects of motivation at multiple points in time. Finally, there is a lack of research that tested the simultaneous impact of several dispositional variables on motivational outcomes. Thus, entering the Big Five personality variables simultaneously into the regression equations that will be implemented to test the hypotheses represents a rigorous test of these hypotheses (Judge & Ilies, 2002). Taking the exposed limitations of prior research into consideration, the study presented here goes beyond prior studies.

Method

This section describes the method of the study.

Context. This study was located in a call center organization. Due to prior research projects and consultant activities within this organization, as the
author of the study, I was well established in this organization. Consequently, for reasons of convenience, the call center organizations was contacted and asked to participate in the study. After a presentation of the study’s goals to top management, the organization agreed to participate in the study. A sample of call center agents working in ten of twenty-two call centers within this organization was drawn. These agents were dealing with customers’ requests (inbound) or engaged in outbound activities such as interviewing customers or selling products on the telephone.

As an expectation, entering the organization affected future employees’ attitudes toward training. This is because information about the company and work-related training programs was presented to them during the assessment and hiring process. This organization offered more than twenty-five training programs that aimed at developing employees’ knowledge, skills, and abilities. However, this study focused on one training program in particular, and only it is described in detail. Because high customer service orientation was essential for effectiveness, training in service skills was offered to all new employees. The one-day training module taught specific service skills such as customer-oriented communication behavior, specific phrases, and appropriate intonation. This training relied on employees’ active participation and implemented such methods as role play, giving feedback, and discussion. Participation was voluntary.

In accordance with the theoretical literature on training (Goldstein & Ford, 2002; Noe & Schmitt, 1986), a discussion with human resource (HR) experts from this organization revealed that future employees developed attitudes in general toward training programs for at least two reasons. First, because the assessment center was the first contact with the future employer, applicants evaluated the organization as well as its HR practices, such as the training programs described in the assessment center. Second, as a part of the assessment center, applicants were given information about work tasks and participated in work sample tests. At the end of the assessment center, they were given feedback about their performance at these exercises. This performance feedback might have signaled to applicants their need for future training and as a consequence formed positive or negative attitude toward training.

Sample. For obtaining a large sample size within a reasonable time frame, all 211 trainees who took part in the training program in 2004 were asked to participate in this study. Of these, 180 employees (85.3 percent) participated in the study; however, after missing data were accounted for, the final sample size was 94 (52.2 percent). Later interviews with call center management revealed one reason for this high dropout rate: employees moved among the organization’s twenty-two call centers and thus dropped out from the ten call centers the study was located in. Trainees’ ages ranged from nineteen to forty-eight years ($M = 27.0; SD = 6.5$), and there were 48 percent male and 52 percent female call center agents. Their average tenure was 6.7 months. As for
education, 17.4 percent had finished junior high school and 82.6 percent had a high school diploma.

Variables. In the next paragraphs, psychometric properties of the scales for the assessment of the study's constructs are described.

Attitudes Toward Training. Because no prior scale existed, a new instrument for the assessment of attitudes toward training was created for the study. The first step was an extensive literature review of motivational and attitudinal variables that had been reported in organizational training research. Then I met with two training experts from the organization. After a discussion of the results of the literature review and the content and practices of the assessment center, four items were constructed to assess employees' attitudes toward training (a sample item was, “As a result of my assessment center performance, I am motivated to participate in future training activities”). In order to examine the construct validity of the attitude-toward-training scale and because a unidimensional factor structure of attitudes toward training was expected, a confirmatory factor analysis (CFA, maximum likelihood with the covariance matrix as input) was performed. The results revealed a close fit between the one-factor model and the data ($\chi = 1.60; \text{df} = 2; p = .448$; comparative fit index (CFI) = .999; adjusted goodness-of-fit (AGFI) = .957; root mean square error of approximation (RMSEA) = .001). Cronbach's alpha for this scale was .75. In sum, these results provide support for the factorial validity and reliability of the attitudes-toward-training scale.

Motivation to Learn. Noe and Schmitt (1986) developed and tested an eight-item motivation-to-learn scale (Cronbach's alpha = .98). In order to arrive at a short scale to assess motivation to learn, five items were selected. A sample item for this scale was, “I will try to learn as much as I can from this training program.” CFA (maximum likelihood with covariance matrix as input) was implemented to test the factorial validity of this scale. The results revealed a good fit between model and data ($\chi = 3.42; \text{df} = 5; p = .635$; CFI = .999; AGFI = .958; RMSEA = .001) and thus support the unidimensionality of the scale. Cronbach's alpha was slightly below the standard of .70 ($\chi = .67$). However, reliability estimates depend on the number of items in their respective scale (Cortina, 1993). Thus, because there were only five items in this scale, the observed reliability was in an acceptable range. In sum, the results for validity and reliability seem to justify the implementation of this motivation-to-learn scale.

Personality. Measures for the personality traits were identical to the scales used by Mowen and Spears (1999), as these economic Big Five measures have been proven to be valid and reliable in empirical research (Brown, Mowen, Donavan, & Licata, 2002). For example, factorial validity of these measures had been supported by means of a CFA in the Brown et al. (2002) study ($\chi = 29.53; \text{df} = 24; p = .00$; non-normed fit index (NNFI) = .98; CFI = .99; RMSEA = .03). In addition, in Mowen and Spears's study (1999), Cronbach's alphas
were .86, .79, .81, .85, and .76 for the five scales of introversion, instability, agreeableness, conscientiousness, and openness, respectively. A sample item for one of the three items for introversion was, “I feel more bashful than others” (this study: Cronbach’s alpha = .68). Instability was assessed by five items, a sample item being, “My emotions go way up and down” (Cronbach’s alpha = .69). Next, for agreeableness (three items), a sample item was, “I am tender-hearted with others” (Cronbach’s alpha = .75). For conscientiousness (three items), a sample item was, “I am orderly” (Cronbach’s alpha = .71). Finally, one of the five items for the assessment of openness to experience was, “I find novel solutions” (Cronbach’s alpha = .67).

**Transfer Motivation.** At the end of training, trainees’ posttraining transfer motivation was assessed. The four-item scale from Noe and Schmitt (1986) was selected for assessing transfer motivation (sample item: “I am highly motivated to apply the skills I learned in this training to my daily work”) because this scale revealed adequate reliability (Cronbach’s alpha = .95) in prior research (Noe & Schmitt, 1986). In addition, within the same study, results were provided that supported the convergent and discriminant validity of the transfer motivation scale. Finally, within this study, CFA was implemented to test the factorial validity of this scale. The results revealed a good fit between model and data ($\chi^2 = 0.11; df = 2; p = .945; CFI = .999; AGFI = .997; RMSEA < .001$) and thus supported the unidimensionality of the transfer motivation scale.

All of these scales included a five-point response scale (1 = Strongly Disagree to 5 = Strongly Agree). The exceptions were the three personality dimensions, which were, in accordance with the original study by Mowen and Spears (1999), assessed by nine-point response scales (1 = Strongly Disagree to 9 = Strongly Agree).

**Procedure.** Data were collected at three consecutive points in time. First, in the assessment center (T1), attitudes toward training were assessed. Due to organizational and time constraints, it was not possible to include measures of personality in the assessment center. Employees first had a four-week vocational adjustment period and after this initial period could register for training. More than 90 percent of newly hired employees took this opportunity and registered for training, which was scheduled to begin the following week. At training registration, the second data assessment (T2) was scheduled (one week prior to training). At T2, motivation to learn and personality variables were assessed. Finally, at the end of the training (T3), trainers administered surveys and participants answered questions regarding transfer motivation. The questionnaires at T1 and T2 were administered to employees by research assistants and were filled out during work time. Participation was voluntary. The participants were guaranteed that data were used only for research purposes, so confidentiality was assured.
Results

Table 1 shows the descriptive statistics, reliability estimates, and intercorrelations for the study variables.

The most complex statistical analysis had to be conducted concerning the mediating effect of motivation to learn (hypothesis 2). From a statistical perspective, one way of testing a mediating effect is to perform three multiple regression analyses (Baron & Kenny, 1986). As outlined below in greater detail, these three regression analyses also provide the opportunity to test the rest of the proposed hypotheses. Thus, in the following paragraphs, the process of performing the three regression analyses necessary to establish a mediating effect of motivation to learn will be followed, and, by doing so, the other hypotheses will be tested.

We followed the procedure outlined by Baron and Kenny (1986) in order to test for mediating effects of motivation to learn. In order to establish mediation, three conditions must hold. First, personality variables and attitudes toward training must affect motivation to learn (the mediating variable). Second, personality variables and attitudes toward training must predict transfer motivation. Finally, motivation to learn must affect transfer motivation while controlling for personality variables and attitudes toward training. Only if all three conditions hold and if the inclusion of motivation to learn in the last regression analysis lowers the effect of one of the personality variables or attitudes toward training on transfer motivation, a mediating relationship of motivation to learn can be established. In order to test these three conditions, three simultaneous multiple regression analyses were performed. An advantage of multiple regression analysis was that the influence of rivaling constructs (the Big Five) could be tested. The results were summarized in Table 2. Each column represents the results of one of the three regression analyses.

The first condition necessary for mediation was that the independent variables have an impact on the mediator. According to the model and the hypotheses, general attitudes toward training and the Big Five personality variables (the independent variables) were proposed to influence motivation to learn (the mediating variable). Consequently, a multiple regression analysis was performed that tested these propositions (see the first column of Table 2). The results revealed a significant relationship between both introversion and agreeableness on motivation to learn, supporting Hypotheses 4a and 6a. However, neither additional personality variables nor general attitudes toward training were related to motivation to learn. In sum, for two of the Big Five (introversion and agreeableness), the first necessary condition for mediation was met.

The second condition was that the independent variables influence the dependent variable. The model and the hypotheses proposed relationships between, respectively, general attitudes toward training and the Big Five personality variables (the independent variables) and transfer motivation (the dependent variable). Thus, another multiple regression analysis was performed...
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<td>1.20</td>
<td>.05</td>
<td>.20*</td>
<td>-.19</td>
<td>.07</td>
<td>.17</td>
<td>.13</td>
<td>(.67)</td>
<td></td>
</tr>
<tr>
<td><strong>T3</strong>&lt;br&gt;8. Transfer Motivation</td>
<td>4.04</td>
<td>0.71</td>
<td>.17*</td>
<td>.41**</td>
<td>-.34**</td>
<td>-.33**</td>
<td>.19</td>
<td>.01</td>
<td>-.10</td>
<td>(.73)</td>
</tr>
</tbody>
</table>

**Note:** Values in parentheses are internal consistency reliability estimates.

*p < .05, two-tailed; **p < .01, two-tailed.
Table 2. Summary of Simultaneous Multiple Regression Analyses Representing the Three Necessary Conditions for the Mediating Effect of Motivation to Learn According to Baron and Kenny (1993) ($N = 94$)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Motivation to Learn (T1)</th>
<th></th>
<th>Motivation to Transfer (T2)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Condition 1</td>
<td>Condition 2</td>
<td>Condition 3</td>
<td>Condition 2</td>
<td>Condition 3</td>
</tr>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
<td>$\beta$</td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>$T_1$ Attitudes Toward Training</td>
<td>0.12</td>
<td>0.06</td>
<td>0.18</td>
<td>0.22</td>
<td>0.10</td>
</tr>
<tr>
<td>$T_1$ Introversion</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.29**</td>
<td>-0.13</td>
<td>0.04</td>
</tr>
<tr>
<td>$T_1$ Instability</td>
<td>-0.02</td>
<td>0.03</td>
<td>-0.07</td>
<td>-0.14</td>
<td>0.05</td>
</tr>
<tr>
<td>$T_1$ Agreeableness</td>
<td>0.08</td>
<td>0.04</td>
<td>0.20*</td>
<td>0.04</td>
<td>0.07</td>
</tr>
<tr>
<td>$T_1$ Conscientiousness</td>
<td>-0.03</td>
<td>0.05</td>
<td>-0.06</td>
<td>-0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>$T_1$ Openness to Experience</td>
<td>0.04</td>
<td>0.03</td>
<td>0.12</td>
<td>-0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.25</td>
<td></td>
<td>0.26</td>
<td></td>
<td>0.31**</td>
</tr>
<tr>
<td>$R^2_{adj}$</td>
<td>0.20</td>
<td></td>
<td>0.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, two-tailed; **p < .01, two-tailed.
(see the second column in Table 2). Two personality variables, introversion and instability, were significantly related to transfer motivation. This supports the second condition necessary for mediation for the cases of two of the Big Five (introversion and instability).

The third condition implied that the mediator was significantly related to the dependent variable while controlling for the independent variables. In the final regression analysis that tested this condition (see the rightmost column in Table 2), motivation to transfer (the dependent variable) was regressed on motivation to learn (the mediator), while controlling for general attitudes toward training and the Big Five personality characteristics (the independent variables). First, a significant relationship between motivation to learn and transfer motivation was observed, yielding support for hypothesis 3. Second, instability was negatively related to transfer motivation. Thus, hypothesis 5b was supported. In addition, because there was a negative relationship between introversion and transfer motivation, hypothesis 4b gained support from the data. In combination with the results provided above, the hypothesis that motivation to learn partially mediates the relationship between introversion and transfer motivation was supported. Thus, hypothesis 9a gained support from the empirical data. For all the other personality variables, at least one of the three conditions outlined by Baron and Kenny (1986) was not met. Finally, the hypothesis that general attitudes toward training were related to transfer motivation (hypothesis 2) was disconfirmed: in the final multiple regression analysis that controlled for the influence of all other variables (see the rightmost column of Table 2), the impact of attitudes toward training on transfer motivation did not reach statistical significance.

Discussion

Research on the impact of trainees’ personality on aspects of motivation in the training context has long been called for. Following Salas and Cannon-Bowers’s recommendations (2001), a model was developed from theory and tested empirically. The results of the study presented here demonstrate significant relationships between several of the Big Five personality variables and pre- and posttraining motivation.

Supporting the proposed model, motivation to learn significantly predicted transfer motivation. This relationship is in line with prior theoretical (Cannon-Bowers et al., 1995) and empirical (Tannenbaum et al., 1991) work and represents an important part of the proposed model. However, the results of the present study do not support the proposed influences of attitudes toward training on any of the other motivational constructs. That is, employees’ general attitudes regarding training are not valid for predicting pre- or post transfer motivation. This result is in contrast with one of the few studies conducted in this area (Warr & Bunce, 1995). One possible explanation for the result of the present study is that trainees perceive the future
training event as too distant in terms of both psychological distance and chronological distance. As a consequence, the attitudes trainees form might be based on inaccurate or superficial judgment. Another explanation for this result might be that future trainees receive additional information about the respective training from colleagues and supervisors during their first weeks of employment. This new information might differ from the information provided in the assessment center, yielding a nonsignificant relationship between attitudes toward training and motivation to learn.

While attitudes toward training should be removed from the proposed model, the remaining model was confirmed for the case of extraversion. That is, while controlling for the other four Big Five variables, extraversion showed a direct influence on both pretraining and posttraining motivation. This result is in line with prior theoretical (Goldstein & Ford, 2002; Kanfer & Heggestad, 1999) and empirical (Naquin & Holton, 2002) work. As the present study was based on a multiple points-in-time data assessment, the relationships between extraversion and motivation to learn and to transfer can be interpreted in a more causal way.

Interestingly, the other four Big Five variables showed only a few relationships to training-related aspects of motivation. First, motivation to learn was significantly predicted by agreeableness. Second, emotional stability fostered transfer motivation. However, although several prior theoretical and empirical arguments supported the influence of all of the Big Five variables on training motivation, only three of the Big Five exhibited a significant impact on training motivation in the present study. Thus, the compare-and-contrast approach implemented in this study yielded a smaller set of personality characteristics as being important for the development of training motivation than was expected.

It might be concluded that the pattern of results hints at the possibility that employees' personality characteristics that are congruent with their work foster the development of different training-related aspects of motivation. More specifically, work in call centers demands highly extraverted (talkative), agreeable (friendly), and emotionally stable (stress-resistant) employees (Dormann & Zijlstra, 2003). Thus, employees high on these personality characteristics might be motivated to learn and apply what they have learned in training because training and transfer content is congruent with their personality.

This perspective on the pattern of results of the present study would also account for the insignificance of both conscientiousness and openness to experience. For example, in their cross-cultural study, Lievens et al. (2003) found that openness to experience was the most important predictor for training outcome variables such as training performance. The context of the study (a training program that prepared managers for expatriate work assignments) might account for this result, as employees who are open to new experience can be expected to be highly motivated for both working in other countries and participation in training that helps to be prepared for these expatriate assignments. However, although the idea that the relationship between the Big
Five variables and motivation variables is moderated by the organizational or training context might be appealing and is consistent with prior theoretical work (Kanfer & Heggestad, 1999; Mount & Barrick, 1995), much more research is necessary before a firm conclusion can be made.

Within the present study, many research hypotheses were not confirmed. This might be due to the implemented research design and statistical procedures. That is, in contrast to earlier research, the proposed model, as well as the multiple points-in-time data assessment strategy, reflected the longitudinal nature of the training process and allowed a more causal interpretation of relationships between variables. Also, entering all Big Five variables simultaneously into the regression analyses represents a more rigorous test of their rivaling influences on aspects of training-related aspects of motivation.

**Implications for Theory.** So far, several individual (such as commitment) and organizational (such as transfer climate) variables have been found to have an impact on training motivation (Baldwin & Ford, 1988; Colquitt et al., 2000). The reported analyses add to our understanding of the development of training-related aspects of motivation and highlight the importance of trainees’ dispositions. In addition, the results support the role of personality variables as distal motivational constructs, as proposed by Kanfer (1990).

Taken together, the results of the present study underline the importance of at least three of the Big Five personality variables because they show significant impact on motivation to learn or transfer motivation, or both. About 20 percent of variance in training motivation was explained by personality variables. However, the notion that training motivation is at least partially determined by more stable personality variables was not explicitly taken into account by the majority of prior empirical research. This problem exists partially due to theoretical literature on training motivation. While only conscientiousness is explicitly included in one model of training effectiveness (Colquitt et al., 2000), the results of the present study highlight the importance of additional Big Five variables that have not yet been studied extensively (extraversion, emotional stability, and agreeableness). Thus, prior theoretical research simplified the development of training-related aspects of motivation, for only a limited set of trainees’ personality characteristics was taken into account.

Consequently, models of the training process (Cannon-Bowers et al., 1995; Holton, 1996, 2005) should be revised with regard to the role of Big Five personality variables. The first step in this direction was undertaken by Naquin and Holton (2002), who proposed—and found empirical support for—a theoretical model that described direct and indirect effects of personality variables on trainees’ attitudes and motivation to improve work through learning, a concept that included motivation to learn and transfer motivation. The results of this study as well as the study of Naquin and Holton are promising and call for an expansion of recent theories of the training process. Differentiated effects of the Big Five on variables within the training process
should be proposed. For example, as for the case of extraversion, direct influences of this Big Five variable on motivation to learn and transfer motivation should be included. At the same time, motivation to learn partially mediates the impact of extraversion on transfer motivation.

Within this expansion of training theories, addressing the potential moderating effects of organizational context and training methods will be a challenge. For example, could training designed congruent to trainees' personality help to ensure high levels of training motivation? Also, how can training content be taught that is incongruent with trainees' dispositions? In order to learn more about these issues, it will be important to include all of the Big Five in future research. While prior research highlighted the importance of conscientiousness (Colquitt et al., 2000) and openness to experience (Lievens et al., 2003), the present study underlined the importance of the other three Big Five (extraversion, agreeableness, and emotional stability) personality characteristics. Finally, as for general attitudes toward training, the results of the present study do not support the idea that this construct should be included in models of training effectiveness.

Implications for Practice. The first implication from the results of this study is quite simple: high motivation to learn will yield high transfer motivation. Thus, attempts to foster trainees' motivation are imperative not only for participation in the training itself but also for the subsequent transfer of training (Gaudine & Saks, 2004). Within needs assessment (Goldstein & Ford, 2002), trainees' knowledge, skills, and abilities, as well as their motivation, needs, and so forth, should be taken into consideration (Kraiger, 2003). In the case of low motivation, interventions that boost motivation to learn could be implemented. Specifically, to increase training motivation, managers could provide training-related information, such as training attributes, training goals, and relevance of training for the respective career.

Also, within the person analysis phase of needs assessment, trainees' personality should be taken into account (Gully, Payne, Kiechel-Koles, & Whitman, 2002). According to the results of the present study, several of the Big Five personality variables (extraversion, emotional stability, and agreeableness) play a fundamental role in motivation for the training process. Because personality variables are often assessed in selection batteries, they might be valuable for subsequent training and transfer needs analysis (Ford & Weissbein, 1997). If the distinct personalities of trainees are known, training content and methods can be designed in ways that are congruent with the personalities. For example, when trainees are characterized as extraverted, methods such as role play and group discussion should be implemented. In contrast, methods that rely on self-study such as reading should be implemented in the case of introverted trainees. As for instability, pre- and posttraining interventions such as peer coaching or mentoring could provide a climate of support and help emotionally unstable trainees to handle training- and transfer-related challenges. These examples demonstrate how training methods and
interventions can be used to provide training that is congruent with the distinct personalities of trainees. In sum, these measures might ultimately result in high levels of pre- and posttraining motivation. Moreover, from the trainer’s perspective, active working with and supporting introverted, emotionally unstable, and disagreeable trainees seems important. For example, within group discussions, trainers might encourage introverted trainees to participate in and contribute to the discussion. In sum, spending more time with these trainees and addressing their training-related interests might help to heighten their respective levels of training motivation.

Practitioners who aim at designing personality-congruent training interventions can rely on several Big Five personality inventories. Due to extended research, these inventories include test norms for various populations. For example, small but significant differences between men and women, and culturally diverse populations have been reported in the literature (Mount & Barrick, 1995). Thus, when the potential training population is heterogeneous with regard to gender and ethnic groups, a careful inspection of test norms for these groups is necessary before taking any further steps, such as assigning trainees to certain training groups or methods.

Limitations and Perspectives for Future Research. Several limitations of this study should be taken into consideration. First, we used data from a single organization. As a consequence, the results may be limited to the call center context. Future research that includes samples other than from call centers is needed to replicate the findings reported here. Also, due to the low mean age of the study participants, replication of the findings for samples of older employees is required. Moreover, the effect of personality variables on training motivation might depend on training design characteristics or on the instructor. In sum, future research should include different kinds of training programs, instructors, and organizations.

The proposed model is limited in several ways. First, organizational influences such as transfer climate should be taken into account (Rouiller & Goldstein, 1993). Next, the present study did not assess the impact of personality on general attitudes toward training. Due to organizational and time constraints, this was not possible. Because the importance of personality variables within the training context was highlighted, studies that assess personalities of employees already in the assessment center are valuable. Third, empirical research underlines the importance of variables other than the Big Five personality variables, such as locus of control (Tziner & Falbe, 1993) and positive affectivity (Naquin & Holton, 2002) for the training context, whereas the proposed model was restricted in its focus on motivational variables. However, within applied organizational context, outcome variables such as performance are often more important. Measures that are known to be key indicators of effective training (for example, knowledge, individual, and organizational performance) should be the focus of future research. Fourth, although the present study relied on data that were assessed at several points in time, future
studies should assess data from several sources. For example, personality might be assessed by raters rather than by trainees themselves. Fifth, future studies should be based on larger sample sizes, especially when additional explanatory variables are included into expanded models.

Despite these limitations, the present study is a starting point for further research and a stimulation for training research that includes all of the Big Five variables. Because these kinds of studies will expand earlier approaches to describe the role of the trainee's personality within the training process, we will be able to arrive at a more comprehensive model of this important organizational intervention.

References


Jens Rowold is scientific assistant at the Institute of Psychology II, University of Muenster, Germany.