

The Mediating Role of General Self-Efficacy in the Relationship Between the Big Five Personality Traits and Perceived Stress: A Weekly Assessment Study

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Abstract A cross-sectional study design may not be a reliable procedure for indicating the effects of stable individual structures on transient conditions in stress situations. In order to address this gap, we aimed to explore the role of the direct and indirect effects of the big five personality traits with the mediating effect of self-efficacy on perceived stress using a weekly diary method. The sample comprised 79 full-time workers who filled in a questionnaire that included the Big Five Inventory and General Self-Efficacy Scale at the initial administration and the Perceived Stress Scale over 12 weeks. Data were analysed using hierarchical linear modelling to examine the relationship between the big five personality traits and weekly perceived stress and the mediating role of general self-efficacy in this relationship. The results indicated that neuroticism and extraversion were significantly associated with general self-efficacy and perceived stress. The results further indicated that general self-efficacy fully mediated the relationship between extraversion and perceived stress. General self-efficacy partially mediated the relationship between neuroticism and perceived stress. Our findings highlight the importance of personality and self-efficacy for predicting perceived stress. Implications for future research and practice are discussed.

Keywords Perceived stress · Big five personality · Self-efficacy · Diary study

Introduction

The transactional model of stress proposes that the stress response occurs as a consequence of interactions between individuals and their environment (Lazarus, 1990, 1999; Lazarus & Folkman, 1984). This view has featured individuals' cognitive appraisal processes in the face of particular situations for understanding stress response. From the stress viewpoint, cognitive appraisal is a process wherein individuals evaluate the particular situation for its relevance and importance to their well-being (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986; Lazarus, 1991). Individuals, based on their initial cognitive evaluations, may perceive a particular situation as a threat or not. Perceiving the particular event as a threat or challenge can influence not only the stress response but also the adaptation process for coping (Folkman & Lazarus, 1980; Forsythe & Compas, 1987). In this regard, individualistic dispositional factors influencing the initial evaluations are becoming more significant, not only for the stress appraisal, but also for the coping process.

From the individualistic perspective, while trait theory (Costa & McCrae, 1992) emphasizes habitual patterns of thought and action, social cognition theory (Bandura, 1997) focuses on psychosocial functioning, with dynamic interactions between person, behaviour and environment. Studies have found that individuals' stable characteristics do not vary across situations (Costa & McCrae, 1992; Goldberg, 1992) and individuals' varying perceptions or appraisals affecting situational interpretations of the same situation essentially influence the initial cognitive evaluation of the stressful situation (Hemenover & Dienstbier, 1996; Perrewe & Zellars, 1999). Therefore, it is becoming significant to discuss the initial cognitive evaluation along with both stable and passing or specific personality

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characteristics of individuals. When evaluating the stress response from the individualistic perspective, how individuals perceive, appraise or sense the stress events with the influence of their stable characteristics and their cognitive efficacy beliefs is of interest. The effects of stable individual characteristics and cognitive efficacy beliefs on initial evaluations have not been fully examined in the stress process. Moreover, Code and Langan-Fox (2001) recommended that motivations, cognitions and personality traits should be measured collectively instead of individually to explain the stress process. Thus, the basic purpose of this study is to explore the role of direct and indirect effects of stable personality traits (i.e. the big five personality traits) with the mediating effect of efficacy beliefs on perceived stress.

Some cross-sectional studies have found that self-efficacy plays a mediating role in the relationship between the big five personality traits and stress or depressive symptoms (Ebstrup, Eplöv, Pisinger & Jørgensen, 2011; Wang et al., 2014). However, Spector and Meier (2014) proposed that cause and effect relationships may not be determined by using cross-sectional study designs. Ohly, Sonnentag, Niessen and Zapf (2010) also suggested that when the unit of analysis is individual and the investigated constructs are fluctuating based on the situational conditions, the results of cross-sectional studies based on self-report questionnaires are highly questionable. These comments also indicate that diary-designed studies have many advantages in terms of the type and quality of data, and the type of research question (Lazarus, 2000). Since the more convenient method for determining the effects of more stable structures on transient conditions is using such a diary design, we have adopted a weekly diary study approach to measure the effects of individuals' characteristics on the experiences of perceived stress. Therefore, there is a need for research that examines the period-to-period processes that lead some individuals to perceive stress constantly.

In our study, we use a weekly diary study approach to predict weekly fluctuations of perceived stress from personality traits and general self-efficacy. This diary study approach provides an answer to the question of whether individuals differ in terms of the perceived stress process, and if so, helps to determine the sources of these individual differences. Moreover, it enables us to test the antecedents of weekly perceived stress (Bolger, Davis & Rafaeli, 2003). Our study adds to the increasing body of studies examining perceived stress. We not only address personality traits and general self-efficacy as predictors, but also utilize a weekly diary study approach to address the potential weaknesses of previous cross-sectional studies (e.g. Ebstrup et al., 2011; Wang et al., 2014).

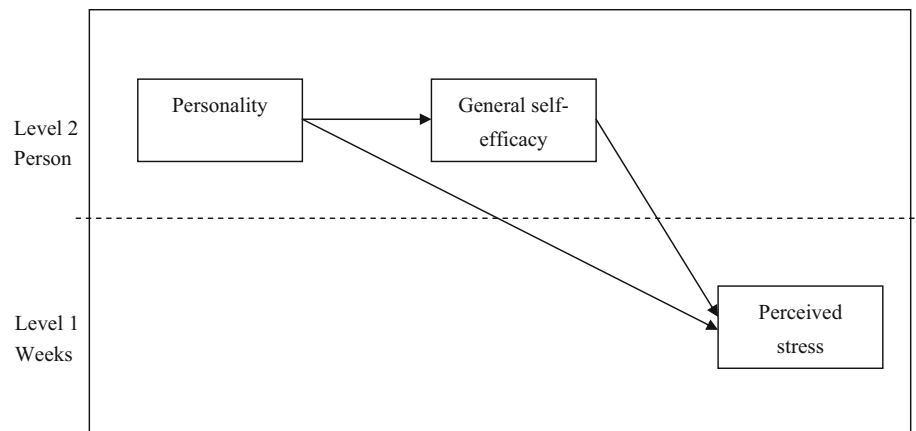
To advance our understanding of how individual differences matter, several questions were formulated in the

present study. Specifically, do the big five personality traits influence efficacy beliefs? Do these personality traits also influence individuals' perception of stress? Furthermore, are those linkages mediated (indirect) or unique (direct)? All of these questions (as illustrated in Fig. 1) are addressed in the literature review. To summarize, the main objective of the present study was to examine the relationships among the big five personality traits, general self-efficacy and perceived stress in order to evaluate the extent to which general self-efficacy mediates the influence of the big five personality traits on perceived stress.

Theoretical Background and Hypotheses

Personality and Perceived Stress

According to the most influential trait theory (McCrae & Costa, 1999), fundamental components of personality are largely hereditary, consistent over conditions and stable over time. From this viewpoint, there has been increased understanding that the big five personality traits—commonly termed extraversion, agreeableness, conscientiousness, openness and neuroticism—give a meaningful framework for determining individual differences (McCrae & Costa, 1999). With their widely used confirmed structural features and favourable psychometric properties, the big five dimensions can be used to understand the role of individualistic stable characteristics in threatening situations and highlight the relationship between stress response and individual differences (Besser & Shackelford, 2007; David & Suls, 1999; Hojat, Gonnella, Erdmann & Vogel, 2003; Miller, Griffin & Hart, 1999). Moreover, beyond the basic role in shaping the initial appraisal process, these stable tendencies have significant influences on preferred coping strategies (Connor-Smith & Flachsbart, 2007; Costa, Somerfield & McCrae, 1996; Lee-Bagley, Preece & DeLongis, 2005). Studies have shown that there are significant relationships between the stable big five personality traits and perceived stress and coping (Bartley & Roesch, 2010; Besser & Shackelford, 2007; Bolger & Zuckerman, 1995; Borkenau & Ostendorf, 1998; Conard & Matthews, 2008; Connor-Smith & Flachsbart, 2007; Grant & Langan-Fox, 2007; Vollrath & Torgersen, 2000). Findings generally support that stable traits of neuroticism and extraversion significantly affect initial evaluations of particular events over a lifetime. Extraverts are liable to experience more positive affect; neurotics are liable to experience more negative affect for the same events (Kagan & Snidman, 1991). These affective evaluations are associated with the emotions related to challenging or threatening appraisals (Gallagher, 1990). Personality traits lead to the assessment

Fig. 1 Personality, general self-efficacy and perceived stress

of events as easily surmountable or unable to be overcome in the initial evaluation. Previous research has indicated that conscientiousness is negatively related to perceived stress (Besser & Shackelford, 2007). Moreover, there are some evidences indicating that agreeableness and openness have negative associations with perceived stress (Ebstrup et al., 2011). Thus, there is broad evidence that the big five personality traits should have effects on perceived stress.

Hypothesis 1 The personality trait of neuroticism (H_{1a}) will be positively related to perceived stress, while extraversion (H_{1b}), openness (H_{1c}), agreeableness (H_{1d}) and conscientiousness (H_{1e}) will be negatively related to perceived stress.

Self-Efficacy and Perceived Stress

Social cognitive theory (Bandura, 1997) posits that personality is a learned output of environment that shows dynamic variation across situations and is largely changeable over time. According to this theory, all the thoughts and actions that influence human functioning are self-efficacy beliefs. Self-efficacy—consisting of knowledge, evaluations and the view of the self—is defined as individuals' beliefs about their capability of performing specified performance-related necessities in the events that influence their lives (Bandura, 1997). Self-efficacy, with its basic role in cognitive motivation in the self-regulation process, organizes self-belief towards what one can do in the face of the necessities of events. Beyond mastery experiences in forming efficacy beliefs, how these experiences are assessed and causally attributed is an integrative part of efficacy beliefs (Bandura, 1982). Individuals' causal attributions towards particular events affect individuals' responses and reactions. Although the locus of causality, stability and controllability dimensions of causal attributions are proposed to explain the cause of behavioural outcomes, the locus of causality is the main dimension associated

with the competence dimensions of psychological states in terms of self-efficacy beliefs from the attributional perspective (Innes & Thomas, 1989; Weiner, 1985, 1986). Attributing performance-related feedback causally to external or internal factors can shape the reciprocal effects of performance-related feedback on following self-efficacy beliefs (Bandura, 1997; Schunk & Ertmer, 1999; Weiner & Graham, 1999). Concordantly, causal attributions for a particular situation or event may differ based on individuals' high or low self-efficacy beliefs (Bandura, 1982). Therefore, individuals may prefer to avoid or confront a situation according to whether the situation exceeds or matches their capabilities based on their efficacy beliefs.

Studies show that low self-efficacy is associated with vulnerability to stress situations (Jerusalem & Schwarzer, 1992; Schwarzer & Hallum, 2008), more psychological symptoms (Karademas & Kalantzi-Azizi, 2004) and depression (Weber et al., 2004). Self-efficacy also plays a significant role in assessing threat or challenge situations for coping. As individuals high in self-efficacy appraise stressful situations as challenging (Luszczynska & Schwarzer, 2005), they promote a more positive approach to coping strategies (Karademas & Kalantzi-Azizi, 2004). Findings also support that higher self-efficacy is linked with coping efforts that are problem-focused (Chwalisz, Altmaier & Russell, 1992), active and meaning-focused (Boehmer, Luszczynska & Schwarzer, 2007), while lower self-efficacy is linked with being emotion-focused (Chwalisz et al., 1992). Furthermore, Semmer (2003) indicated that individuals with a tendency to use a problem-focused strategy report less physical and psychological stress. All these findings support that individuals' existing self-efficacy beliefs and the reciprocal effects of outcomes on competency beliefs can shape both the initial evaluation of the stress event and the coping. The relationships found in previous studies clearly indicate that self-efficacy beliefs should have an effect on the perceived stress situation.

Hypothesis 2 General self-efficacy will be negatively related to perceived stress.

Personality and Self-Efficacy

Personality theorists propose that human characteristics can be classified into two broad hierarchical categories as “traits” and “states” in terms of human functioning (Costa & McCrae, 1992; Goldberg, 1993). While traits are assumed to be more stable characteristics over time and placed on higher levels, states are thought to be more temporary and placed on lower levels of the characteristic hierarchy. Higher-level characteristics, with their context-free properties, are more appropriate for determining individual differences in the same situation. Under the influence of situations or cognitions, lower-level characteristics are the result of the characteristic affect interacting with situational influences. The big five personality traits, representing enduring individual characteristics, are in the higher levels of the hierarchy; however, self-efficacy—consisting of knowledge, evaluation and the view of the self—is roughly in the upper-middle levels of hierarchy (McCrae & Costa, 1999).

Although some researchers have proposed that there are reciprocal relationships between the big five personality traits and self-concept structures (Marsh, Trautwein, Ludtke, Koller & Baumert, 2006), numerous findings have shown that malleable efficacy beliefs are influenced by the stable big five personality traits (Asendorpf & van Aken, 2003; Chen, Casper & Cortina, 2001; Hoyle, 2006; Judge & Ilies, 2002; Judge, Jackson, Shaw, Scott & Rich, 2007). Some findings note a positive correlation between self-efficacy and extraversion, high conscientiousness and low neuroticism (Hoyle, 2006; Judge & Ilies, 2002). Moreover, a meta-analysis study showed that, among the personality traits, conscientiousness and extraversion positively predicted self-efficacy, while neuroticism negatively predicted self-efficacy in relation to work-related performance (Judge et al., 2007). Previous results indicated that the big five personality traits should have an effect on self-efficacy beliefs.

Hypothesis 3 The personality trait of neuroticism (H_{3a}) will be negatively related to general self-efficacy, while extraversion (H_{3b}), openness (H_{3c}), agreeableness (H_{3d}) and conscientiousness (H_{3e}) will be positively related to general self-efficacy.

The Mediating Effect of Self-Efficacy in the Personality–Perceived Stress Relationship

Besides the notion that personality and efficacy beliefs have separate specific effects in the stress process, their interrelated effects may also be significant in understanding the initial appraisal process of stress situations from the

individualistic perspective. Code and Langan-Fox (2001) indicated that motivations, cognitions and traits as a whole should explain more variance in stress in comparison with using just one of them. When examining the individual characteristics, as nomothetic approaches focus mostly on personnel selection and classification (e.g. how people differ), we should adapt ideographic approaches concerning how people function at the individual level (e.g. how traits, cognitions and motivations interact). Hemenover and Dienstbier (1996) suggested that it is essential to examine the stress process with different level intra-individual factors as some broad and narrow dimensions. They conceptualized the broad personality dimensions as traits comprising the big five, and narrow personality dimensions as general appraisal tendencies. General self-efficacy, representing broad and mostly stable general evaluations of personal competence, can be thought of as a general appraisal tendency. It reflects a sense of personal competence to cope with various challenging situations. Studies have proposed that appraisal tendencies are highly related to the stable personality traits (Hemenover & Dienstbier, 1996). One study found that the neuroticism trait uniquely contributed incremental variance for the prediction of stress and strain after controlling for core self-evaluation (Judge, Erez, Bono & Thoresen, 2002). Thus, we assume that general appraisal tendencies like self-efficacy are affected by broad stable personality traits like the big five in the initial stress evaluation process. Moreover, Ebstrup et al. (2011) showed that general self-efficacy mediates the relationship between the big five personality traits and perceived stress. These results imply that general self-efficacy should be a mediator between the big five personality traits and perceived stress.

Hypothesis 4 General self-efficacy will mediate the impact on perceived stress of the personality traits extraversion (H_{4a}), conscientiousness (H_{4b}), openness (H_{4c}), agreeableness (H_{4d}) and neuroticism (H_{4e}).

Methods

Participants and Procedure

Data were collected using paper questionnaire forms. The study participants consisted of full-time workers in public and private sectors in Turkey (i.e. government, academia/education, social services, healthcare, financial services/insurance, trading, wholesale and retail, and business services). To recruit participants, we made brief presentations at work and talked with potential participants about the study’s aim and design. We stressed that data collection would include responding to a general survey at the

beginning of the study and 12 further weekly surveys to be responded to on a Friday afternoon over 12 consecutive weeks. Participation in the study was voluntary and the respondents were guaranteed anonymity. We distributed the survey questionnaires to a total of 111 workers who agreed to participate in our study. The respondents received the questionnaires in person at work and returned them directly to the researchers. At the beginning of the study, participants provided demographic information and completed personality and self-efficacy scales. Subsequent questionnaires asked participants about perceived stress during the past weeks.

After 12 weeks, 32 participants had failed to provide the necessary data or had not responded to the weekly survey. As a result, 79 participants filled out the questionnaires, which resulted in a response rate of 71.1%. The total number of data points was $79 \times 12 = 948$, which indicates sufficient power to test our hypotheses (Maas & Hox, 2005). The participants' age ranged from 22 years to over 44 years, the average age being 32.98 years ($SD = 6.18$). Furthermore, 59.4% of the participants were female, and 49.3% were unmarried. Of those who reported their education levels, 24% held a high school or a college degree, 69.6% held a Bachelor's degree and the remaining 6.4% held a graduate school degree.

Measures

Personality

At the beginning of the study, personality traits were measured by the 44-item the Big Five Inventory (BFI; Benet-Martinez & John, 1998). Sumer, Lajunen and Ozkan (2005) showed that the Turkish version of the BFI has good psychometric properties. The scale included eight items for extraversion (e.g. "I see myself as someone who is talkative"), nine items for agreeableness (e.g. "I see myself as someone who is considerate and kind to almost everyone"), nine items for conscientiousness (e.g. "I see myself as someone who does a thorough job"), eight items for neuroticism (e.g. "I see myself as someone who gets nervous easily") and ten items for openness (e.g. "I see myself as someone who is inventive"). Participants indicated their level of agreement with the items on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The alpha reliability coefficients of these sub-scales were 0.87 for extraversion, 0.77 for agreeableness, 0.89 for conscientiousness, 0.88 for neuroticism and 0.88 for openness.

Self-Efficacy

We used the General Self-efficacy Scale (GSE) developed by Schwarzer and Jerusalem (1995) to measure participants' self-efficacy beliefs at the beginning of the study.

The GSE scale consists of ten items rated on a five-point Likert-type scale ranging from 1 (not at all true) to 5 (exactly true). An example of an item was "I can always manage to solve difficult problems if I try hard enough". Higher scores indicated that the participant perceived a high level of self-efficacy. This GSE scale has been adapted for 28 languages, including Turkish (Yeşilay, Schwarzer & Jerusalem, 1997). Previous research has suggested that the scale has good psychometric properties and can be used as a single-factor measure (e.g. Scholz, Gutiérrez-Doña, Sud & Schwarzer, 2002). The scale's alpha reliability coefficient in this study was 0.80.

Perceived Stress

To assess participants' weekly perceived stress level, we used the Perceived Stress Scale (PSS) developed by Cohen, Kamarck and Mermelstein (1983). The PSS scale consists of ten items rated on a five-point Likert-type scale ranging from 1 (never) to 5 (very often). We reformulated the items so that they assessed an individual's level of perceived stress during the week of data collection (e.g. "In the last week, how often have you been upset because of something that happened unexpectedly?"). Higher scores indicated that the participant perceived a high level of stress. The PSS is a widely used psychological instrument for measuring the perception of stress, and the Turkish version of PSS has good psychometric properties (e.g. Örüçü & Demir, 2009). The scale's alpha reliability coefficient computed separately for each of the 12 weeks ranged between 0.88 and 0.91 (mean = 0.90).

Analytical Strategy

Our diary dataset had a hierarchical structure with weeks nested in persons. We had a multilevel design with weeks at the first level (level 1; $N = 948$) nested within persons at the second level (level 2; $N = 79$). Because diary data had a nested (multilevel) structure, we used hierarchical linear modelling (HLM) to analyse data (Hofmann, 1997; Raudenbush & Bryk, 2002).

Prior to testing the hypotheses, we ran a null or fully unconditional model to examine between-person and within-person variance components of perceived stress. Afterwards, to address the aim of the study (i.e. whether GSE mediates the personality–perceived stress relationship), the mediation procedure suggested by Baron and Kenny (1986) for mediational analysis and multilevel equations (e.g. Krull & MacKinnon, 2001; Zhang, Zyphur & Preacher, 2009) was used, which required three separate analyses. We used the computer program HLM (Raudenbush, Bryk & Congdon, 2010) for these analyses.

Results

Preliminary Analyses

The descriptive statistics and correlations of variables at an individual level are presented in Table 1. An examination of correlations revealed significant associations among variables. Overall, the pattern of correlations was in the expected direction. However, the main interest of the present study was in the HLM analyses.

In order to support our hypotheses, which included cross-level relationships, we examined the between-person and within-person variance components of perceived stress. Thus, using HLM, we estimated a null model to test the significant level of perceived stress. The Chi-square estimates for the amount of variation in the changes in perceived stress ($\chi^2 = 519.52$; $df = 78$; $p < 0.001$) between persons were significant. The intra-class correlations (ICC) were computed with the formula $\tau_{00}/(\tau_{00} + \sigma^2)$, of which the σ^2 (level 1) and τ (level 2) were variance components. The ICC was 0.40 for perceived stress. This result suggests that 60% of the variance in perceived stress existed within-person and 40% of the variance in perceived stress existed between persons. Thus, the amount of within-person variability was not trivial, suggesting it was appropriate to utilize HLM.

Test of Hypotheses

Hypothesis 1a predicted that the personality trait of neuroticism (H_{1a}) would be positively related to perceived stress, while extraversion (H_{1b}), openness (H_{1c}), agreeableness (H_{1d}) and conscientiousness (H_{1e}) would be negatively related to perceived stress. Model 1 in Table 2—the means-as-outcome model—shows that neuroticism had a significantly positive relationship with perceived stress ($\gamma = 0.168$, $p < 0.001$), while extraversion had a significantly negative relationship with perceived stress

($\gamma = -0.155$, $p < 0.001$). However, openness ($\gamma = 0.052$, $p = 0.323$), agreeableness ($\gamma = -0.008$, $p = 0.909$) and conscientiousness ($\gamma = -0.120$, $p = 0.086$) had no significant relationship with perceived stress. Therefore, Hypothesis 1 was partially supported.

Hypothesis 2 predicted that general self-efficacy would be negatively related to perceived stress. Model 2 in Table 2—the means-as-outcome model—shows that general self-efficacy had a significantly negative relationship with perceived stress ($\gamma = -0.338$, $p < 0.001$). Therefore, Hypothesis 2 was supported.

Hypothesis 3 predicted that the personality trait of neuroticism (H_{3a}) would be negatively related to general self-efficacy, while extraversion (H_{3b}), openness (H_{3c}), agreeableness (H_{3d}) and conscientiousness (H_{3e}) would be positively related to general self-efficacy. Model 4 in Table 2—the ordinary least-squares (OLS) regression model—shows that among the personality traits, only neuroticism ($B = -0.227$, $p < 0.01$) and extraversion ($B = 0.206$, $p < 0.01$) had significantly positive relationships with general self-efficacy. Openness ($B = 0.166$, $p = 0.060$), agreeableness ($B = 0.061$, $p = 0.607$) and conscientiousness ($B = 0.202$, $p = 0.077$) had no significant relationships with general self-efficacy. Therefore, Hypothesis 3 was partially supported.

Hypothesis 4 predicted that general self-efficacy mediates the relationship between the big five personality traits and perceived stress. Before testing the mediation effect of general self-efficacy, three criteria should be met. Firstly, the big five personality traits must be significantly related to perceived stress (H_{1a} and H_{1b} were supported). Secondly, general self-efficacy must be significantly related to perceived stress (Hypothesis 2 was supported). Thirdly, the big five personality traits must be significantly related to general self-efficacy (H_{3a} and H_{3b} were supported). All three of these preconditions were supported only for testing the mediation effect of general self-efficacy on the relationship between the personality traits of neuroticism and

Table 1 Descriptive statistics and correlations

| Variables | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------------------|----------|-----------|---------|--------|--------|--------|--------|---------|--------|
| 1. Neuroticism | 2.61 | 0.77 | (0.88) | | | | | | |
| 2. Extraversion | 3.40 | 0.70 | -0.27* | (0.87) | | | | | |
| 3. Openness | 3.81 | 0.60 | -0.24* | 0.26* | (0.88) | | | | |
| 4. Agreeableness | 4.04 | 0.44 | -0.20 | 0.16 | 0.11 | (0.77) | | | |
| 5. Conscientiousness | 4.10 | 0.51 | -0.33** | 0.02 | 0.26* | 0.26* | (0.89) | | |
| 6. General self-efficacy | 3.82 | 0.50 | -0.31** | 0.39** | 0.37** | 0.21 | 0.33** | (0.80) | |
| 7. Perceived stress | 1.83 | 0.53 | 0.37** | -0.25* | -0.15 | -0.18 | -0.24* | -0.32** | (0.90) |

The statistics in this table are based on the person-level data ($n = 79$). Weekly perceived stress scores were averaged across person level. Scale reliabilities (α) are displayed between parentheses on the diagonal

* $p < 0.05$; ** $p < 0.01$

Table 2 Multilevel estimates for models predicting perceived stress: general self-efficacy as mediator

| Variables | Perceived stress | | | | | | General self-efficacy | | |
|-----------------------|------------------|------|----------|-------------|---------|----------|-----------------------|------|----------|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | |
| | Coefficient | SE | t ratio | Coefficient | SE | t ratio | Coefficient | SE | t ratio |
| Intercept | 2.790 | 0.03 | 93.90*** | 2.790 | 0.03 | 93.11*** | 2.790 | 0.03 | 94.45*** |
| Neuroticism | 0.168 | 0.04 | 3.93*** | | | | 0.151 | 0.04 | 3.51*** |
| Extraversion | -0.155 | 0.04 | -3.41*** | | | | -0.110 | 0.04 | -1.65 |
| Openness | 0.052 | 0.05 | 0.98 | | | | 0.079 | 0.05 | 1.49 |
| Agreeableness | -0.008 | 0.07 | -0.11 | | | | 0.003 | 0.07 | 0.04 |
| Conscientiousness | -0.120 | 0.07 | -1.71 | | | | -0.078 | 0.07 | -1.10 |
| General self-efficacy | | | | -0.338 | 0.06 | -5.73*** | -0.207 | 0.06 | -2.98* |
| σ^2 | 0.366 | | | 0.365 | | | 0.366 | | |
| τ_{00} | 0.226 | | | 0.224 | | | 0.221 | | |
| Df | 73 | | | 77 | | | 72 | | |
| χ^2 | 443.02*** | | | 466.93*** | | | 428.95*** | | |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Level 1: $N = 948$; level 2: $N = 79$; SE = standard error

extraversion, because the results showed that other personality traits (openness, agreeableness and conscientiousness) had no relationships with either general self-efficacy or perceived stress.

Table 2 also shows the effects of the big five personality traits and general self-efficacy on perceived stress. Models 1–3 show the results of a set of tests with perceived stress as the dependent variable. Comparing Model 1 with Model 3, the significant relationship between extraversion and perceived stress declined substantially when general self-efficacy was added to the equation (from $\gamma = -0.155$, $p < 0.001$ to $\gamma = -0.110$, $p = 0.069$). These results indicate that general self-efficacy mediated the relationship between extraversion and perceived stress. Using a product-of-coefficients test (Zhang et al., 2009), the mediation effect was found to be -0.069 . The Sobel test (1982) results ($z = -2.60$; $p < 0.001$) provide statistical support for the fully mediated relationship.

However, the significant relationship between neuroticism and perceived stress declined slightly when general self-efficacy was added to the equation (from $\gamma = 0.168$, $p < 0.001$ to $\gamma = 0.151$, $p < 0.001$). The mediated contribution of neuroticism equalled 0.076. The effect was significant using the Sobel test ($z = 2.81$; $p < 0.01$), revealing that general self-efficacy mediated the relationship between neuroticism and perceived stress; however, the relationship still remained significant. Therefore, these results indicate that general self-efficacy partially mediated the relationship between neuroticism and perceived stress. In sum, Hypothesis 4 was partially supported.

Discussion

This study explored the relationship between the big five personality traits and perceived stress and the mediating role of general self-efficacy in this relationship. On a general level, the results indicate that neuroticism and extraversion are significantly associated with general self-efficacy and perceived stress. The results further indicate that general self-efficacy fully mediates the relationship between extraversion and perceived stress.

Extraversion is characterized by the need to be in social situations and by having social facility. Highly extraverted individuals seek excitement, are sociable, active, gregarious, assertive, bold and adventurous (Goldberg, 1992; McCrae & Costa, 1999). Since individuals high in extraversion perceive stressful events as challenges rather than threats and positively appraise coping resources (Carver & Connor-Smith, 2010), they would suffer less under stress. In other words, the tendency of highly extraverted individuals to judge their capabilities positively enhances personal accomplishment and reduces

stress. The results of our study that indicated the mediating role of general self-efficacy in the relationship between extraversion and perceived stress are in line with previous findings (e.g. Ebstrup et al., 2011). Moreover, this finding provides a possible explanation as to why extraverted individuals report less perceived stress via the stress-protective role of general self-efficacy.

The results of the present study showed a significant positive association between neuroticism and perceived stress and a sparsely mediating role of general self-efficacy in this relationship. Individuals who score high on neuroticism are more likely to experience negative emotions such as anxiety, angry, helplessness and depression (Goldberg, 1992; McCrae & Costa, 1999). Neurotic individuals are more self-conscious and have a proclivity to hold unrealistic ideas and have inefficient ways of coping with stress (Kotov, Gamez, Schmidt & Watson, 2010). Compared to individuals low in neuroticism, individuals high in neuroticism evaluate events, conditions or experiences as more aversive and thus have an inclination to make negative self-appraisal (Gunthert, Cohen & Armeli, 1999). The fact that perceived stress was not fully mediated by general self-efficacy but also had an association with neuroticism might be due to the inability of individuals high in neuroticism to deal successfully with stressors, which would increase the amount of stress.

The present study indicates that openness, agreeableness and conscientiousness have no significant relationships with perceived stress. Previous studies examining the associations between personality traits and perceived stress showed that, of the big five personality traits, neuroticism and extraversion were the two major dispositions affecting individuals' level of perceived stress (e.g. Besser & Shackelford, 2007; Conard & Matthews, 2008; Ebstrup et al., 2011; Grant & Langan-Fox, 2007; Wang et al., 2014). Future studies need to examine whether openness, agreeableness and conscientiousness are related to perceived stress.

Implications for Research and Practice

The present study offers several implications for research, and specifically for organizations that might be helpful in facilitating individual and organizational outcomes. In short, the significance of this research is at least threefold.

Firstly, we found that neuroticism and extraversion predict perceived stress. More specifically, in addition to such personality traits, we found that self-efficacy was related to perceived stress and fully mediated the relationship between extraversion and perceived stress while partially mediating the relationship between neuroticism and perceived stress. These findings are unique, although some of the within-person effects are consistent with the

between-person effect (Ebstруп et al., 2011). In addition, the findings are consistent with the stress process proposed by the transactional model of stress (Lazarus, 1990, 1999). Accordingly, stressful experiences are construed as transactions between the individual and the environment. A transaction suggests that stress exists neither solely in the individual nor solely in the environment, but in the transaction between the two. Individual appraisal of the stressors that bind the individual and environment lies at the heart of the stress process (Cooper, Dewe & O'Driscoll, 2001). Thus, our findings add to the understanding of psychological structures—that is, stable personality dispositions (or traits) may have an effect on the individual's appraisal of both the stressor and the resources at his or her disposal (Lazarus, 2000). Future studies need to establish whether the present findings are also applicable to other sample types.

Secondly, we found that general self-efficacy was negatively related to perceived stress. This replicates previous research showing this association (e.g. Jerusalem & Schwarzer, 1992; Schwarzer & Hallum, 2008; Weber et al., 2004). However, the present study expands previous research by showing the importance of general self-efficacy as a mediator in the relationship between extraversion and perceived stress. In particular, our findings indicating that general self-efficacy mediates stress-reducing treatment effects are supported by the transactional model of stress (Lazarus, 1990, 1999). General self-efficacy is an important personal resource in the appraisal process in potentially stressful situations. Individuals high in general self-efficacy are more likely to interpret a stressful encounter as a challenge and less likely to see it as a threat (Bandura, 1997). The results clearly suggest that extraverted individuals report less perceived stress via the stress-protective role of general self-efficacy.

The third contribution of our study is the finding that the neuroticism personality trait has the greatest impact on weekly perceived stress. This means that individuals who are often self-conscious and more likely to experience such feelings as anxiety, anger, guilt and depressed mood evaluate stressors as more aversive and thus are inclined to make negative appraisals of the self (Gunthert et al., 1999); this then further increases the amount of stress. Our findings indicate that individuals high in neuroticism experience only small preventative benefits of general self-efficacy with respect to their appraisal or perception of stress. Certainly, additional research is needed to examine these associations.

In an attempt to explore theories of stress in the work setting, Cooper et al. (2001) concluded that "...many of these theories draw attention not just to the contribution of the person as opposed to the environment, in creating organizational stress, but also to the way in which the

demands of an encounter are appraised” (p. 36). In our study, we followed the approach of the transactional model of stress and examined the relationship between the big five personality traits and perceived stress and the mediating role of general self-efficacy in this relationship. We took a close look at the individual’s contribution to creating stress and used a within-person study approach to predict weekly fluctuations of perceived stress from stable personality dispositions. Our results indicated that the amount of between-person variance in perceived stress over 12 weeks is 40%. The remainder (60%) is the within-person variance (plus error). Individuals vary from one to another in perceived stress, and this accounts for 40% of the total variability across all the perceived stress measurements. However, this between-person source is not total: a considerable majority of the variation—60%—represents within-person variance. Therefore, the amount that individuals vary within themselves is not negligible. Figure 2 shows a collection of ten perceived stress patterns. Each corresponds to an individual’s measurements over 12 weeks. As illustrated in Fig. 2, some individuals go up, some down and others remain stable. This indicates within-person variation, or whether someone varies from himself or herself.

We believe that the present study is different from previous studies which used a between-person study design in that it examined perceived stress fluctuations within persons from week to week. Weekly diary research is very promising, since it allows researchers to identify psychological structures (i.e. personality traits) and changes over time (Lazarus, 2000).

Although one should be careful in drawing conclusions about the causal relationships found in the present study, our findings may provide organizations with some directions and tools in the area of personnel selection and development. In line with previous studies, our results support the notion that personality traits (e.g. Bartley &

Roesch, 2010; Besser & Shackelford, 2007; Bolger & Zuckerman, 1995; Borkeau & Ostendorf, 1998; Conard & Matthews, 2008; Connor-Smith & Flachsbart, 2007; Grant & Langan-Fox, 2007; Vollrath & Torgersen, 2000), together with general self-efficacy (e.g. Jerusalem & Schwarzer, 1992; Schwarzer & Hallum, 2008; Weber et al., 2004), are important predictors of perceived stress. Although the usefulness of personality tests in personnel selection is a matter of some debate (Hogan, Barrett & Hogan, 2007), meta-analytic procedures have indicated that the big five factors are valid predictors of job performance (Barrick, Mount & Judge, 2001). Moreover, previous research has identified self-efficacy as a significant predictor of job performance (e.g. Bandura, 1991; Cole & Hopkins, 1995; Prussia, Anderson & Manz, 1998; Renn & Fedor, 2001; Stajkovic & Luthans, 1998). Given the previous studies identifying personality and self-efficacy as important predictors of job performance, our results are practically relevant for organizations.

Limitations and Suggestions for Future Research

This study is not without its limitations. Firstly, we collected our data through self-report measures. Thus, one might argue that the sole reliance on this format may increase the problem of common method variance and lead to inflated correlations (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The big five personality traits and general self-efficacy were measured at the same point in time, so occasion factors might have influenced the findings. We tried to avoid or correct common method variance through the design and administration of the questionnaire, specifically by assuring anonymity of responses and mixing the order of the questions. Nevertheless, it would be worthwhile for future studies to consider measurements from multiple sources and the separation of measurement points. Secondly, the sample used in our study may raise questions about the generalizability of the findings. Therefore, the results found here should not be generalized until the findings have been replicated in other samples of interest, as well as across nationalities and cultures.

Thirdly, although the present study used a within-person study approach, and even though it applied multilevel analysis to investigate the relationships among variables, causality among the variables should be interpreted with caution. For example, one might argue for potential variables that may have had an influence on perceived stress. Indeed, several individual characteristics (e.g. locus of control, hardiness) and environmental features (e.g. work setting; autonomy in job, feedback on performance, social support) are linked to perceived stress (Cooper et al., 2001). As noted above, the aim of the present study was to examine the relationship between the big five personality

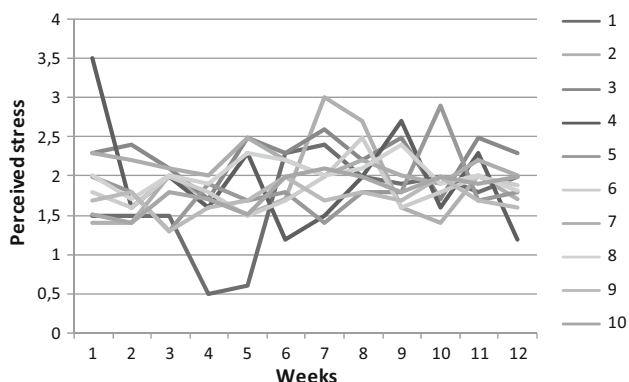


Fig. 2 A collection of perceived stress patterns, each based on several occasions of measurement over 12 weeks

traits and perceived stress and the mediating role of general self-efficacy in this relationship. Future research could choose to test other possible factors that are of central concern in studies of perceived stress.

Conclusion

Regarding the individualistic perspective, motivation, cognition and trait levels of personality should be measured collectively in order to better understand the complexity of the stress process. Moreover, longitudinal and hierarchical designs are more convenient methods for determining the effects of more stable structures on transient conditions in terms of an ideographic perspective. We believe that the findings of this study can help to identify some individualistic components of the stress process while using more valid and reliable measurement for theoretical and practical reasons.

References

- Asendorpf, J. B., & van Aken, M. A. G. (2003). Personality-relationship transaction in adolescence: Core versus surface personality characteristics. *Journal of Personality, 71*, 629–662.
- Bandura, A. (1982). The assessment and predictive generality of self-percepts of efficacy. *Journal of Behavior Therapy and Experimental Psychiatry, 13*, 195–199.
- Bandura, A. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision-making. *Journal of Personality and Social Psychology, 60*(6), 941–951.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment, 9*, 1–20.
- Bartley, C. E., & Roesch, S. C. (2010). Coping with daily stress: The role of conscientiousness. *Personality and Individual Differences, 50*(1), 79–83.
- Benet-Martinez, V., & John, O. P. (1998). *Los Cinco Grandes* across cultures and ethnic groups: Multitrait multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology, 75*, 729–750.
- Besser, A., & Shackelford, T. K. (2007). Mediation of the effects of the big five personality dimensions on negative mood and confirmed affective expectations by perceived situational stress: A quasi-field study of vacationers. *Personality and Individual Differences, 42*, 1333–1346.
- Boehmer, S., Luszczynska, A., & Schwarzer, R. (2007). Coping and quality of life after tumor surgery: Personal and social resources promote different domains of quality of life. *Anxiety, Stress, and Coping, 20*, 61–75.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579–616.
- Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology, 69*, 890–902.
- Borkenau, P., & Ostendorf, F. (1998). The Big Five as states: How useful is the five-factor model to describe intraindividual variations over time? *Journal of Research in Personality, 32*, 202–221.
- Carver, C. S., & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology, 61*, 679–704.
- Chen, G., Casper, W. J., & Cortina, J. M. (2001). The roles of self-efficacy and task complexity in the relationships among cognitive ability, conscientiousness, and work-related performance: A meta-analytic examination. *Human Performance, 14*, 209–230.
- Chwalisz, K., Altmaier, E., & Russell, D. (1992). Causal attributions, self-efficacy cognitions, and coping with stress. *Journal of Social and Clinical Psychology, 11*, 377–400.
- Code, S., & Langan-Fox, J. (2001). Motivation, cognitions and traits: Predicting occupational health, well-being and performance. *Stress and Health, 17*, 159–174.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385–396.
- Cole, B. L., & Hopkins, B. L. (1995). Manipulations of the relationship between reported self-efficacy and performance. *Journal of Organizational Behavior Management, 15*(1/2), 95–123.
- Conard, M. A., & Matthews, R. A. (2008). Modeling the stress process: Personality eclipses dysfunctional cognitions and workload in predicting stress. *Personality and Individual Differences, 44*, 171–181.
- Connor-Smith, J. K., & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. *Journal of Personality and Social Psychology, 93*(6), 1080–1107.
- Cooper, C. L., Dewe, P. J., & O’Driscoll, M. P. (2001). *Organisational stress: A review and critique of theory, research, and applications*. Thousand Oaks, CA: Sage Publications.
- Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment, 14*(1), 5–13.
- Costa, P. T., Somerfield, M. R., & McCrae, R. R. (1996). Personality and coping: A reconceptualization. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 44–61). New York, NY: Wiley.
- David, J. P., & Suls, J. (1999). Coping efforts in daily life: Role of Big Five traits and problem appraisals. *Journal of Personality, 67*, 265–294.
- Ebstrup, J. F., Eplöv, L. F., Pisinger, C., & Jørgensen, T. (2011). Association between the Five Factor personality traits and perceived stress: Is the effect mediated by general self-efficacy? *Anxiety, Stress, & Coping: An International Journal, 24*(4), 407–419.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21*, 219–239.
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping and encounter outcomes. *Journal of Personality and Social Psychology, 50*(5), 992–1003.
- Forsythe, C. J., & Compas, B. E. (1987). Interaction of cognitive appraisals of stressful events and coping: Testing the goodness of hypothesis. *Cognitive Therapy and Research, 11*(4), 473–485.
- Gallagher, D. J. (1990). Extraversion, neuroticism, and appraisal of stressful academic events. *Personality and Individual Differences, 11*, 1053–1057.
- Goldberg, L. R. (1992). The development of markers of the Big-Five factor structure. *Psychological Assessment, 4*, 26–42.

- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, *48*, 26–34.
- Grant, S., & Langan-Fox, J. (2007). Personality and the occupational stressor-strain relationship: The role of the Big Five. *Journal of Occupational Health Psychology*, *12*, 20–33.
- Gunther, K., Cohen, L., & Armeli, S. (1999). The role of neuroticism in daily stress and coping. *Journal of Personality and Social Psychology*, *77*(5), 1087–1100.
- Hemenover, S. H., & Dienstbier, R. A. (1996). The effects of an appraisal manipulation: Affect, intrusive cognitions, and performance for two cognitive tasks. *Motivation and Emotion*, *20*(4), 319–340.
- Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management*, *23*, 723–744.
- Hogan, J., Barrett, P., & Hogan, R. (2007). Personality measurement, faking, and employment selection. *Journal of Applied Psychology*, *92*, 1270–1285.
- Hojat, M., Gonnella, J. S., Erdmann, J. B., & Vogel, W. H. (2003). Medical students' cognitive appraisal of stressful life events as related to personality, physical well-being, and academic performance: A longitudinal study. *Personality and Individual Differences*, *35*, 219–235.
- Hoyle, R. H. (2006). Personality and self-regulation: Trait and information processing perspectives. *Journal of Personality*, *74*, 1507–1526.
- Innes, J. M., & Thomas, C. (1989). Attributional style, self-efficacy and social avoidance and inhibition among secondary school students. *Personality and Individual Differences*, *10*, 757–762.
- Jerusalem, M., & Schwarzer, R. (1992). Self-efficacy as a resource factor in stress appraisal processes. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 195–213). Washington, DC: Hemisphere.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology*, *83*, 693–710.
- Judge, T. A., & Ilies, R. (2002). Relationship of personality to performance motivation: A meta-analysis. *Journal of Applied Psychology*, *87*, 797–807.
- Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-efficacy and work-related performance: The integral role of individual differences. *Journal of Applied Psychology*, *92*(1), 107–127.
- Kagan, J., & Snidman, N. (1991). Temperament factors in human development. *American Psychologist*, *46*, 856–862.
- Karademas, E. C., & Kalantzi-Azizi, A. (2004). The stress process, self-efficacy expectations, and psychological health. *Personality and Individual Differences*, *37*, 1033–1043.
- Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking “big” personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychology Bulletin*, *136*, 768–821.
- Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research*, *36*, 249–277.
- Lazarus, R. S. (1990). Theory based stress measurement. *Psychological Inquiry*, *1*, 3–12.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. London: Free Association.
- Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist*, *55*, 665–673.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Lee-Baggley, D., Preece, M., & DeLongis, A. (2005). Coping with interpersonal stress: Role of Big Five traits. *Journal of Personality*, *73*, 1142–1180.
- Luszczynska, A., & Schwarzer, R. (2005). Multidimensional health locus of control: Comments on the construct and its measurement. *Journal of Health Psychology*, *10*, 633–642.
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modelling. *Methodology*, *1*(3), 86–92.
- Marsh, H. W., Trautwein, U., Ludtke, O., Koller, O., & Baumert, J. (2006). Integration of multidimensional self-concept and core personality constructs: Construct validation and relations to well-being and achievement. *Journal of Personality*, *74*(2), 403–456.
- McCrae, R. R., & Costa, P. T. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality* (2nd ed., pp. 139–153). New York, NY: The Guilford Press.
- Miller, R. L., Griffin, M. A., & Hart, P. M. (1999). Personality and organizational health: The role of conscientiousness. *Work & Stress*, *13*(1), 7–19.
- Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research. *Journal of Personnel Psychology*, *9*, 79–93.
- Örücü, M. Ç., & Demir, A. (2009). Psychometric evaluation of perceived stress scale for Turkish university students. *Stress and Health*, *25*(1), 103–109.
- Perrewe, P. L., & Zellars, K. L. (1999). An examination of attributions and emotions in the transactional approach to the organizational stress process. *Journal of Organizational Behavior*, *20*, 739–752.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*, 879–903.
- Prussia, G. E., Anderson, J. S., & Manz, C. C. (1998). Self-leadership and performance outcomes: The mediating influence of self-efficacy. *Journal of Organizational Behaviour*, *19*(5), 523–538.
- Raudenbush, S. W., & Bryk, T. A. (2002). *Hierarchical linear model: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Raudenbush, S. W., Bryk, T. A., & Congdon, R. T., Jr. (2010). *HLM 7.01: Hierarchical linear and nonlinear modeling* [Computer software]. Chicago, IL: Scientific Software International.
- Renn, R. W., & Fedor, D. B. (2001). Development and field test of a feedback seeking, self-efficacy and goal setting model of work performance. *Journal of Management*, *27*(5), 563–583.
- Scholz, U., Gutiérrez-Doña, B., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, *18*(3), 242–251.
- Schunk, D. H., & Ertmer, P. A. (1999). Self-regulatory processes during computer skill acquisition: Goal and self-evaluative influences. *Journal of Educational Psychology*, *91*, 251–260.
- Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. *Applied Psychology: An International Review*, *57*, 152–171.
- Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, England: NFER-NELSON.
- Semmer, N. (2003). Individual differences, work stress and health. In M. J. Schabracq, J. A. M. Winnubst, & C. L. Cooper (Eds.), *Handbook of work and health psychology* (2nd ed., pp. 83–120). Chichester: Wiley.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). San Francisco, CA: Jossey-Bass.
- Spector, P. E., & Meier, L. L. (2014). Methodologies for the study of organizational behavior processes: How to find your keys in the dark. *Journal of Organizational Behavior*, *35*, 1109–1119.

- Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*, 240–261.
- Sumer, N., Lajunen, T., & Ozkan, T. (2005). Big Five personality traits as the distal predictors of road accident involvement. In G. Underwood (Ed.), *Traffic and transport psychology* (pp. 215–227). Oxford: Elsevier.
- Vollrath, M., & Torgersen, S. (2000). Personality types and coping. *Personality and Individual Differences*, *29*, 367–378.
- Wang, Y., Yao, L., Liu, L., Yang, X., Wu, H., Wang, J., et al. (2014). The mediating role of self-efficacy in the relationship between Big Five personality and depressive symptoms among Chinese unemployed population: A cross-sectional study. *BMC Psychiatry*, *14*, 61–68.
- Weber, B. A., Roberts, B. L., Resnick, M., Deimling, G., Zauszniewski, J. A., Musil, C., et al. (2004). The effect of dyadic intervention on self-efficacy, social support, and depression for men with prostate cancer. *Psycho-Oncology*, *13*, 47–60.
- Weiner, B. (1985). Spontaneous causal thinking. *Psychological Bulletin*, *97*, 74–84.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York, NY: Springer.
- Weiner, B., & Graham, S. (1999). Attribution in personality psychology. In I. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theories and research* (pp. 605–628). New York, NY: The Guildford Press.
- Yeşilay, A., Schwarzer, R., & Jerusalem, M. (1997). *Turkish version of the general self-efficacy scale*. Retrieved from <http://userpage.fu-berlin.de/~health/turk.htm>.
- Zhang, Z., Zyphur, M. J., & Preacher, K. J. (2009). Testing multilevel mediation using hierarchical linear models: Problems and solutions. *Organizational Research Methods*, *12*(4), 695–719.