PSYCHOLOGICAL REPORTS

Psychological Reports is published bimonthly, two volumes a year, the first with issues in February, April, and June, and the second with issues in August, October, and December, from P.O. Box 9229, Missoula, Montana 59807-9229. Subscriptions are accepted only for full calendar years. For subscription information, please visit www.AmSci.com and click on “Subscribers.”

The purpose of this journal is to encourage scientific originality and creativity in the study of experimental, theoretical, and social psychology including: mental health; rehabilitation; intelligence and creativity; development and ageing; motivation; burnout; substance abuse; coping; communication; suicide and criminal behavior; organizational and consumer behavior; sports psychology; personality; fitness and health behavior. New or translated psychometric instruments may be described. Comments and special reviews are occasionally accepted. Controversial material of scientific merit is welcomed. Submitted manuscripts are all subject to rigorous peer review by outside experts chosen for their knowledge in the particular topic and/or general expertise in design, method, and analysis. In addition, associate editors who have broad knowledge of various topic areas are asked to review particularly difficult, unique, or controversial manuscripts. All manuscripts have at least 3 and up to 20 peer reviewers. Critical editing is combined with specific suggestions from multiple referees of each paper to help authors meet standards. For instructions for submitting a manuscript, please visit our web site (www.AmSci.com) and click on “Authors.”

If a manuscript is accepted for publication, there are three formats for publication. Regular articles. These are articles which require three or more printed pages. One- or two-page “brief articles.” This arrangement is useful if a particular finding can be reported completely in this format and will be immediately useful to other researchers in the field. Charge is $35.00 per printed page plus compositior fees for tables, figures, or equations. Authors may submit supplemental material for filing with the Archive for Psychological Data. Monograph supplements. Certain papers printing to more than 50 pages are published as monograph supplements. These are distributed to subscribers as parts of regular issues and are also made available as separates.

Publication is in order of receipt of proof from the authors. Author fees are $35.00 per page, plus costs of special composition, e.g., tables, figures, and mathematics. Fees are paid by authors or their institutions. This journal is supported by a fully searchable electronic database at www.AmSci.com. All articles and reference metadata are submitted to CrossRef for linking to other publishers and databases, so that the materials are accessible to online literature search. It is also the policy of this journal to file raw data with the Archive for Psychological Data. Authors should submit appropriate tables with their articles.

Section 1: Disability & Trauma
Morningness–Eveningness, Current Depression, and Past Suicidality: Dorota Lester .................................................. 331
Examination of Stigmatizing Beliefs About Depression and Stigma-reduction Effects of Education by Using Implicit Measures: Jun KASHIMARA ................................................................. 337
Test of Antonovsky’s Postulate: High Sense of Coherence Helps People Avoid Negative Life Events: JACQUELINE HUCHZER .................................................. 363

Section 2: Employment Psychology & Marketing
Stress, Coping, and Work Engagement Within the Specific Job Context: Comment on Kaiser, et al. (2014) : Esther GRACIA ........................................................................................................................................ 377
Influence of Chopstick Size on Taste Evaluations: HUNG-MING LIN, CHEN-HUANG LIN, AND HUI-HUI HUNG .................................................. 381
Turkish Version of the Academic Motivation Scale: GURBAN CAN .................................................................................. 388

Section 3: Measures & Statistics
Socially Desirable Responding in Chinese University Students: Denial and Enhancement?: FENG LI, YONGZUAN LI, AND YONG WANG .................................................................................................................. 409
Psychometric Properties of the Physical Self-Concept Questionnaire with Mexican University Students: JOSE R. BLANCO, HUMBERTO BLANCO, JESUS VUCINI, AND CARMEN ZUDEK ........................................................................................................ 422
Bifactor Analysis of the Mental Health Continuum–Short Form (MHC–SF): GABRIEL P. DE BRUIN AND GRAHAM A. D. PEDERSEN ........................................................................................................ 438
Reliability and Validity of the Japanese Version of the Coping Inventory for Adults for Stressful Situations in Healthy People: K. WATAKANE, K. YOSHIKAWA, AND T. A. FURUKAWA ........................................................................................................ 447
Validation of an Arabic Version of the GHQ–28 Against the Beck Depression Inventory for Screening for Depression in War-exposed Civilians: LAILA F. FABRECHO AND HANI DHAIGH ........................................................................................................ 470

Section 4: Mental & Physical Health
Children Left Behind in Romania: Anxiety and Predictor Variables: R. TOBIA AND C. JENARD .......................................................................................... 485
Self-acceptance Mediates the Relationship Between Mindfulness and Perceived Stress: MARCUS A. RODRIGUEZ, WEI-XU, XIANGMENG WANG, AND XENGFEI LI ........................................................................................................ 513
Associations Between Seasonal Sleep Change and Indoor Tanning: ELIZABETH CULINAN, JACQUELINE D. KLUIN, SEAN DAVIES, AND CARLTON J. HEDDEN ........................................................................................................ 523
The Effect of Grounding the Human Body on Mood: GAETAN CHERVALET .................................................................................. 534
Perspectives of Taiwanese Pastoral Counselors on the Use of Scripture and Prayer in the Counseling Process: PETR JIN DENG PO, LIANG-YI F. DENG, SHIH-LING TSAI, AND S. S. JENNY YUAN ........................................................................................................ 543

Section 5: Relationships & Communications
Effect of Hierarchy Legitimacy on Love Status Groups: Members’ Attractions for Ingroup and Outgroup Failures: RUTH M. BRATTON AND MICHAEL J. HALLGRAN ........................................................................................................ 586

Section 6: Sociocultural Issues in Psychology
Materialist Value Orientations as Correlates of the New Ecological Paradigm Among University Students in China: GAO XIAOCHAO ........................................................................................................ 597
Exploratory Examination of the Relationship Between Acculturation and Personal Growth Among Korean Immigrants: JINSEONG KIM, EILEEN MALLENBRECHT, INSEOK HIEO, JUN KIM, AND MAO KIM ........................................................................................................ 613
Creating a Positive Learning Environment for Students with English Classroom Anxiety: HUNG-CHANG LIAO AND YU-HUI WANG ........................................................................................................ 631
The Relationship Between Core Self-evaluations, View of God, and Intrinsic/Extrinsic Religious Motivation: JAMES W. SMITHE AND ALAN G. WALKER ........................................................................................................ 647

Errata .................................................................................................................. 663
SELF-ACCEPTANCE MEDIATES THE RELATIONSHIP BETWEEN MINDFULNESS AND PERCEIVED STRESS

MARCUS A. RODRIGUEZ

Beijing Key Laboratory of Learning and Cognition, Department of Psychology
Capital Normal University, Beijing

Department of Psychology and Neuroscience, Duke University

WEI XU, XIAOMING WANG, AND XINGHUA LIU

Beijing Key Laboratory of Learning and Cognition, Department of Psychology
Capital Normal University, Beijing

Summary.—Previous research has shown that the effects of mindfulness-based interventions and increased trait mindfulness are associated with reduced stress. Further research is needed to understand the mechanisms by which mindfulness-based interventions exert their beneficial effect on decreased stress. The purpose of the present study was to examine the role of self-acceptance in the relationship between trait mindfulness and perceived stress among a sample of 132 students from Beijing, China. Results revealed that self-acceptance was found to partially mediate the relationship between mindfulness and stress. Limitations, clinical implications, and directions for future research are identified.

Stress has been shown to be associated with a range of physical and mental health problems (Schneiderman, Ironson, & Siegel, 2005; Richardson, Shaffer, Falzon, Krupka, Davidson, & Edmondson, 2012). One promising line of research indicates that mindfulness-based interventions are helpful in treating stress (Chiesa & Serretti, 2009). Nevertheless, mindfulness-based therapies need improvement.

Mindfulness can be defined as the awareness that arises through “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p. 4). The so-called “Third Wave” of cognitive-behavioral therapies (Hayes, 2004), including Mindfulness-Based Cognitive Therapy (MBCT), Acceptance and Commitment Therapy (ACT), and Dialectical Behavior Therapy (DBT), integrates mindfulness-related principles and strategies into treatments for a wide range of psychological problems across a wide range of populations. Many treatment studies have demonstrated these treatments lead to clinically significant reductions in
psychological symptoms and improvements in perceived stress (Nyklíček & Kuipers, 2008; $d=0.64$), as well as positive affect and subjective well-being (Keng, Smoski, & Robins, 2011). However, in order to develop more targeted and effective interventions, more work is needed to examine mechanisms by which mindfulness produces these beneficial effects.

A growing body of evidence suggests mindfulness training leads to increased trait mindfulness (Shapiro, Oman, Thoresen, Plante, & Flinders, 2008; Robins, Keng, Ekblad, & Brantley, 2012; $f^2=0.47$), and increased trait mindfulness, in turn, is associated with decreased perceived stress (e.g., Shapiro, Brown, & Biegel, 2007). There is preliminary empirical work investigating mechanisms of mindfulness interventions (for review, see Chiesa, Anselmi, & Serretti, 2014). The present study seeks to extend this line of research by proposing and exploring self-acceptance as another mechanism by which mindfulness-based interventions exert their beneficial effect on stress.

Self-acceptance is defined as holding a positive regard for or attitude toward oneself as a whole, including one’s past life experiences. Self-acceptance does not rely on the approval of others or personal achievements (Ellis, 2005). Empirical evidence suggests self-acceptance is positively associated with subjective well-being (Makino & Tagami, 1998; Sanjuán, 2011). Moreover, Thompson and Waltz (2008) showed that mindfulness has a positive relationship with self-acceptance ($r=.31$), and they also proposed that mindfulness training is one way to cultivate self-acceptance. Indeed, empirical studies have shown mindfulness-based interventions not only decrease stress, but also increase self-acceptance (Cohen-Katz, Wiley, Capuano, Baker, Deitrick, & Shapiro, 2005) and self-compassion (Shapiro, et al., 2007). Corroborating these findings, Hollis-Walker and Colosimo (2011) found that self-compassion mediated the relationship between mindfulness and subjective well-being. Jimenez, Niles, and Park (2010) found that self-acceptance mediated the relationship between trait mindfulness and depressive symptoms ($\beta=-.38$). According to their model, higher mindfulness was associated with higher positive emotions and self-acceptance, which have protective effects in preventing depressive symptoms (Brown, Ryan, & Creswell, 2007).

An exploration of the potential mediating role of self-acceptance in the relationship between mindfulness and stress is important for several reasons. First, although previous research has demonstrated that self-acceptance mediates the relationship between mindfulness and peace of mind, a positive mental health outcome (Xu, Rodriguez, Zhang, & Liu, 2014), self-acceptance has not been examined in the context of the stress, a mental health problem. Second, a better understanding of specific mechanisms enables the development of brief targeted interventions for stress.
Loving-kindness meditations and programs such as Mindful Self-compassion have been shown to enhance self-acceptance (Carson & Langer, 2006; Neff & Germer, 2013; Boellinghaus, Jones, & Hutton, 2014) and can promote beneficial effects within as little as three weeks of practice (Albertson, Neff, & Dill-Shackleford, 2014), which makes these approaches potentially more feasible and generalizable than comprehensive mindfulness treatments which tend to take at least eight weeks of intensive practice to promote lasting effects. Third, this investigation contributes to the larger literature investigating mindfulness mechanisms. If successful, i.e., if self-acceptance is shown to play a mediating role in the effect of mindfulness on perceived stress, this study will serve as a foundation for future studies to explore the relative effect of all proposed mechanisms of mindfulness simultaneously. This line of research can ultimately elucidate for whom and in what circumstances different aspects of mindfulness are effective in addressing the problem of perceived stress.

The possible mediating role of self-acceptance in the relationship between mindfulness and perceived stress also has important theoretical implications. Mindfulness can be conceptualized in numerous ways, but most mindfulness scales aim to measure and mindfulness interventions aim to enhance both the attentional (e.g., observing the present moment and acting with awareness) and attitudinal (e.g., non-judging of inner experience and non-reactivity to inner experience) facets of mindfulness (Kabat-Zinn, 1994; Baer, 2003). However, non-judgment, non-reactivity, non-striving, and curiosity—attitudinal facets of mindfulness—are not by nature self-acceptance. Improvements in one’s awareness of and non-judgmental orientation toward experiences in the present moment (e.g., external events or internal thoughts, emotions, and body sensations) do not necessarily extend to acceptance of the self as a whole. For example, it is possible to remove judgments of one’s experience in a moment, but still remain non-accepting of the self in a more global sense. Although most researchers and clinicians would agree that self-acceptance is a desired outcome of mindfulness (along with related constructs, such as self-compassion and peace of mind), there is more controversy surrounding the question of whether self-acceptance is also a mechanism by which mindfulness exerts its effect on interpersonal, behavioral, cognitive, and emotional domains of functioning.

This study was designed to extend previous research concerning the mechanisms of actions underlying mindfulness, i.e., why some individuals seem to benefit more from mindfulness-based interventions targeting stress. A mediation model is proposed: self-acceptance would either partially or fully mediate the relationship between mindfulness and perceived stress. This study makes an important and unique contribution to
the literature because no study has explicitly examined the role of self-ac-
ceptance as a mechanism involved in the mindfulness-stress relationship.

Hypothesis. With self-acceptance controlled, mindfulness will still
account for variance in perceived stress.

Method

Participants

One hundred and thirty-two students from a university in Beijing,
China, participated in this study. The sample was comprised of under-
graduate (n = 109; 82.6%) and graduate (n = 23; 17.4%) students. Their
mean age was 21.1 yr. (SD = 1.9). Women comprised 50% of the sample. El-
igibility requirements were related to mental health background and med-
itation experience. No participants were excluded because (1) none of the
participants endorsed having ever received a mental disorder diagnosis or
psychological treatment from a mental health professional, and (2) none of
the participants had long-term meditation experience, which was opera-
tionalized as regular meditation practices for two years or more.

Procedure

Participants were recruited between April and June 2012 using flyers
on campus. Flyers included the statement “Students needed to complete
a series of questionnaires,” as well as the contact information for the pri-
mary investigator responsible for the study in the Department of Psychol-
ogy. Students interested in the study were asked to contact the study coor-
dinator to determine a suitable time for completing the questionnaires. The
surveys were completed in a quiet laboratory setting. All participants com-
pleted the questionnaires anonymously and voluntarily. After completing
the packet, all participants were debriefed and given monetary compensa-
tion for their time and effort. Ethical principles outlined in the Declaration
of Helsinki regarding research involving human subjects were followed.

Measures

Mindfulness.—Mindfulness was assessed using the 39-item Chinese
version of the Five-Facet Mindfulness Questionnaire (FFMQ; Deng, Liu,
Rodriguez, & Xia, 2011), originally developed by Baer (2003). The FFMQ
is organized into five subscales, with seven or eight items in each subscale.
Deng, et al. (2011) reported internal reliabilities of .45–.85 and test-retest re-
liabilities of .44–.74 for the five factors of the Chinese version of the FFMQ.
The five facets include Observing (e.g., “I pay attention to sensations, such
as the wind in my hair or sun on my face”), Describing (e.g., “I’m good at
finding words to describe my feelings”), Non-judging of Inner Experience
(e.g., “I make judgments about whether my thoughts are good or bad”),
Non-reactivity to Inner Experience (e.g., “I perceive my feelings and emotions without having to react to them”), and Acting with Awareness (e.g., “I find myself doing things without paying attention”). Items are rated on a 5-point Likert-type scale with anchors 1: Never or rarely true and 5: Very often or always true. Scores range from 39 to 195, with higher scores indicating higher trait mindfulness. Nineteen items are reverse scored. Cronbach’s α internal consistencies of the five factors in this sample were as follows: .75 for observing, .84 for describing, .66 for non-judgment, .45 for non-reactivity, and .79 for acting with awareness. Due to the low reliability of the non-reactivity factor, this scale was excluded from further analyses.

Perceived stress.—Perceived stress was measured using the Chinese version of the 14-item Perceived Stress Scale (CPSS; Yang & Huang, 2003), which was developed by Cohen, Kamarck, and Mermelstein (1983). Yang and Huang (2003) reported the CPSS possesses internal (.78) and test-retest (.78) reliability. The CPSS is scored on a 5-point Likert-type scale with anchors 0: Never and 4: Very often. Scores range from 0 to 64. Higher scores reflect greater perceived stress in the last month. Sample items include, “In the last month, how often have you been upset because of something that happened to you unexpectedly?” and “In the last month, how often have you felt nervous and ‘stressed’?” Cronbach’s α reliability coefficient for the PSS in this sample was .78.

Self-acceptance.—The Self-Acceptance Questionnaire (SAQ; Cong & Gao, 1999) is a 16-item measure of self-acceptance. Cong and Gao (1999) reported an internal reliability of .85 and a test-retest reliability of .77. The SAQ is scored on a 4-point Likert-type scale with anchors 0: Strongly agree and 3: Strongly disagree. Scores range from 0 to 48, with higher scores representing greater self-acceptance. Sample items include, “Generally speaking, I am very satisfied with myself” and “I am often concerned that people look down on me” (reverse scored). Cronbach’s α internal consistency of the SAQ in this sample was .86.

**RESULTS**

Table 1 displays descriptive statistics for participants’ mindfulness, self-acceptance, and stress scores. As expected, greater mindfulness was significantly associated with less stress ($r = -0.60, p < 0.001, 95\% CI = -0.74, -0.43$) and was also associated with higher self-acceptance ($r = 0.65, p < 0.001, 95\% CI = 0.54, 0.74$). Higher self-acceptance was significantly associated with less stress ($r = -0.72, p < 0.001, 95\% CI = -0.80, -0.62$).

In the mediation model tested, perceived stress was the dependent variable, mindfulness the predictor, and self-acceptance the mediator. A variable functions as a mediator when it meets three conditions (Baron & Kenny, 1986). First, the predictor (mindfulness) is significantly correlated with the presumed mediator (self-acceptance). Second, the predictor is sig-
nificantly correlated with the dependent variable (perceived stress). Third, when the predictor and the presumed mediator concurrently predict the dependent variable, a previously significant relationship between the independent and dependent variable is no longer significant or decreases.

The results of the mediating effect are displayed in Fig. 1. In order to test the first two assumptions, two separate regression analyses were conducted. Mindfulness was found to significantly predict self-acceptance ($\beta = 0.65, p < .001$) and perceived stress ($\beta = -0.60, p < .001$). However, when mindfulness and self-acceptance were considered together (i.e., simultaneously in a regression model), the relationship between mindfulness and perceived stress was reduced ($\beta = -0.22, p < .01$). A follow-up Sobel Test (Preacher & Leonardelli, 2001) indicated that the indirect effect was statistically significantly different from zero ($Z = -5.93, p < .001$), indicating a partial mediation effect of self-acceptance on the relationship between mindfulness and perceived stress.

**DISCUSSION**

The purpose of the present study was to examine the role of self-acceptance in the relationship between trait mindfulness and perceived

![Fig. 1. Self-acceptance partially mediates the relationship between mindfulness and stress. Values near arrows represent standardized beta coefficients. Value within parentheses is the direct effect of mindfulness on stress (significantly reduced when controlling for self-acceptance). *p < .01. †p < .001.](image-url)
stress among a sample of 132 students from Beijing, China. As predicted, mindfulness and self-acceptance were both independently negatively associated with perceived stress. Based on the Baron and Kenny (1986) method of mediation, results of the present study suggest that self-acceptance partially mediates the relationship between mindfulness and stress.

**Theoretical Implications**

Recent research has focused on understanding the mechanisms of mindfulness that account for the benefits of practicing mindfulness meditation and increasing trait mindfulness. The conceptual body of research suggests that mindfulness reduces stress and depression through mediating variables such as cognitive flexibility, values clarification, enhanced attention, and acceptance of experience (Kabat-Zinn, 1994). Empirical studies suggest enhanced positive emotional regulation strategies, decreased rumination, and experiential avoidance are the mechanisms associated with symptom reduction as well as the enhancement of positive emotions. The present study extends this line of research and fills an important gap in the literature by explicitly investigating whether self-acceptance is an essential component of mindfulness (Bishop, Lau, Shapiro, Carlson, Anderson, Carmody, et al., 2004). This type of research sets the foundation for comparative studies exploring the relative effects of different mechanisms in promoting benefits of mindfulness interventions, which can ultimately reveal when and for whom different aspects of mindfulness are effective in addressing specific, targeted problems of clinical relevance. By identifying specific processes linked to specific clinical outcomes, researchers can tailor mindfulness-based interventions to efficiently address the particular problems of individual clients.

**Clinical Implications**

One clinical implication of the present findings is that clinicians can directly and explicitly target self-acceptance or self-compassion in mindfulness-based treatments, in order to enhance the beneficial effect of mindfulness-based interventions on stress reduction. It could be that enhancing mindfulness without first, or simultaneously, increasing self-acceptance would diminish the beneficial effects of mindfulness on stress. Loving-kindness Meditation is an example of such an approach, which has been found to enhance non-judgment and non-reactivity in mindfulness-based interventions (Boellinghaus, et al., 2014). Similarly, the fundamental dialectic in Dialectical Behavior Therapy is that of acceptance and change, which entails patients accepting themselves as they are in the moment while simultaneously working to change.

Previous research suggests that mindfulness interventions that teach attention or acting with awareness skills without also emphasizing how to pay attention—i.e., non-judgmentally—may cause more harm than
good (Peters, Eisenlohr-Moul, Upton, & Baer, 2013). Accordingly, therapists now understand the importance of emphasizing both the attentional and attitudinal aspects of mindfulness. Similarly, findings from the present study suggest that therapists can intentionally and explicitly help patients be mindful of whether a lack of self-acceptance is interfering with their efforts to attend to their experiences in the present moment and to do so in a way that is characterized by non-judgment and non-reactivity.

Limitations and Conclusions

Several limitations of the present study, most of them sample-related, suggest areas for improvement and future research. First, the present study included a relatively small (N=132) and homogeneous (i.e., college students) sample of volunteer participants. Generalizations beyond the population sampled in this study should be made tentatively until such time as they can be replicated in a larger, more diverse sample, using randomization methods, and among clinical populations. Furthermore, the present study should be replicated in other cultural contexts. Christopher, Charoensuk, Gilbert, Neary, and Pearce (2009) found that conceptualizations of mindfulness differ across cultures and can influence patterns of responding to self-report mindfulness scales. Specifically, compared to their American counterparts, Thai participants seemed to view mindfulness as a more dynamic and holistic construct, without clear distinctions between acting with awareness and accepting without judgment. In order to demonstrate causality in this model, randomized clinical trials could be conducted to examine whether self-acceptance enhances mindfulness-based interventions for stress and anxiety, or whether self-acceptance serves as a protective factor against perceived stress in mindfulness-based prevention interventions, such as Mindfulness-based Cognitive Therapy. Finally, emerging research suggests most traits demonstrate intraindividual variability across time. Accordingly, research using long-term longitudinal or ecological momentary assessment methods are needed to examine the effect of naturally occurring within-person fluctuations in mindfulness and self-acceptance on perceived stress and psychological well-being.

The current study contributes to the recent body of literature that attempts to understand the mechanisms of mindfulness that partially account for the beneficial effects of mindfulness-based interventions (e.g., Mindfulness-based Stress Reduction or Acceptance and Commitment Therapy) and the practice of mindfulness meditation. The present findings corroborate previous research (Cohen-Katz, et al., 2005; Hollis-Walker & Colosimo, 2011; Sanjuán, 2011) that suggests higher trait mindfulness is associated with increased self-acceptance and decreased psychological distress. Results from the mediation model explored in this study provide preliminary empirical evidence supporting the theory that self-acceptance is an important mechanism underlying the negative correlation between mindfulness and perceived stress.
REFERENCES


Accepted January 26, 2015.