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# Overcoming the Barriers to Self-Knowledge: Mindfulness as a Path to Seeing Yourself as You Really Are

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## Abstract

People's beliefs about their personality, or how they typically think, feel, and behave, correspond somewhat to objective accuracy criteria. Yet recent research has highlighted the fact that there are many blind spots in self-knowledge and that these blind spots can have fairly negative consequences. What can people do to improve self-knowledge? The current article suggests that the construct of *mindfulness*, defined as paying attention to one's current experience in a nonevaluative way, may serve as a path to self-knowledge. Specifically, mindfulness appears to directly address the two major barriers to self-knowledge: informational barriers (i.e., the quantity and quality of information people have about themselves) and motivational barriers (i.e., ego-protective motives that affect how people process information about themselves). This article reviews the available evidence supporting the hypothesis that mindfulness improves self-knowledge and outlines promising future directions that might firmly establish an empirical link between mindfulness and self-knowledge.

## Keywords

self-knowledge, personality, mindfulness, mental health, cognition

“The quieter you become, the more you can hear.”

—Baba Ram Dass

There are many blind spots in self-knowledge, and these blind spots can have negative consequences for the self and for others (Dunning, Heath, & Suls, 2004; R. W. Robins & John, 1997; Tenney & Spellman, 2011; Vazire, 2010; Vazire & Carlson, 2011; Wilson, 2002, 2009). For example, one who overestimates the positivity of his or her personality or status is often disliked by others (Anderson, Ames, & Gosling, 2008; Colvin, Funder, & Block, 1995; Paulhus, 1998; R. W. Robins & Beer, 2001), whereas having insight into how others perceive the self and acknowledging one's flaws seems to attenuate the negativity of others' impressions (Oltmanns, Gleason, Klonsky, & Turkheimer, 2005; Ward & Brenner, 2006). Poor self-knowledge is also associated with negative intrapersonal consequences, such as weak academic achievement and emotional problems (Baumann, Kaschel, & Kuhl, 2005; Y. Kim & Chiu, 2011; Y. H. Kim, Chiu, & Zou, 2010; Schröder-Abé, Rudolph, & Schütz, 2007; Schultheiss, Jones, Davis, & Kley, 2008). Likewise, lack of insight into how one will feel or behave in the future tends to result in poor decision making, disappointment with unpredicted outcomes, and ultimately lower life satisfaction (Schkade & Kahneman, 1998; Wilson & Gilbert, 2005).

What might shed light on blind spots in self-knowledge? The goal of the current article is to explore the hypothesis that mindfulness, often defined as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p. 4), improves self-knowledge. Mindfulness has received attention for its positive effects on mental and physical health (Carmody & Baer, 2008; Grossman, Niemann, Schmidt, & Walach, 2004; Hofmann, Sawyer, Witt, & Oh, 2010; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008). The current article reviews evidence suggesting that mindfulness might also improve self-knowledge, an outcome that has been overlooked in the literature.<sup>1</sup>

In the following sections, I first summarize the two major barriers to self-knowledge, or factors that generally prevent people from seeing themselves as they really are. Then I further define the construct of mindfulness and review the available evidence that links mindfulness to self-knowledge. Finally, I discuss promising future directions and important considerations for moving forward in this area of research.

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## Self-Knowledge of Personality

Self-knowledge of personality reflects the accurate perception of one's personality, or one's pattern of thinking, feeling, and behaving, as well as knowledge about how others perceive those patterns (Vazire & Carlson, 2010). According to this definition, a person who has self-knowledge is aware of his general tendencies (e.g., that he tends to be quiet and reserved) as well as his context-specific tendencies (e.g., that he is talkative at parties). A person who has self-knowledge is also aware of her reputation (e.g., that others think she is funny). Thus, self-knowledge reflects people's awareness of their patterns of thinking, feeling, and behaving as well as awareness of their reputation (for a review of additional types of self-knowledge, see Wilson, 2009).

How well do people know themselves? Overall, there is a moderate relationship between self-reports and criteria that reflect a person's actual personality (Vazire & Carlson, 2010, 2011). For instance, self-perceptions of the Big Five traits are moderately correlated with behavior measured during a social interaction in the laboratory (mean  $r = .34$ ; Back, Schmukle, & Egloff, 2009), with behavior measured in a person's everyday life (mean  $r = .27$ ; Mehl, Gosling, & Pennebaker, 2006), and with life outcomes that reflect an aggregation of several behaviors (e.g., criminality, divorce, occupational success; Ozer & Benet-Martinez, 2006). Self-perceptions of traits are also associated with the consensual impressions of others for normal traits (mean  $r = .55$ ; Connolly, Kavanagh, & Viswesvaran, 2007) and pathological traits (mean  $r = .39$ ; Klonsky, Oltmanns, & Turkheimer, 2002). Finally, people's beliefs about how they are seen by others, or their metaperceptions of personality traits, are associated with how others actually see them (mean  $r = .32$ ; Carlson, Vazire, & Furr, 2011).

People have some insight into what they are like, but a growing body of research suggests that self-knowledge is far from perfect. For example, people are often unaware of how they behave (e.g., Gosling, John, Craik, & Robins, 1998), how and why they make certain decisions (Nisbett & Wilson, 1977), what truly motivates them (Schultheiss & Brunstein, 1999), how they will behave in the future (Diekmann, Tenbrunsel, & Galinsky, 2003; Osberg & Shrauger, 1986), and how they will feel in the future (Wilson & Gilbert, 2005). In fact, others know more than the self knows about several personality traits and behaviors (Carlson, Vazire, & Oltmanns, in press; Vazire, 2010; Vazire & Mehl, 2008). Such findings have led to the conclusion that "people's capacity to evaluate themselves and predict their behavior is usually quite modest and often much more meager than common intuition would lead one to believe" (Dunning et al., 2004, p. 70).

## Barriers to self-knowledge

Why do people fail to see themselves accurately? Accurate self-perception involves detecting and accurately utilizing relevant and available cues about one's personality (Funder, 1995, 1999). For example, self-perception theory argues that

people observe their own behavior to infer their ambiguous, internal attributes (Bem, 1972). Thus, to achieve self-knowledge, people must observe themselves engaging in a behavior (e.g., donating to charity) that is relevant to a specific trait (e.g., generosity) and then accurately infer the meaning of that behavior with respect to the trait. Although there are many factors that interfere with this process, Vazire's (2010) self-other knowledge asymmetry model has identified two fundamental barriers to self-knowledge: informational barriers and motivational barriers.

**Informational barriers to self-knowledge.** Informational barriers reflect instances when the quantity or quality of information that is available or detected interferes with self-knowledge. Sometimes information is simply unavailable. In fact, a great deal of personality is hidden from conscious awareness (Wilson, 2002). For instance, self-reports of affiliation, power, and achievement motives are often weakly associated with implicit measures, meaning that people have little insight into what truly motivates them (Schultheiss, Yankova, Dirlikov, & Schach, 2009). People also lack the visual perspective necessary to detect their own nonverbal behavior, which can lead to over- and underestimation of the transparency of one's inner states (Barr & Kleck, 1995; Cameron & Vorauer, 2008). A lack of insight into the transparency of one's inner states can have negative effects on self-knowledge for interpersonal characteristics (e.g., warmth).

Sometimes available information about one's personality is overlooked because of distraction or other cognitive demands. For example, in social interactions, which can be distracting, cognitively demanding situations, people often fail to notice social cues (Gilbert, Krull, & Pelham, 1988; Gilbert & Osborne, 1989) as well as their own behavior (e.g., interrupting; Gosling et al., 1998; Hall, Murphy, & Mast, 2007). People can also become so accustomed to their own behavioral style that they fail to notice how extreme or unique their behavior is relative to others' behavior (fish-and-water hypothesis; Kolar, Funder, & Colvin, 1996; Leising, Rehbein, & Sporberg, 2006). Likewise, people overlook information about how they behave because their thoughts, feelings, and intentions are more salient to them (Malle & Pearce, 2001).

Information about one's personality can also be ambiguous. Explicit feedback is available for some personality characteristics (e.g., IQ test scores), but for most characteristics, people are forced to rely on ambiguous social feedback (Blumberg, 1972; Swann, Stein-Seroussi, & McNulty, 1992). For example, negative feedback can be delivered as a "nonoccurrence," or a lack of a response (e.g., lack of a compliment), which can be difficult to interpret (Carter & Dunning, 2008). Unfortunately, much of the direct feedback people receive tends to be positively biased to avoid hurt feelings (DePaulo & Bell, 1996).

Finally, self-knowledge of personality often requires knowledge about what the typical person is like (Vazire & Solomon, in press). For example, people tend to overestimate their own level of neuroticism arguably because they lack

information about the typical person's neuroticism (e.g., Jordan et al., 2011). Lack of information about others should be especially problematic for self-knowledge of internal (e.g., neuroticism) and infrequently expressed (e.g., bravery) traits.

**Motivational barriers to self-knowledge.** Motivational barriers reflect instances when ego-protective motives influence the way people process and utilize information about their personality. Self-perception seems to be most influenced by two fundamental motives: a self-enhancement motive (i.e., the desire to perceive the self positively; Sedikides, 1993, 2007) and a self-verification motive (i.e., the desire to confirm one's identity; Swann, 1992, 1997). For example, self-enhancing information is processed more thoroughly than ego-threatening information, which results in a better memory for positive relative to negative information about the self (Green, Sedikides, & Gregg, 2008; Sedikides, Green, & Pinter, 2004). Likewise, people self-verify their identity by dismissing and avoiding feedback that contradicts their preconceived positive or negative self-views. For instance, people perceive feedback as inaccurate when it is more negative or more positive than expected (Brett & Atwater, 2001; Sargeant, Mann, Sinclair, Van der Vleuten, & Metsemakers, 2008; Swann, 1997). Thus, motivational barriers bias the processing of information about one's personality, which often leads to inaccurate self-perceptions.

### Overcoming the barriers to self-knowledge

How can one overcome barriers to self-knowledge? Thus far, efforts to improve self-knowledge have fallen short. For instance, in one study, Vazire, Mehl, and Carlson (2010) gave participants direct feedback about their personality but found no change in self-knowledge. Participants in their study wore the electrically activated recorder (EAR; Mehl, Pennebaker, Crow, Dabbs, & Price, 2001) for several days, a device that records audible, everyday behaviors (e.g., socializing, watching TV). Half of participants listened to their own sound files, but their self-perceptions were no more accurate than before they wore the EAR and were no more accurate than the self-perceptions of participants who did not hear their sound files.

Introspection also seems to be another dead end rather than a path to self-knowledge. Introspection involves examining the contents of one's mind with the goal of understanding how and why one thinks, feels, and behaves in certain ways (Wilson, 2002; Wilson & Dunn, 2004). People tend to place a great deal of trust in their introspections, but generating explanations for one's tendencies seems to make self-perceptions less accurate (Pronin, 2009; Pronin & Kugler, 2007; Silvia & Gendolla, 2001; Wilson, 2002; Wilson & Dunn, 2004; Wilson & LaFleur, 1995). For instance, people mistakenly focus more on their intentions than on their actual behavior when they introspect (Pronin, Gilovich, & Ross, 2004). Notably, explanatory introspection, or identifying why one has certain traits, before providing self-perceptions seems to curtail self-enhancement biases (Sedikides, Horton, & Gregg, 2007). For example, before providing self-perceptions of the trait *honest*,

participants might recall instances when they told people how they felt when it was not easy to do so (i.e., evidence that they are honest) or instances when they lied to someone (i.e., evidence that they are not honest). However, it is unlikely that people continued to use this strategy outside of the laboratory setting.

Why do self-knowledge interventions fail? It is possible that self-knowledge cannot be improved, but a more likely explanation is that interventions have not addressed both barriers to self-knowledge. For example, feedback and introspection might increase the amount of information people have about their personality, but ego-protective biases likely influence how feedback is processed and guide the explanations people generate when engaging in introspection (Wilson, 2002). Likewise, identifying why one has a trait does not tackle fundamental informational barriers (e.g., cognitive distraction). Thus, an intervention that addresses both informational and motivational barriers should have a more robust effect on self-knowledge of personality. The following sections explain how mindfulness may overcome both barriers to self-knowledge by improving the amount of information people have about themselves as well as diminishing the tendency to process information in a biased way.

### Mindfulness

Mindfulness has been broadly defined as nonevaluative, non-elaborative attention to and awareness of one's current experience (Brown & Ryan, 2003; Grossman et al., 2004; Kabat-Zinn, 1990, 1994; Segal, Williams, & Teasdale, 2002), or "nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise" (Baer, 2003, p. 125). One of the most widely used operational definitions of mindfulness highlights two core components: attention to one's current experience and nonevaluative observation of that experience (Bishop et al., 2004). The attention component reflects a sustained awareness of one's feelings, thoughts, and behaviors as they occur without elaboration. Put another way, mindfulness attention reflects metacognitive monitoring of one's current experience. The nonevaluative observation component reflects a general curiosity, openness, and acceptance of one's experience without expectations and without trying to alter the experience. Although some researchers have focused exclusively on the attention component of mindfulness (e.g., Brown & Ryan, 2003), the hypothesized link between mindfulness and self-knowledge outlined in the current article is based on the two-component definition of mindfulness.<sup>2</sup>

On the surface, mindfulness may resemble other constructs and processes that involve self-focus, such as private self-consciousness (i.e., a chronic tendency to direct attention toward thoughts and feelings; Fenigstein, Scheier, & Buss, 1975), psychological mindedness (i.e., awareness and understanding of psychological processes; Beitel, Ferrer, & Cecero, 2005), objective self-awareness (Duval & Wicklund, 1972), or introspection. However, mindfulness is conceptually and empirically distinct (Baer, Smith, & Allen, 2004; Beitel et al.,



2005; Bishop et al., 2004; Lau et al., 2006; Nyklíček & Denollet, 2009). The key difference is that self-focused constructs involve analyzing, explaining, or interpreting what is observed, whereas mindfulness involves observation of one's experience without "telling a story" (e.g., thoughts are just thoughts; Kabat-Zinn, 1990). For example, in response to loneliness, introspection might result in explanations for the emotion, such as identifying past choices or personality traits that led to social isolation. Unfortunately, introspections are often wrong, and introspecting about the causes of negative emotions seems to have negative mental health outcomes (e.g., depression; Teasdale et al., 2000, 2002). In contrast, mindfulness involves simply noticing thoughts and emotions as they arise without elaboration or rumination. This kind of detached observation, often called *decentering* (Segal et al., 2002), allows people to experience fairly aversive thoughts and emotions as temporary events rather than experiences that require a response or an explanation.

### **Operationalization of mindfulness**

The two-component definition of mindfulness can be conceptualized and measured as a trait, a state, or a skill. Trait mindfulness is assessed with self-report measures (e.g., Five Facet Mindfulness Questionnaire; Carmody & Baer, 2008) and reflects the extent to which people tend to be mindful in their everyday lives. Notably, people can be mindful without mindfulness training, but people can also increase their trait mindfulness with training. Some argue that trait measures are limited because they lack construct validity (e.g., there is no gold standard for a mindful person) and cannot test causal mechanisms (e.g., Grossman, 2011; but see Brown, Ryan, Loverich, Biegel, & West, 2011). However, trait measures do correlate with outcomes theoretically related to mindfulness, such as less mind wandering (e.g., Mrazek, Smallwood, & Schooler, 2012) and less defensiveness to ego-threatening information (Niemic et al., 2010), which suggests that these measures do have some construct validity. State mindfulness reflects a momentary episode of mindfulness rather than a general tendency. In research settings, state mindfulness is often induced with a brief mindfulness exercise (e.g., guided meditation) and then assessed with self-report measures (e.g., Toronto Mindfulness Scale; Lau et al., 2006). Conceptualizing mindfulness as a skill reflects the idea that mindfulness can be developed with practice, such as with mindfulness meditation or with mindfulness-based courses or treatments (for a review of mindfulness-based training techniques, see Baer, 2003). Mindfulness meditation involves focusing on one's breath; noticing, without elaboration, any thoughts, feelings, or sensations that might arise; and returning one's attention to the breath if and when attention wanders. Mindfulness-based courses (e.g., mindfulness-based stress reduction [MBSR]; Kabat-Zinn, 1990) involve meditation training, daily mindfulness exercises (e.g., mindful eating), and body awareness training (e.g., body scanning). Mindfulness-based treatments are similar but also integrate clinical interventions such as cognitive therapy techniques

(e.g., mindfulness-based cognitive therapy [MBCT]; Segal et al., 2002).

### **Mindfulness as a path to self-knowledge**

The two-component conceptualization of mindfulness outlined by Bishop and colleagues (2004) provides a theoretical framework for understanding how mindfulness may serve as a path to self-knowledge. Broadly speaking, paying more attention to one's current experience may help a person to overcome many informational barriers, and nonevaluative observation may help one to overcome many motivational barriers to self-knowledge.

**Paying attention to one's current experience.** Paying more attention to one's current experience should counteract informational barriers to self-knowledge by increasing the amount of information individuals have about their patterns of thinking, feeling, and behaving. An important assumption is that mindfulness improves the ability to sustain one's attention on the current moment and to process more information. Several lines of evidence support this assumption. First, relative to untrained individuals, those who have been trained in mindfulness demonstrate superior executive attention skills (Chambers, Lo, & Allen, 2008; Hodgins & Adair, 2010; Jha, Krompinger, & Baime, 2007; Lutz et al., 2009; MacLean et al., 2010; Tang et al., 2007). For instance, compared with control groups, meditators perform better on conflict monitoring tasks, which require prioritizing among several competing tasks, and individuals trained in MBSR perform better on orienting tasks, which require directing or limiting one's attention to a subset of information (Jha et al., 2007). Second, trait mindfulness, state mindfulness, and mindfulness training are associated with paying attention to the current moment, that is, with less mind wandering (Brewer, Worhunsky, et al., 2011; Mrazek et al., 2012). Third, individuals trained in mindfulness have a higher working memory capacity, which is the amount of information people can actively hold in mind while operating on that information (Chambers et al., 2008; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010). Taken together, these cognitive skills may help people pay more attention to and notice more information about their patterns of feeling, thinking, and behaving.

**Nonevaluative observation of one's current experience.** Nonevaluative observation should help individuals to overcome motivational barriers to self-knowledge by reducing reactivity and defensiveness to ego-threatening information. Trait mindfulness and mindfulness training are associated with less reactivity and a greater willingness to experience negative emotions (Arch & Craske, 2006; Creswell, Way, Eisenberger, & Lieberman, 2007; Farb et al., 2010; Modinos, Ormel, & Aleman, 2010; Way, Creswell, Eisenberger, & Lieberman, 2010). For instance, individuals trained in MBSR reported the same level of dysphoria as untrained individuals

after watching a sad film but showed less neural activation in areas associated with self-referential processing. The authors argued that mindfully trained individuals experienced sadness as “innocuous sensory information rather than as an affect-laden threat to self requiring a regulatory response” (Farb et al., 2010, p. 31).

Mindfulness also reduces reactivity and defensiveness to ego-threatening information. When participating in the Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer, 1993), individuals higher in trait mindfulness reported less anxiety and had a lower cortisol response than did individuals lower in mindfulness (Brown, Weinstein, & Creswell, 2012). Britton, Shahr, Szepeswol, and Jacobs (2012) also found that individuals experienced less residual anxiety in response to the Trier Social Stress Test after completing mindfulness training (MBCT). Moreover, a recent study using the mortality salience paradigm, a priming technique that makes thoughts of death salient, found that mindfulness is associated with less defensive processing of thoughts of death, a fundamental threat to the self (Niemic et al., 2010). Specifically, the typical response to mortality salience is to bolster one’s self-esteem by defending worldviews (e.g., religious or political beliefs), but individuals higher in trait mindfulness defended their worldviews less, thought about death longer, and suppressed negative thoughts about death less than did individuals lower in mindfulness. In sum, mindfulness reduces reactivity and defensiveness toward ego-threatening information, which should reduce the tendency to process information about one’s personality in biased ways.

## Empirical Links Between Mindfulness and Self-Knowledge of Personality

Theoretically, mindfulness should overcome informational barriers and motivational barriers to self-knowledge by improving people’s ability to pay attention to their experience and to accept what they observe. To date, the link between mindfulness and self-knowledge of personality has not been the focus of empirical research. Consequently, much of the evidence is indirect. The following sections outline the available evidence linking mindfulness to self-knowledge of emotions, thoughts, behaviors, and knowledge of how others perceive one’s personality. When discussing studies that link mindfulness to self-knowledge, I will indicate whether the evidence is from a trait mindfulness study (i.e., correlational) or from state mindfulness or mindfulness training studies (i.e., experimental).

### Self-knowledge of emotions

The superior attention skills and reduced reactivity associated with mindfulness should increase awareness of a wider range of emotions (Corcoran, Farb, Anderson, & Segal, 2010; Wadlinger & Isaacowitz, 2011). In line with this hypothesis, mindfulness is associated with greater clarity and discrimination of emotions. An experience sampling study found that

individuals who scored higher on mindfulness (i.e., the Nonreactivity subscale of the Five Facet Mindfulness Questionnaire) were more able to differentiate among their emotions than individuals who scored lower on mindfulness (Hill & Updegraff, 2012). Likewise, a study examining the effects of mindfulness training on chronic worriers found that worriers who received mindfulness training improved in their ability to discriminate among their emotions more than did individuals in a relaxation condition (Delgado et al., 2010).

Mindfulness also seems to shed light on implicit feelings of self-worth, which are generally hidden from conscious awareness. In fact, in contrast to introspection, which tends to weaken the association between implicit and explicit measures of self-esteem, Koole, Govorun, Cheng, and Gallucci (2009) found that a short meditation exercise (11 min) brought people’s explicit feelings of self-worth more in line with their implicit self-esteem. Participants in their study completed an implicit self-esteem measure, engaged in either a meditation exercise (i.e., state mindfulness induction) or a similar control exercise, and then completed an explicit self-esteem measure. Those who meditated showed a stronger association between their implicit and explicit self-esteem. Notably, individuals higher in trait mindfulness also show a stronger association between their implicit and explicit feelings of self-worth (Brown & Ryan, 2003).

Recall that one blind spot in self-knowledge is the ability to predict how one will feel in the future (Wilson & Gilbert, 2005). It is thus interesting to note that Emanuel, Updegraff, Kalmbach, and Ciesla (2010) found that individuals higher in trait mindfulness were less prone to the impact bias (i.e., overestimating an event’s emotional impact) than individuals lower in mindfulness; the former group were consequently more accurate in their predictions about how they would emotionally respond to a future event.

### Mindfulness and self-knowledge of thoughts

Mindfulness should improve the amount of information people have about their pattern of thinking (e.g., goals, motives), particularly ego-threatening patterns of thinking. Mindfulness may also improve awareness of one’s patterns of thinking in response to emotions (e.g., thoughts in response to sadness) given that mindfulness reduces distraction during emotional experiences.

One link between mindfulness and self-knowledge of thoughts comes from a study comparing the effects of short (15-min) mental exercises on emotional reactions to repetitive thoughts. Relative to individuals who engaged in loving-kindness meditation (Salzberg, 1995) or progressive muscle relaxation, individuals who engaged in mindfulness meditation reported more thoughts during the exercise (i.e., increased awareness of thoughts) but were less emotionally reactive to their thoughts (Feldman, Greeson, & Senville, 2010).

One indirect link between mindfulness and self-knowledge of thoughts comes from work examining the effect of mindfulness on memory. Perhaps as a defense against reexperiencing

unpleasant events, depressed and formerly depressed patients tend to have an overgeneralized autobiographical memory, meaning that they recall past events in a broad, vague way (Williams et al., 2007). However, after mindfulness training (MBCT), depressed individuals were able to recall aversive memories about their relapse episode in more detail (Hargus, Crane, Barnhofer, & Williams, 2010; Williams, Teasdale, Segal, & Soulsby, 2000). Given that one motivational barrier to self-knowledge is a biased memory for positive relative to negative information about the self (Green et al., 2008; Sedikides et al., 2004), mindfulness might help improve self-knowledge by providing more balanced and detailed autobiographical information.

Another indirect link comes from work examining the effect of mindfulness training on craving. After a brief mindfulness exercise, individuals showed less impulsive reactions toward food than did individuals in a control condition (Papies, Barsalou, & Custers, 2012). The authors suggested that it was self-knowledge of cravings, particularly awareness of the fleeting nature of cravings, that diminished the typical behavioral response.

In sum, there is some evidence that mindfulness is associated with self-knowledge of thoughts, but future research is needed to establish a more direct link between them. For example, implicit and explicit measures of motives are weakly correlated, yet people appear to be more satisfied with life when their implicit motives and explicit goals are aligned (Schultheiss et al., 2009). Thus, one future direction might be to examine whether mindfulness training aligns implicit and explicit motives in the same way it aligns implicit and explicit self-esteem.

### **Self-knowledge of behavior**

Mindfulness should improve self-knowledge of one's pattern of behavior, particularly in cognitively demanding and emotionally arousing situations. Unfortunately, most evidence linking mindfulness to self-knowledge of behavior is indirect. One indirect link comes from work investigating self-compassion. Self-compassion, as defined by Neff (2003), reflects self-kindness (e.g., nonjudgmental understanding of oneself), common humanity (e.g., understanding that one's problems are common human experiences), and mindfulness. Although mindfulness and self-compassion are not synonymous, individuals who undergo mindfulness training increase in self-compassion, and those who are higher in trait mindfulness are also higher in self-compassion (Birnie, Speca, & Carlson, 2010; Orzech, Shapiro, Brown, & McKay, 2009; C. J. Robins, Keng, Ekblad, & Brantley, 2012). Of interest is one study that found that individuals higher in self-compassion are more accurate about their behavior than are individuals lower in self-compassion (Leary, Tate, Adams, Batts Allen, & Hancock, 2007). Participants in the study provided a videotaped introduction and then rated their own performance. Individuals higher in self-compassion demonstrated less self-criticism and held a

more accurate perception of their performance than did individuals who were lower in self-compassion.

Recall that one major blind spot in self-knowledge is nonverbal behavior. For example, people often overestimate how expressive they are (Barr & Kleck, 1995) and fail to notice when they engage in interpersonally significant behaviors (e.g., mimicry; Chartrand & Bargh, 1999). Some have speculated that greater proprioceptive feedback, or body awareness, might increase self-knowledge of one's nonverbal behavior, especially emotional expressions (e.g., Barr & Kleck, 1995). Mindfulness training is associated with greater awareness of bodily sensations, particularly in response to emotions, suggesting that mindfulness might improve self-knowledge of nonverbal behavior as well. For example, relative to individuals trained in dance and individuals in a control group, meditators showed greater awareness of their bodily sensations (e.g., heartbeat) in response to their emotions (Sze, Gyurak, Yuan, & Levenson, 2010). Others have found that people are more able to recall their own nonverbal behavior (e.g., smiling, eye contact) when they are less focused on being evaluated by others (Hall et al., 2007). Broadly speaking, the nonevaluative observation component of mindfulness might facilitate self-observation of nonverbal behavior by limiting the extent to which people focus on judging themselves. Taken together, greater attention to and less evaluative observation of the self may improve self-knowledge of nonverbal behavior.

There are some indirect links between mindfulness and self-knowledge of behavior, but future research is needed to clearly demonstrate that mindfulness sheds light on one's pattern of behavior. As discussed earlier, people have poor insight into their nonverbal behavior, and they are often unaware of how they behave in their everyday lives. Thus, one promising and important avenue for future research might be to examine whether mindfulness training improves self-knowledge of nonverbal behavior, such as smiling or fidgeting (e.g., measured in a laboratory setting), and of everyday life behaviors, particularly evaluative behaviors, such as gossiping or bragging (e.g., measured with the EAR).

### **Meta-accuracy**

Beliefs about how others perceive the self are called metaperceptions (Laing, Phillipson, & Lee, 1966), and the accuracy of these beliefs is called meta-accuracy (Kenny & DePaulo, 1993). To my knowledge, no study to date has directly examined the link between mindfulness and meta-accuracy. However, one way to examine this link is to explore whether mindfulness improves the detection and utilization of the information that generally results in more accurate metaperceptions. There are several sources of valid information people might use to discern how others perceive them, but one of the most promising sources seems to be self-perceptions of one's own behavior (Carlson & Kenny, 2012; Kenny & DePaulo, 1993; Kenny & West, 2008). People generally base their personality judgments of others on observations of



behavior (Funder & Sneed, 1993). Thus, using the same information (i.e., perceptions of one's own behavior) to guess how others perceive one's personality generally improves meta-accuracy (Albright, Forest, & Reiser, 2001; Albright & Malloy, 1999). As discussed above, there is some indirect evidence that mindfulness increases self-knowledge of one's behavior, which suggests that mindfulness might improve the accuracy of metaperceptions as well.

Another valid source of information people might use to discern how others perceive them is interpersonal feedback (Carlson & Kenny, 2012; Kenny & DePaulo, 1993). Yet when it comes to inferring how others see them, people seem to have trouble detecting and utilizing feedback (Kenny & DePaulo, 1993; Shechtman & Kenny, 1994). One reason may be that people are too distracted to notice important social cues (Gilbert et al., 1988). What is interesting is that individuals with higher working memory capacity (WMC) are more able to detect whether others like them than are individuals with lower WMC, suggesting that WMC aids in detecting subtle interpersonal cues (Lieberman & Rosenthal, 2001). Given that mindfulness improves WMC, mindfulness may also be associated with better detection of social cues.

Another explanation for why people overlook social feedback is that they fail to think about how their behavior might be observed or interpreted by others (Kenny & DePaulo, 1993). However, trait mindfulness and mindfulness-based training are associated with higher self-reported perspective taking and empathy, processes that involve thinking about and understanding the thoughts and emotions of others (Birnie et al., 2010; Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008; Shapiro, Schwartz, & Bonner, 1998). Thus, mindful individuals may be more inclined to take others' perspectives and consequently may be more able to see themselves in the eyes of others. Of course, feedback is not always available, especially when people refuse to provide extremely positive or negative feedback (e.g., Blumberg, 1972; DePaulo & Bell, 1996; Swann et al., 1992). Arguably, people may be more willing to provide direct, honest feedback to individuals who have more effective communication styles and who are less defensive to feedback. Trait mindfulness and mindfulness training are associated with more effective communication and with less conflict in relationships (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Carson, Carson, Gil, & Baucom, 2004; Wachs & Cordova, 2007). For example, Barnes and colleagues (2007) found that when discussing conflict issues with a romantic partner, individuals higher in trait mindfulness displayed less hostility and verbal aggression than did individuals lower in mindfulness. Likewise, mindfulness is associated with less hostility and defensiveness in response to social feedback (e.g., trait mindfulness; Lakey, Kernis, Heppner, & Lance, 2008). For example, after receiving feedback that fellow participants did not want to work with them on a subsequent task (i.e., social rejection feedback), individuals who went through a mindfulness induction responded with less aggression than individuals who did not go through the

intervention (i.e., they provided weaker blasts of noise to those individuals; Heppner et al., 2008). Given that mindful individuals are less reactive and defensive in social situations, others may provide mindful individuals with more direct and honest social feedback, which can improve their ability to infer how others see them.

Evidence for the link between mindfulness and meta-accuracy is indirect, but mindfulness is associated with skills and abilities that facilitate meta-accuracy. Future work could directly explore the link between mindfulness and meta-accuracy by examining whether mindfulness training improves people's ability to detect the first impressions they make or whether training improves people's meta-accuracy about their reputation among individuals from their everyday lives.

## Future Directions

The two components of mindfulness, attention to one's current experience and nonevaluative observation, seem to overcome some of the informational and motivational barriers to self-knowledge. However, much of the evidence linking mindfulness and self-knowledge is indirect. Indeed, the main goal of the current article is to spark interest in this topic and to highlight promising future directions that might establish more empirical links.

One clear next step is to establish additional links between mindfulness and self-knowledge of the specific elements of personality described above (i.e., patterns of feeling, thinking, and behaving). For example, does mindfulness training improve self-knowledge of implicit attitudes (e.g., stereotypes) or everyday behaviors (e.g., gossiping)? Likewise, future work could examine the link between mindfulness and self-knowledge of broad traits that encompass all three elements of personality (e.g., the Big Five). For example, neuroticism includes patterns of emotions (e.g., anxiety), thoughts (e.g., self-consciousness), and behaviors (e.g., irritability). In particular, future work might focus on evaluative traits (e.g., intelligence, agreeableness) that tend to show poor self-knowledge (Carlson et al., in press; Vazire, 2010). In fact, friends, family, and acquaintances are often more accurate than the self about evaluative traits. Thus, evidence that mindfulness interventions eliminate these self-other knowledge asymmetries will provide additional evidence that mindfulness can overcome barriers to self-knowledge.

Of course, a critical area for future research will be to identify the limitations of mindfulness as a path to self-knowledge. Some aspects of personality may simply be unobservable (e.g., implicit processes; Vazire, 2010; Wilson, 2002; Wilson & Dunn, 2004). Moreover, mindfulness probably will not overcome informational barriers that are due to a lack of information about what others are like (Vazire & Solomon, in press). That is, mindfulness should increase people's awareness of their anxious thoughts, but people may still overestimate how frequently they experience anxiety relative to others. Similarly, Wilson (2009) argues that knowledge of



psychological science, or exposure to basic psychological findings, is another way to improve self-knowledge. Arguably, mindfulness alone might not illuminate counterintuitive psychological processes, such as the bystander effect or conformity. Mindfulness might also have a greater effect on self-knowledge of internal aspects of personality (e.g., thoughts, emotions) than on external aspects (e.g., behavior), which might further exacerbate the tendency to overlook one's behavior. Finally, mindfulness probably will not overcome inaccurate feedback (e.g., deceptive social feedback).

There are also a couple of methodological considerations with respect to assessing the link between mindfulness and self-knowledge. First, there are a host of mindfulness measures, manipulations, and treatments but no clear consensus about which approach or measure best captures the construct of mindfulness (Brown et al., 2011; Grossman, 2011; Hayes & Shenk, 2004). Second, there are a variety of ways to measure self-knowledge of personality, such as comparing self-perceptions of traits to observed behavior or to the consensual impression of others (Vazire & Wilson, 2012; Vogt & Colvin, 2005; Wilson, 2009). On the one hand, disagreement about how to measure the two constructs makes it difficult to decide how to best study the link between them. On the other hand, these options provide researchers with a variety of tools, some of which might help to overcome practical limitations. For example, it is not always feasible to conduct an 8-week-long meditation intervention study. Likewise, the versatility of measurement might allow researchers to focus on specific aspects of mindfulness (e.g., the attention component) or personality (e.g., a specific trait). Clearly, conceptual replications and a multimethod approach will be critical for advancing this area of research.

## Implications

Despite the potential challenges, understanding the link between mindfulness and self-knowledge is an important empirical issue that will have theoretical and practical implications for a wide range of disciplines. In particular, learning that mindfulness helps to overcome the barriers to self-knowledge may provide insight into how mindfulness operates as well as confirm theoretical assumptions about how people attain (or fail to attain) self-knowledge.

## Mechanisms underlying mindfulness

Mindfulness seems to have positive effects on a variety of mental health outcomes, but a critical, unanswered question is how mindfulness works to improve mental health. Hölzel and colleagues (2011) outlined four possible mechanisms of mindfulness meditation: attention regulation, body awareness, emotional regulation, and changes in self-perspective (e.g., decentering). Arguably, self-knowledge of one's patterns of thinking, feeling, and behaving may be another mechanism. That is, mindfulness might improve self-knowledge of one's

habitual patterns, which then helps people notice the consequences of their personality and make changes that have more desirable consequences (e.g., avoid situations that elicit negative emotions).

Future work is needed to explicitly examine whether self-knowledge explains how and why mindfulness works to improve mental health. However, there is some indirect evidence that self-knowledge of one's personality may be a mechanism underlying the positive mental health outcomes of mindfulness. For example, improved emotional discrimination, or self-knowledge of emotions, seems to explain the link between mindfulness training (i.e., dialectical behavior therapy) and a reduction in emotional lability, which is a key feature of borderline personality disorder (Gratz & Gunderson, 2006; Hill & Updegraff, 2012; Linehan, 1993; Linehan & Dexter-Mazza, 2008). Likewise, self-knowledge of one's pattern of thinking seems to explain reductions in depression symptoms after mindfulness training. Depressive episodes often occur when individuals ruminate about the causes of their negative emotions, but mindfulness interventions, such as MBCT, teach individuals to notice and accept their cognitive reactions to emotions, which reduces negative thought patterns and symptoms of depression (i.e., mindfulness improves self-knowledge of one's tendency to ruminate; Baer, 2003; Heeren & Philippot, 2011; Kiken & Shook, 2012; Kuyken et al., 2010; Ramel, Goldin, Carmona, & McQuaid, 2004; Teasdale et al., 2000, 2002). Self-knowledge may also explain the link between mindfulness training and a reduction in substance use (Brewer, Mallik, et al., 2011; Brewer et al., 2009; Courbasson, Nishikawa, & Shapira, 2011; Rogojanski, Vettese, & Antony, 2011). Mindfulness-based relapse prevention (Bowen, Chawla, & Marlatt, 2011) is an effective treatment for addiction that trains individuals to identify the impermanent nature of their cravings (i.e., thoughts, feelings) as well as their behavioral responses to those cravings. Arguably, self-knowledge of cravings and of one's behavioral responses to cravings precedes positive changes in addiction behaviors.

Another explanation and important methodological consideration is that mindfulness improves self-knowledge, which then leads to the intentional change of one's personality (i.e., change in undesirable core patterns of thinking, feeling, and behaving). Research is just beginning to uncover how personality develops (e.g., Roberts & Mroczek, 2008) and whether intentional change can occur (Edmonds, Jackson, Fayard, & Roberts, 2008; Nofle, 2011, 2012). However, recent work suggests that even minor interventions, such as completing daily cognitive puzzles, can change personality (e.g., openness; Jackson, Hill, Roberts, Payne, & Stine-Morrow, in press). Thus, when investigating whether self-knowledge explains the link between mindfulness and positive outcomes, researchers should examine and control for actual personality change. For instance, personality should be measured before, during, and after mindfulness interventions using criteria that are independent of self-perceptions (e.g., observable behavior, peer reports).

## Barriers to self-knowledge

To date, interventions designed to improve self-knowledge have fallen short. It seems possible that one of the primary reasons for this failure is that interventions have not addressed both informational and motivational barriers to self-knowledge. However, the current review suggests that the attention and nonevaluative components of mindfulness do address both barriers. A clear, empirical demonstration that mindfulness improves self-knowledge of personality will provide some of the first evidence that self-knowledge can be improved and might provide further support for the theory that informational and motivational barriers operate together and are the primary explanations for blind spots in self-knowledge (Vazire, 2010).

There is an ongoing debate about the costs and benefits of self-knowledge (e.g., costs and benefits of self-enhancement; Baumeister, 1989; Taylor & Brown, 1994). Many lines of work have shown that poor insight into one's personality has negative intrapersonal and interpersonal consequences, but future research is needed to firmly establish whether and when self-knowledge is more desirable than positive illusions or other forms of self-deception. One consideration for this line of research is to take into account how people obtain self-knowledge. Recent work suggests that self-affirmation can increase openness to negative information about the self (Critcher, Dunning, & Armor, 2010). Perhaps some of the negative effects associated with holding more accurate and less positively biased self-views are due to the ways in which people learned undesirable information about themselves, more so than the information itself. Future work might compare the outcomes of self-knowledge when people obtain self-knowledge in a mindful versus less mindful way. For example, a mindfulness intervention prior to receipt of ego-threatening feedback might attenuate the negative outcomes associated with holding more accurate versus positively biased self-views.

## Conclusion

Despite the privileged access we have to our feelings, thoughts, and behaviors, informational and motivational barriers often prevent us from seeing ourselves as we really are. There is some evidence that mindfulness may overcome these barriers and that self-knowledge is an outcome of mindfulness; however, there are many gaps in the literature. Future research that directly examines the empirical link between mindfulness and self-knowledge will have important theoretical implications for mindfulness and self-knowledge as well as practical consequences for individuals who desire to improve self-knowledge.

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## Notes

1. Books such as *How to See Yourself as You Really Are* (Gyatso & Hopkins, 2006) suggest a link between mindfulness and self-knowledge.
2. The two-component conceptualization of mindfulness differs from Ellen Langer's (1989) conceptualization, which reflects openness to new categories of objects (i.e., novelty) and flexible perception of one's current environment. This conceptualization also differs from traditional Buddhist perspectives (see Rosch, 2007).

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