


The Key Ingredients of Personality Traits: Situations, Behaviors, and Explanations

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Abstract

The trait and social cognitive perspectives are considered disparate approaches to understanding personality. We suggest an integrative view in which three elements derived from the social cognitive perspective (i.e., situations, behaviors, and explanations [SBEs]) form the basis of personality traits. Study 1 demonstrated strong associations between traits and SBEs across the Big Five dimensions. Studies 2 through 7 tested the discriminative validity, internal structure, and unique contributions of the individual components of SBEs. Studies 8 and 9 demonstrated that the strong associations between traits and SBEs generalize to different cultures. The present work suggests that SBEs may be a universal folk psychological mechanism underlying personality traits.

Keywords

personality, traits, social cognitive theories, person perception, culture

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The trait perspective on personality posits that individuals can be described in terms of relatively stable and enduring characteristics such as those embedded in the lexicon (e.g., one is extraverted). This approach is exemplified by research within the Big Five tradition, which demonstrates that specific traits can be mapped onto the five superordinate dimensions of extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences (Digman, 1990; John, Naumann, & Soto, 2008; McCrae & Costa, 1999). Traits are shaped by genes and environment (Krueger & Johnson, 2008); they show remarkable continuity, yet systematically change over the life span (Roberts & Mroczek, 2008); and they predict a wide range of important individual, interpersonal, and social outcomes (Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

Sometimes identified as an alternative to the trait approach, the social cognitive perspective on personality posits that individuals can be described in terms of *if* (situation) *then* (behavior) contingencies and the mechanisms that mediate the influence of situational features on behavioral expressions (Mischel, 2004; Mischel & Shoda, 1995, 1998). The specific mediating mechanisms include cognitive–affective units such as encodings, expectancies, beliefs, emotions, goals, values, competencies, and self-regulatory plans. According to this perspective, lay people do not necessarily think of individuals in trait terms. Rather, they are social cognitive theorists who think of individuals in terms of

distinctive *if* (situation) *then* (behavior) relations (e.g., if one is in situation X, then one behaves in a more extraverted fashion; if one is in situation Y, then one behaves in a more introverted fashion).

The Trait and Social Cognitive Perspectives Are Incompatible

The trait and social cognitive perspectives are among the most influential research paradigms in personality psychology today. They differ in at least five major aspects. First, the trait perspective is historically rooted in the person side of the person–situation debate. The social cognitive perspective is closely associated with the situation side of the debate (Swann & Seyle, 2005). Second, the trait perspective is typically used to determine inter-individual differences and

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how such differences predict outcomes of interest. The social cognitive perspective, in contrast, is often applied to identify and explain intra-individual variability with cognitive-affective concepts. Third, the trait perspective tends to focus on broad, general dispositions such as those described in the Big Five dimensions. The social cognitive perspective, however, tends to focus on relatively narrow, specific mechanisms that regulate behavioral expressions in situations. Fourth, trait theorists often focus on structure and assessment, whereas social cognitive theorists typically focus on process and experimentation (Fleeson, 2012). Fifth, some suggest that the trait perspective is inherently descriptive. By contrast, the social cognitive perspective has more explanatory power because this approach incorporates the mediating mechanisms between situational features and behavioral expressions (Mischel, 2009).

For all these reasons, some scholars have argued that the two perspectives are fundamentally incommensurate with each other. For example, Cervone (1999) noted that an integration of the two may be “conceptually problematic and empirically unnecessary” (p. 329). Funder (2001) considered integrating the two perspectives to be one of the major challenges for personality psychology. More recently, Roberts (2009) noted that “there has yet to be a successful integration of trait and social cognitive perspectives on personality psychology” (p. 139).

The Trait and Social Cognitive Perspectives Are Compatible

Despite the sharp differences between the two perspectives, significant efforts have been made to narrow the gap between them. For instance, research shows that individual differences can be modeled by situation-behavior relations (Vansteelandt & Van Mechelen, 1998); some dispositions or traits can be associated to if-then profiles described in vignette stories (Kammrath, Mendoza-Denton, & Mischel, 2005); and inter-individual differences and intra-individual variability in personality can be connected through underlying motivational systems (Read et al., 2010). Thus, it appears that the trait and social cognitive perspectives share common elements.

Recently, Fleeson (2012) discussed whole trait theory and provided a comprehensive account with which to unify the trait and social cognitive perspectives. Whole trait theory acknowledges the major differences between the two perspectives; however, it maintains that integrating some, if not all, of the major tenets from each perspective, or even modifying some of these tenets will markedly increase our understanding of personality. The trait perspective has provided a descriptive account of *how* people differ from each other; whereas the social cognitive perspective has provided an explanatory account of *why* people differ in those ways. Rather than highlighting the incompatibility of the two perspectives, whole trait theory suggests that descriptive and

explanatory approaches are needed for a complete understanding of personality. At the empirical level, a growing body of literature has supported the general thesis of the theory (e.g., Fleeson, 2001, 2004).

We concur with Fleeson (2012) and many others that it can be valuable to connect at least some of the key elements from each perspective. For example, McCabe and Fleeson (2012) found that manifestations of descriptive traits (e.g., extraversion) can be explained as the means by which people pursue specific goals (e.g., having fun, connecting with other people), thereby combining previously separate literatures of traits and motives. Similarly, in this article, we discuss a fundamental premise that might connect the trait and social cognitive perspectives. We then examine this premise in a new domain by empirically identifying three key ingredients of personality traits.

A Fundamental Premise: $P = f(S, B, E)$

The theoretical foundation of the present research rests on an extension of the personality triad model (Funder, 2006). According to this model, given the classic equation $B = f(P, S)$ previously proposed by Lewin (1936), it is argued that knowledge of any one of the three elements—persons, situations, and behaviors—requires an understanding of the other two. A person can also be thought of as the sum of all the behaviors he or she might perform in all the situations, or in mathematical form: $P = f(S, B)$.

Taking an integrative view, we suggest that the trait and social cognitive perspectives capture the same distinctive features of the person. Hence, the two perspectives can be thought of as two sides of the same equation $P = f(S, B)$. The trait perspective appears to be concerned primarily with the left-hand side of the equation (i.e., personality traits). The social cognitive perspective appears to be concerned primarily with the right-hand side of the equation (i.e., situation-behavior relations and mediating mechanisms that regulate such relations). Because of the role of mediating mechanisms, such as goals and expectancies, in the social cognitive perspective (e.g., Miller & Read, 1991; Read & Miller, 1989), we suggest that the term *explanations* should be added to the right side of the equation to capture the functional relations between situations and behaviors and to identify why people behave in certain ways in certain situations. Thus, we propose that $P = f(S, B, E)$.

If the two sides of the equation are indeed interchangeable (and hence, the two perspectives are compatible), we would expect relatively strong associations between personality traits and situation-behavior-explanation triads. However, if the two sides of the equation are not interchangeable (and hence, the two perspectives are incompatible), we would expect relatively weak associations between personality traits and situation-behavior-explanation triads. In the present research, we directly tested the strength of these associations.

The Key Ingredients of Personality Traits

There has been much confusion, if not controversy, concerning the key ingredients, components, constituencies, and proximate mechanisms underlying personality traits (see also Fleeson & Nofle, 2008; Hampson, 2012; Pervin, 2003). As Roberts (2009) noted, “a valid criticism of many modern personality trait theorists and researchers is that they have not provided a deeper analysis of the constituent elements that make up traits, nor the mechanisms that elucidate how they cause things to occur” (p. 140).

There are at least three unresolved issues with regard to the key ingredients of personality traits. First, researchers disagree on whether behaviors should be treated as the only core component of personality traits. Historically, behaviors have been considered the core element. Even today, the idea that traits are primarily concerned with behaviors, as opposed to other psychological constructs, continues to resurface (e.g., Bandura, 2012; Jackson, Hill, & Roberts, 2012). Second, there is no clear consensus on what other psychological constructs, in addition to behaviors, represents key ingredients of personality traits. Some researchers maintain that cognition and affect are also key ingredients of personality traits (Johnson, 1997). Others have highlighted motivational constructs such as goals, plans, resources, and beliefs as principal mechanisms underlying traits (Pervin, 1989; Read, Jones, & Miller, 1990); yet some have explicitly opposed the inclusion of motivational constructs (Roberts & Jackson, 2008). Third, there is still debate on whether situations or contexts should be included as key ingredients of personality traits. Traits have been described as decontextualized in that it is the invariance of traits across situations that define them (Cervone, Shadel, & Jencius, 2001). However, others have argued that theories of traits have never excluded situational influences and that cross-situational variation is an important feature of traits (Roberts, 2009).

To date, only a few empirical studies have explicitly examined the key ingredients of traits (Pytlik Zillig, Hemenover, & Dienstbier, 2002; Read et al., 1990; Werner & Pervin, 1986). For example, one such investigation found that extraversion is more strongly characterized by behavior (53% overall) and affect (38% overall); whereas conscientiousness is more strongly characterized by behavior (68% overall) and cognition (26% overall; Pytlik Zillig et al., 2002). Read et al. (1990) showed that goals were important to the meaning of many traits, but did not investigate other possible components.

The Present Research

In the present research, we investigate whether the two sides of the equation $P = f(S, B, E)$ are interchangeable by examining the strength of the associations between personality traits and situation–behavior–explanation triads. We predict that

traits can be accurately described by the kinds of situations people find themselves in, their behavioral responses to those situations, and their explanations for their behaviors in those situations. In short, we test the hypothesis that the key ingredients of personality traits are situations, behaviors, and explanations (SBEs).

In this research, we established that personality traits were strongly associated with SBEs across the Big Five dimensions (Study 1). Next, we tested the discriminative validity of SBEs by examining whether SBEs are related only to their corresponding traits and not to other traits (Study 2). We then considered the unique contributions of the individual ingredients of SBEs by examining whether situations and behaviors (SBs) alone (Study 3), SBs combined with mismatched explanations (Study 4), explanations alone (Study 5), or behaviors alone (Study 6) would lead to equally strong associations with traits. After that, we examined whether behaviors are related only to their corresponding traits and not to other traits (Study 7). Finally, we investigated whether the presumably strong associations between traits and SBEs would generalize to two different cultures (Studies 8 and 9).

Study 1

If traits and SBEs are strongly associated with each other, then people should have the ability to decompose traits into SBEs. Importantly, they should also have the ability to accurately infer traits from SBEs. Study 1 was designed to test this hypothesis.

Method

Materials. A panel of 109 American undergraduates (59 women) helped develop materials for the study. Panelists were asked to describe themselves in terms of personality traits and SBEs. Specifically, they were first asked to rate themselves on the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), which measures the Big Five dimensions (extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences). Examples of the TIPI items include “I see myself as extraverted, enthusiastic” (positively keyed to extraversion) and “I see myself as critical, quarrelsome” (negatively keyed to agreeableness). Panelists rated themselves on these items from 1 (*disagree strongly*) to 7 (*agree strongly*). Then, based on their specific trait rating, they were instructed to generate two SBEs in a format of “When/If (situation), I (behavior), because (explanation)” after each trait rating. Panelists relied on their own understandings and definitions of the terms *situations*, *behaviors*, and *explanations*. It is important to note that panelists were told that the SBEs should describe their actual experiences that best demonstrate their trait ratings. The opening “When” and “If” were provided to be completely interchangeable, both were to specify the context in

Table 1. Examples of SBEs Generated in Study 1.

<p>Extraversion <i>Extraverted, enthusiastic</i> (7) When I meet new people, I am very open to them, because I feel that's a good way to connect to people.</p>	<p>Reserved, quiet (6) When I am in school, I usually like to sit alone, because I feel overwhelmed by all the people.</p>
<p>Agreeableness <i>Sympathetic, warm</i> (4) When a friend is upset and crying, I feel uncomfortable, because I don't feel like my words will help them.</p>	<p>Critical, quarrelsome (2) When someone is bothering me, I try to avoid them rather than confront them, because I don't like to start fights.</p>
<p>Conscientiousness <i>Dependable, self-disciplined</i> (6) When someone asks me to complete a task, I make sure to get it done and to the best of my ability, because I don't like letting others down.</p>	<p>Disorganized, careless (5) When I put something down, I can't remember where I put it, because I don't pay attention to what I'm doing.</p>
<p>Emotional stability <i>Calm, emotionally stable</i> (3) When I get a bad grade, I get upset, because I do not like to fail.</p>	<p>Anxious, easily upset (2) When my roommate takes my food, I don't really care, because there is no need to make a big deal out of it.</p>
<p>Openness to experiences <i>Open to new experiences, complex</i> (6) When I'm offered food I've never had before, I try it, because I've never had it and it might be really good.</p>	<p>Conventional, uncreative (4) When I talk to people about my hobbies, I sometimes feel that I am boring and just like everyone else, because I don't have any one defining talent or hobby.</p>

Note. Participants first rated themselves on the TIPI items (in italics above and started with "I see myself as . . .") from 1 (*strongly disagree*) to 7 (*strongly agree*). The original trait ratings provided by participants are shown in parentheses above after the TIPI items. Based on their specific trait ratings, participants were asked to generate two examples of the situations they find themselves in, their behavioral responses to those situations, and their explanations for their behaviors in those situations after each trait rating. The SBEs should be their actual experiences and best demonstrate their trait ratings. SBEs = situations, behaviors, and explanations; TIPI = Ten-Item Personality Inventory.

which behaviors took place and the explanations given for them. In short, every panelist was asked to rate themselves on 10 personality trait items and to generate two SBEs after each trait rating, for a total of 20 SBEs per panelist.

At the end of the procedure, the 109 panelists provided a total of 1,090 trait ratings and 1,956 SBEs after their trait ratings. Together, these SBEs captured a wide range of everyday encounters and experiences important for traits. For example, for one panelist who rated herself relatively high on extraversion, the SBE she provided included "When I am at a party, I dress flashy, because I like getting attention and it provides conversation starters." For another panelist who rated himself relatively low on conscientiousness, the SBE he provided was "When I have class at 11 a.m., I tend not to go, because I don't wake up or don't feel like going." Table 1 provides more examples of SBEs along with their original self-ratings of trait items. These SBEs and their corresponding trait ratings served as materials for the present research.

Participants and procedure. The SBEs generated from the earlier procedure were divided into a total of 20 sets (10 TIPI items \times 2 genders), as we wanted to sample SBEs representative of all the trait items and both genders. Next, a list of 5 SBEs was randomly selected from each set to form a list of 100 SBEs. This procedure was replicated four more times to obtain a total of five nonoverlapping lists of 100 SBEs.

Within each list of 100 SBEs, 10 of them were related to each particular TIPI item, and 20 of them were related to each Big Five dimension. Across the five lists of the total 500 SBEs, 50 of them were related to each particular TIPI item, and 100 of them were related to each Big Five dimension.

Subsequently, 192 American undergraduates participated in exchange for extra course credit. Participants were told that the purpose of the study was to understand how they make personality judgments. They were randomly divided into five different groups and each group rated one list of 100 SBEs. Each SBE was rated only on its corresponding TIPI item. For example, one SBE was "When I have the opportunity to speak in class, I usually pass it up, because I am afraid people will laugh at what I have to say." After reading this SBE, the participants' task was to form an impression of the person who provided the SBE, and indicate the extent to which they would agree with the statement "I see this person as extraverted, enthusiastic" on a scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). The reliability of other-ratings of SBEs, calculated in intra-class correlations (ICCs), ranged from .974 to .986 for the five lists of SBEs.

Results and Discussion

In the first stage of the study, panelists generated SBEs based on levels of their own specific trait ratings (self-ratings of

Table 2. Correlations Between Original Self-Ratings of Traits and Averaged Other-Ratings of SBEs (Study 1), Noncorresponding SBEs (Study 2), SBs Only (Study 3), SBs With Mismatched Explanations (Study 4), Explanations Only (Study 5), Behaviors Only (Study 6), and Noncorresponding Behaviors (Study 7).

	Study 1	Study 2	Study 3	Study 4	Study 5	Study 6	Study 7
	SBEs	Noncorresponding SBEs	SBs only	SBs with mismatched Es	Es only	Bs only	Noncorresponding Bs
All SBEs	.82**	.13	.80**	.60**	.75**	.73**	.06
Extraversion	.81**		.78**	.59**	.72**	.72**	
Agreeableness	.83**		.82**	.61**	.76**	.75**	
Conscientiousness	.83**		.81**	.76**	.76**	.68**	
Emotional stability	.75**		.74**	.49**	.69**	.64**	
Openness to experiences	.89**		.85**	.67**	.83**	.85**	

Note. SBEs = situations, behaviors, and explanations.

** $p < .01$.

traits). Each SBE was generated based on, and therefore corresponded to, only one self-reported rating on a particular trait item. The second stage of the study reversed the earlier procedure. A different group of participants rated 500 randomly sampled SBEs on the corresponding trait items (other-ratings of SBEs). If traits and SBEs can be translated into each other, the correlations between the original self-ratings of traits and averaged other-ratings of SBEs should be sizable. To calculate these correlations, we first obtained the original self-rating for each of the 500 SBEs from the first stage of the study. We then calculated a mean score of the other-ratings for each of the same 500 SBEs from the second stage of the study, because every SBE was rated by multiple participants on a particular trait item. Correlations between the original self-ratings of traits and averaged other-ratings of SBEs were then calculated across the 500 SBEs ($r = .82, p < .01$) and on each of the Big Five dimensions of extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences ($r_s = .81, .83, .83, .75$, and $.89$, respectively, all $p_s < .01$). Correlations between the original self-ratings of traits and median other-ratings of SBEs were also calculated across the 500 SBEs ($r = .82, p < .01$) and on each of the Big Five dimensions ($r_s = .81, .81, .81, .75$, and $.89$, respectively, all $p_s < .01$).¹ These rather large correlations suggest that traits and SBEs can be easily translated into each other (see Table 2).

One possible concern is that extreme ratings at the scale endpoints were responsible for the large correlations. Detecting relatively extreme trait levels may be easier than detecting more moderate trait levels. Thus, we next examined correlations between traits and SBEs with a more stringent test. The original self-ratings of traits and SBEs ranged from 1 (*disagree strongly*) to 7 (*agree strongly*). Therefore, the SBEs with original self-ratings of 1s and 7s can be regarded as the “poles” and relatively more extreme cases. The SBEs with original self-ratings between 2s and 6s can be regarded as the “mid-ranges” and relatively moderate cases.

To examine the applicability of SBEs in more moderate cases, we removed 136 SBEs of the “poles” from the 500 SBEs and only retained 364 SBEs of the “mid-ranges” in the analyses. Correlations between the original self-ratings of traits and averaged other-ratings of SBEs were then calculated across the 364 remaining SBEs ($r = .79, p < .01$) and on each of the Big Five dimensions ($r_s = .77, .81, .75, .79$, and $.86$, respectively, all $p_s < .01$). These correlations were still quite large, demonstrating that SBEs are useful not just in extreme cases, but also in moderate cases. In sum, Study 1 suggests that traits and SBEs are strongly related to each other, and they can be easily translated into each other across all Big Five dimensions.

Study 2

Studies 2 to 7 tested the discriminative validity of SBEs. In particular, Study 2 examined the extent to which each SBE would be related to just one specific trait. If this is the case, the original self-ratings of traits should only correlate with averaged other-ratings of SBEs on corresponding traits (as in Study 1), but not with averaged other-ratings of SBEs on noncorresponding traits.

Method

Participants and procedure. Twenty-two American undergraduates participated. We sampled one list of 100 SBEs from Study 1 as materials for the study. Instead of rating the SBEs on their corresponding TIPI items as in Study 1, participants rated the SBEs on randomly sampled noncorresponding TIPI items. For example, the SBE “When I want to meet a new person, I approach them and introduce myself, because I don’t have any qualms about meeting strangers,” originally generated from extraversion, was not rated on the extraversion TIPI items (e.g., “I see this person as extraverted, enthusiastic”), but instead on one of the remaining

TIPI items related to other traits (e.g., “I see this person as disorganized, careless”).

Results and Discussion

A mean score of the other-ratings was calculated for each of the 100 SBEs. Across these SBEs, the original self-ratings of traits did not correlate with averaged other-ratings of SBEs, $r = .13$, $p = .19$, suggesting that each SBE is only related to one specific trait and that SBEs are diagnostic only for some, and not all, possible traits.²

Study 3

Study 3 examined the unique contributions of explanations in the SBE structure by testing whether SBs only would lead to equally strong associations with traits. We removed information concerning explanations from the SBEs and only retained SBs in the materials for the study. Explanations for behaviors in situations describe the reasons why people behave in certain ways in certain situations. They should play a nontrivial role in the SBE structure.

Method

Participants and procedure. One hundred thirty-one American undergraduates participated. The procedure of this study was similar to the second stage of Study 1. Instead of rating SBEs, participants only rated SBs (situations and behaviors, without explanations). The 500 SBs rated were from the same 500 SBEs of Study 1. Each SB was rated only on its corresponding TIPI item. The reliability of other-ratings of SBs, calculated in ICCs, ranged from .974 to .981 for the five lists of SBs.

Results and Discussion

A mean score of the other-ratings was calculated for each of the 500 SBs. Correlations between the original self-ratings of traits and averaged other-ratings of SBs were then calculated across the 500 SBs ($r = .80$, $p < .01$) and on each of the Big Five dimensions (r s = .78, .82, .81, .74, and .85, respectively, all p s $< .01$). We further examined the unique contributions of explanations using residual analysis. We tested whether averaged other-ratings of SBEs would still be significantly related to self-ratings of traits when the shared variance with averaged other-ratings of SBs was partialled out. Specifically, averaged other-ratings of SBEs were regressed onto averaged other-ratings of SBs, and the residuals were saved. In this case, the residualized other-ratings of SBEs represented the part of the other-ratings of SBEs that could not be predicted from other-ratings of SBs. It was found that the correlation between residualized other-ratings of SBEs and self-ratings of traits remained significant, $r = .20$, $p < .01$. These results suggest that although it appears that SBs are important, explanations for behaviors in situations, which

were included in SBEs but not SBs, play a nontrivial role in the SBE structure.

Study 4

In Study 4, we removed the original explanations from the SBEs and paired the remaining SBs with novel, mismatched explanations created by our research team. If explanations are indeed nontrivial in the SBE structure, the mismatched explanations should lower accuracy, compared with circumstances in which the original explanations were correctly provided (Study 1) or removed entirely (Study 3).

Method

Participants and procedure. Twenty-seven American undergraduates participated. To develop materials for the study, we first randomly sampled one list of 100 SBEs from Study 1 and removed their original explanations. Next, each of the remaining SBs was paired with an explanation that two members of the present research team created. They were not blind to the original explanation. These novel explanations made semantic sense and appeared logical in the context of the existing SBs, but would lead to different levels of trait attribution. For example, one SB was “When I am in class, I participate.” This SB was paired not with the original explanation (“because I want people to notice me”) but with a revised and mismatched explanation (“because my grade would be lower if I don’t”). Participants rated the 100 newly assembled SBEs. Each SBE was rated only on its corresponding TIPI item.

Results and Discussion

A mean score of the other-ratings was calculated for each of the 100 mismatched SBEs. Across these SBEs, the correlation between self-ratings of traits and averaged other-ratings of the 100 mismatched SBEs was $.60$, $p < .01$. We then calculated the correlation between self-ratings of traits and averaged other-ratings of the 100 original SBEs from Study 1 ($r = .82$, $p < .01$), and the correlation between self-ratings of traits and averaged other-ratings of the 100 corresponding SBs from Study 3 ($r = .78$, $p < .01$). Because the same self-ratings were used in the calculations of the three correlations, we used dependent t tests to examine the significance of the differences among them (Chen & Popovich, 2002). The results showed that the correlation between self-ratings of traits and averaged other-ratings of the 100 mismatched SBEs ($r = .60$) was significantly lower than the correlation between self-ratings of traits and averaged other-ratings of the 100 original SBEs ($r = .82$), $t(97) = 6.68$, $p < .001$, and the correlation between self-ratings of traits and averaged other-ratings of the 100 corresponding SBs ($r = .78$), $t(97) = 6.18$, $p < .001$. Overall, these data provide additional evidence that explanations are a nontrivial part of personality traits.

Study 5

In Study 5, we removed information concerning SBs from the SBEs, and retained only explanations. If explanations are indeed a nontrivial part of personality traits, people should be able to refer back to traits from explanations alone.

Method

Participants and procedure. One hundred twenty-eight American undergraduates participated. The procedure was similar to Study 3. Instead of rating SBs, participants only rated explanations. The 500 explanations rated were from the same 500 SBEs of Study 1. Each explanation was rated only on its corresponding TIPI item. The reliability of other-ratings of explanations, calculated in ICCs, ranged from .969 to .979 for the five lists of explanations.

Results and Discussion

A mean score of the other-ratings was calculated for each of the 500 explanations. Correlations between the original self-ratings of traits and averaged other-ratings of explanations were then calculated across the 500 explanations ($r = .75, p < .01$) and on each of the Big Five dimensions ($r_s = .72, .76, .76, .69, \text{ and } .83$, respectively, all $p_s < .01$). At the same time, residualized other-ratings of SBEs remained significantly related to self-ratings of traits, after the shared variance with averaged other-ratings of explanations was partialled out ($r = .33, p < .01$). These results suggest that although explanations alone are important, SBs play a nontrivial role in the SBE structure.

Study 6

In Study 6, we removed information concerning situations and explanations from the SBEs, and only retained behaviors in the materials for the study. If traits indeed describe behaviors, people should be able to refer back to traits based on behaviors alone.

Method

Participants and procedure. One hundred eighty-eight American undergraduates participated. The procedure was similar to Study 3. Instead of rating SBs, participants only rated behaviors. The 500 behaviors rated were from the same 500 SBs of Study 3. Each behavior was rated only on its corresponding TIPI item. The reliability of other-ratings of behaviors, calculated in ICCs, ranged from .977 to .985 for the five lists of behaviors.

Results and Discussion

A mean score of the other-ratings was calculated for each of the 500 behaviors. Correlations between the original

self-ratings of traits and averaged other-ratings of behaviors were then calculated across the 500 behaviors ($r = .73, p < .01$) and on each of the Big Five dimensions ($r_s = .72, .75, .68, .64, \text{ and } .85$, respectively, all $p_s < .01$). At the same time, residualized other-ratings of SBEs or SBs remained significantly related to self-ratings of traits, after the shared variance with averaged other-ratings of behaviors was partialled out ($r_s = .39 \text{ and } .33, p_s < .01$). These results suggest that although it appears that behaviors alone are important, situations and explanations also play a nontrivial role in the SBE structure.

Study 7

Study 7 tested the hypothesis that, similar to SBEs, behaviors are only diagnostic for some, and not all, possible traits. If this is the case, the original self-ratings of traits should only correlate with averaged other-ratings of behaviors on corresponding traits (as in Study 6), but not with averaged other-ratings of behaviors on noncorresponding traits.

Method

Participants and procedure. Twenty-three American undergraduates participated. We used the same list of 100 SBEs from Study 2. Instead of rating the behaviors on their corresponding TIPI items, participants only rated behaviors on randomly sampled noncorresponding TIPI items. For example, the behavior "I approach them and introduce myself," originally generated from extraversion, was rated not on extraversion-related TIPI items (e.g., "I see this person as extraverted, enthusiastic"), but on one of the remaining TIPI items related to other traits (e.g., "I see this person as disorganized, careless").

Results and Discussion

A mean score of the other-ratings was calculated for each of the 100 behaviors. Across these behaviors, the original self-ratings of traits did not correlate with averaged other-ratings of behaviors, $r = .06, p = .59$, suggesting that each behavior is only related to one specific trait and that behaviors are diagnostic only for some, and not all, possible traits.³

Study 8

Study 8 investigated whether the strong associations between traits and SBEs would generalize to different cultures. Finding a similar pattern of strong associations in two very different cultures (i.e., the United States and China) suggests that SBEs could be a universal folk psychological mechanism underlying personality traits.

Method

Materials. A procedure similar to Study 1 for generating SBEs was used in China. Specifically, a panel of 102

Chinese undergraduates (55 women) developed materials for the present study. The 102 panelists provided a total of 1,020 trait ratings and 1,711 SBEs reflecting their trait ratings. As in Study 1, we randomly selected 5 SBEs from each of the 20 possible sets (10 TIPI items \times 2 genders), which resulted in a list of 100 Chinese SBEs and a list of 100 American SBEs (from Study 1).

The 100 Chinese SBEs were translated into English, and the 100 American SBEs were translated into Chinese. One of three English–Chinese bilinguals completed the translation first, and the translated SBEs were back-translated by one of the other two bilinguals to assure semantic equivalence. All three bilinguals were Chinese natives and had been living in the United States for more than 5 years. The English translations of Chinese SBEs were further reviewed by four native English speakers to assure their appropriateness in the American context. During this procedure, terms used in the SBEs that were too culturally or locally specific (e.g., margarita, name of the specific university panelists attended) were changed to more general ones (e.g., drink, university). After this procedure, the 100 Chinese SBEs were merged with the 100 American SBEs to form one list of 200 SBEs in Chinese and another list of the same 200 SBEs in English. Within each list, the 200 SBEs were presented in a random order. These two lists of SBEs served as the materials for Studies 8 and 9. This procedure of mixing stimuli from different cultures is similar to the situation sampling method (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997).

Participants and procedure. Participants were 141 undergraduates in America and 115 undergraduates in China. They were given the list of 200 SBEs in their native language and asked to rate these SBEs on their corresponding TIPI items. Participants received no information concerning who originally generated the SBEs.

Results and Discussion

A mean score of the other-ratings was calculated for each of the 200 SBEs. Correlations between the self-ratings of traits and averaged other-ratings of SBEs were then calculated across the 200 SBEs, the 100 SBEs originally made in the United States or China, and on each of the Big Five dimensions (see Table 3). Across the 200 SBEs, the correlation between self-ratings of traits and averaged other-ratings of SBEs was $r = .80, p < .01$, for American participants and $r = .79, p < .01$, for Chinese participants. These correlations were not significantly different, $t < 1$. Across the 100 SBEs made in the United States, the correlation between self-ratings of traits and averaged other-ratings of SBEs was $.79, p < .01$, for American participants and $.76, p < .01$, for Chinese participants. These correlations were not significantly different, $t = 1.35$. Finally, across the 100 SBEs made in China, the correlation between self-ratings of traits and averaged other-ratings of SBEs was $r = .79, p < .01$, for American

participants and $r = .81, p < .01$, for Chinese participants. These correlations were not significantly different, $t < 1$. Similar to Study 1, these correlations were quite large.

In sum, no significant difference was found between the strong associations for American or Chinese participants, regardless of whether the SBEs were originally made in the United States or China. Americans and Chinese were able to decompose traits into SBEs and accurately infer traits from SBEs. They were able to do so for SBEs originally generated from their own culture, as well as SBEs generated from a very different culture.

Study 9

In Study 8, participants received no information concerning who originally generated the SBEs. However, in actual intercultural contexts, perceivers often have knowledge as to the nationality of their targets. Therefore, Study 9 tested whether the nationality of the target person to be judged would moderate the strength of the associations between traits and SBEs.

Method

Participants and procedure. The procedure and SBEs used in this study were identical to Study 8, except for the manipulation of the nationality of the target person. Participants were 155 American and 152 Chinese undergraduates. They were given the same list of 200 SBEs from Study 8 in their native language and asked to rate these SBEs on their corresponding TIPI items. Participants were also randomly assigned to one of the two experimental conditions. In one condition, 81 Americans and 79 Chinese were told that the SBEs they were about to read were originally generated by American undergraduates in prior studies. In the other condition, 74 Americans and 73 Chinese were told that the SBEs were originally generated by Chinese undergraduates. For example, after reading the SBE “When I am doing something that is new to me, I look forward to it a lot, because I am really excited to begin,” the participant’s task was to form an impression of the American [Chinese] student who provided the SBE and indicate the extent to which they would agree with the statement “I see this American [Chinese] student as extraverted, enthusiastic.”

Results and Discussion

A mean score of the other-ratings was calculated for each of the 200 SBEs. Correlations between the self-ratings of traits and averaged other-ratings of SBEs were then calculated across the 200 SBEs, the 100 SBEs originally made in the United States or China, the nationality of the target person, and on each of the Big Five dimensions (see Table 3). All these correlations between self-ratings of traits and averaged other-ratings of SBEs remained strong, replicating Study 8.

Table 3. Correlations Between Original Self-Ratings of Traits and Averaged Other-Ratings of SBEs (Studies 8 and 9).

	Study 8		Study 9			
			American participants		Chinese participants	
	American participants	Chinese participants	American targets	Chinese targets	American targets	Chinese targets
All SBEs	.80**	.79**	.81**	.81**	.79**	.79**
Extraversion	.82**	.79**	.83**	.83**	.80**	.80**
Agreeableness	.81**	.84**	.83**	.83**	.83**	.86**
Conscientiousness	.87**	.85**	.86**	.87**	.85**	.84**
Emotional stability	.67**	.66**	.69**	.68**	.68**	.65**
Openness to experiences	.81**	.79**	.79**	.81**	.80**	.78**
SBEs made in the United States	.79**	.76**	.80**	.81**	.74**	.75**
Extraversion	.85**	.82**	.87**	.86**	.80**	.83**
Agreeableness	.82**	.84**	.83**	.83**	.82**	.86**
Conscientiousness	.90**	.78**	.85**	.88**	.77**	.75**
Emotional stability	.70**	.62**	.70**	.67**	.62**	.56**
Openness to experiences	.80**	.83**	.79**	.83**	.82**	.80**
SBEs made in China	.79**	.81**	.80**	.80**	.82**	.82**
Extraversion	.80**	.78**	.80**	.80**	.81**	.78**
Agreeableness	.83**	.83**	.85**	.85**	.84**	.87**
Conscientiousness	.83**	.92**	.84**	.84**	.90**	.90**
Emotional stability	.65**	.70**	.68**	.68**	.72**	.72**
Openness to experiences	.87**	.83**	.84**	.86**	.86**	.83**

Note. SBEs = situations, behaviors, and explanations.

** $p < .01$.

Importantly, dependent t tests showed no significant differences between all the correlations regardless of whether participants were told their targets of judgment were American or Chinese. These data suggest that the nationality of the target person to be judged did not moderate the strength of the associations between traits and SBEs.

General Discussion

The trait and social cognitive perspectives are most often considered disparate approaches to understanding personality. The present research contributes to the growing literature by suggesting that the two perspectives are likely to be compatible in many ways. Our data supported the fundamental premise $P = f(S, B, E)$, that the trait and social cognitive perspectives may each represent different sides of the same equation. Our findings strongly suggest that the key ingredients of personality traits should include SBEs. Contrary to viewpoints that personality traits focus only on behaviors, that they are not concerned with motivational constructs, that they are decontextualized, and that they reflect behavior, cognition, and affect disproportionately across the Big Five dimensions, the present findings suggest that personality traits are connected to all three elements of SBEs across the Big Five and different cultures. In particular, situations and

explanations are implied strongly along with behaviors by traits. To our knowledge, the present research is the most systematic and comprehensive effort to empirically clarify the key ingredients of personality traits.

Correlations between .70 and .90 are typically expected between two identical constructs (cf. Fleenor & Gallagher, 2009). In the present studies, correlations between traits (described by the trait perspective) and SBEs (derived from the social cognitive perspective) were between .75 and .89 on the Big Five dimensions (Study 1). These correlations were the strongest when all three elements of SBEs were present (Studies 2 to 7), providing discriminative validity for SBEs. Each of the ingredients we investigated (behaviors alone, explanations alone, and situations plus behaviors) allowed individuals to readily refer back to traits, suggesting that each of these three ingredients plays a central role in the representation of traits. It is likely that all three elements of SBEs are tightly bound together in a conceptual structure (Miller & Read, 1991; Read & Miller, 1989). Thus, in some circumstances and particularly when time is short, perceivers might not need all three elements. Providing one (e.g., explanations as in Study 5, behaviors as in Study 6) or two (e.g., SBs as in Study 3) of the ingredients would allow a perceiver to easily infer the other piece(s). Lay people seem to have rich conceptual representations for trait terms that include

explanatory mechanisms for the trait-related behavior. Thus, we are arguing that even though psychologists have tended to treat trait terms as descriptive, rather than explanatory concepts, the same is not true for the lay person. Lay people view traits as also providing an explanation for someone's behavior.

When SBEs from different cultures were mixed, correlations between traits and SBEs ranged from .70 to .92 on the Big Five dimensions within cultures, and from .62 to .87 between cultures (Study 8). Moreover, these correlations remained strong whether participants were told that the targets of their judgment came from their own culture or from another culture (Study 9). Thus, traits and SBEs can be readily translated into each other not just within cultures but also between cultures. SBEs may be a universal folk psychological mechanism underlying personality traits. When people talk about personality traits, they are essentially talking about SBEs. Conversely, when people are presented with information concerning SBEs, they can readily and accurately refer back to traits.

These findings, however, do not imply that the trait and social cognitive perspectives are identical. There might be ways of operationalizing the trait and social cognitive perspectives in terms other than traits and SBEs. Even under the present framework, there might be some traits that are not well represented by SBEs, and some SBEs that are not well captured by traits. Personality psychologists do not need to approach these two perspectives as opposing forces. One possible way of organizing them is to consider the social cognitive perspective as subsumed by, or indeed as a part of, the trait perspective.⁴ The interrelationship between these two traditions of personality psychology is an important topic for future research. Still, comparing, contrasting, and connecting some features of each perspective may offer opportunities for us to reinterpret and integrate previous findings, as well as to open new domains of research with new questions.

From Traits to SBEs

The suggestion that traits consist of all three elements of SBEs contrasts sharply with the dominant emphasis on behavioral consistency across situations for inferring traits (e.g., Cervone et al., 2001; Swann & Seyle, 2005). The present research suggests that a trait (or a particular standing on the trait) may manifest itself in multiple instantiations of SBEs. Hence, low levels of behavioral consistency are not necessarily a threat to the existence of traits. Traits can be defined not just by consistent behavior across situations (e.g., high level of extraversion as in "When I am in an elevator or grocery line, I initiate a conversation, because silence makes me feel awkward") but also by *different* behaviors in the *same* situation (e.g., "When I am at a party, I dance crazily with my hands in the air, because it is really fun to be wild," and "When I am at a party, I introduce myself to everyone, because

I get excited about meeting new people"), as well as by *different* behaviors in *different* situations (e.g., "When I am playing in a volleyball game, I tend to invite lots of people to come watch, because I want to show them how athletic I can be," and "When a professor asks the class a question, I am willing to raise my hand even if I will look like a fool, because I am not scared of looking stupid and want to be outgoing"). Moreover, explanations for behaviors in situations play an important role in the SBE structure (Studies 3 to 5). Even if people consistently display the *same* behavior in the *same* situation (e.g., "When I see a group of pretty girls, I do not approach them"), their *different* explanations ("because I want to stay cool" versus "because I do not want to be embarrassed") may convey distinct personality characteristics.

From SBEs to Traits

The finding that SBEs (Study 2) and behaviors (Study 7) are only diagnostic for some, but not all, possible traits, also contrasts with the traditional notion that traits lack predictive power for determining short-term, momentary behaviors (e.g., Swann & Seyle, 2005). In this regard, the strongest evidence to date in support of the predictive validity of traits came from a meta-analysis of 15 experience sampling studies (Fleeson & Gallagher, 2009). Traits predicted mean behavioral states with correlations between .42 and .56 on the Big Five dimensions, which is above the commonly assumed .30 to .40 "personality effect ceiling."

In the present research, SBEs captured a wide range of everyday experiences. However, each trait only relates to some, and not all, possible SBEs. Conversely, each SBE is diagnostic only for some, and not all, possible traits (e.g., "When I have an assignment due, I create a timeline, because I want to be as efficient as possible" only corresponds to conscientiousness) and not to other traits (e.g., extraversion, agreeableness). To investigate the predictive power of traits on behaviors, traits should be used to predict *related* behaviors, such as those embedded in SBEs, and not *all* the possible behaviors of an individual. In this regard, Study 7 showed that when behaviors are only related to their corresponding traits, correlations between self-ratings on traits and averaged other-ratings of specific behaviors were between .64 and .85 on the Big Five dimensions, providing further support to the predictive power of traits on behaviors.

Structure, Content, and Process

Although the present studies have only outlined the *structure* of the key ingredients of personality traits, future studies may determine the specific *content* and *process* of SBEs through appropriate qualitative and quantitative analyses. With regard to the content of SBEs, the approach used in the present studies can be adapted to identify the specific SBEs most relevant to specific traits, or even those relevant only to specific standings on a particular trait. In the area of situations, future

studies may assist in constructing taxonomies of situations and tools to measure properties of situations (e.g., Rauthmann, 2012; Saucier, Bel-Bahar, & Fernandez, 2007; Sherman, Nave, & Funder, 2010, 2012; Yang, Read, & Miller, 2006, 2009). Similarly, in the area of behaviors, the present approach can be used to determine the specific ways in which traits manifest themselves in concrete, everyday behaviors (Studies 6 and 7). Finally, in the area of explanations, lay people seem to have rich conceptual representations for trait terms that include explanatory mechanisms for trait-related behavior. They view traits as also providing an explanation for someone's behavior. Traits, it seems, reflect much more than simple situation-behavior relations. Given the wide range of possible candidates that mediate situational features and behavioral expressions, explanations identified through the present approach can be used to specify the kinds of explanations important to specific traits, how they explain behaviors in situations, and how they lead to accurate (Study 5) or misguided (Study 4) trait inferences.

We relied on lay understandings of the terms *situations*, *behaviors*, and *explanations* in the present research largely because there is no consensus in the field on their scientific definitions. For example, situation researchers have often used lay definitions (Saucier et al., 2007), broad definitions (Yang et al., 2006), or left the term undefined. Content analysis of each of the elements of SBEs should help in developing scientific definitions of these concepts. Furthermore, even though the present studies provided strong evidence for the close connection between traits and SBEs, we do not wish to argue that traits are completely represented by SBEs or vice versa. Content analysis of SBEs may also help in discovering what is still missing in the $P = f(S, B, E)$ equation.

Another important area for future research is uncovering the specific *processes* by which SBEs relate to traits, such as the ways in which they become established and evolve over time. In this regard, SBEs can first be used to account for similarities and differences between individuals. It can be hypothesized that one person is similar to another because they encounter similar situations, behave in similar ways, and for similar reasons. One person is different from another because they encounter different situations, behave in different ways, or for different reasons. Culture can be conceptualized and operationalized in much the same way. It can be hypothesized that one culture is similar to another because members of the cultural groups encounter similar situations, behave in similar ways, and for similar reasons. Cultural differences may occur because members of one cultural group encounter different situations, behave in different ways, or for different reasons, compared with members of another cultural group. Culture can also be thought to exist in any social group, such as nations, ethnicities, and organizations, as long as their members collectively endorse and act on the same SBEs.

Once a culture is identified in terms of SBEs, the antecedents and consequences of these SBEs can be investigated. It

may be hypothesized, for example, that an important aspect of acculturation is to train newcomers to go to certain situations and behave in culture-appropriate ways for culture-appropriate reasons (Hochschild, 1979). As another example, the amount and relative impact of SBEs prevalent in different cultures can be investigated. In a classic paper, Pelto (1968) contrasted societies in which social norms are tightly or loosely imposed on individuals. Deviation from appropriate behaviors is less tolerated in tight societies and more tolerated in loose societies. Loose societies tend to be found in relatively heterogeneous cultures (Triandis, 1995). The tightness-looseness analysis suggests that there might be some cultures in which only a small number of homogeneous SBEs are collectively endorsed, whereas in other cultures there might be a large number of heterogeneous SBEs that are collectively endorsed. Recently, it has also become increasingly important to investigate how people perceive, compete, cooperate, and negotiate with others from other cultures, as well as how to become a culturally accepted person. Although these issues are typically considered difficult to examine, SBEs offer a new, inexpensive, and culturally translatable methodology for such research purposes.

The present studies were limited in that they relied on self- and other-reports related to traits and SBEs. Despite the strong agreement between almost all the self- and other-ratings, there might be a difference between how traits and SBEs are described in such reports and how they are actually experienced. The majority of personality literature has built itself on self- and other-reports, as people's theories of themselves and others are an unavoidable part of personality. However, in future research it is important to investigate traits and SBEs in real settings. Related, in the present studies, the SBEs were generated by panelists to best demonstrate their specific trait ratings. While this does not seem to undermine the overarching point of the present research, that SBEs are likely to be the key ingredients of personality traits, it does raise the concern about the applicability of SBEs generated from other sources. Future studies, for example, may examine the relationship between traits and SBEs naturally observed in daily lives (cf. Mehl, Gosling, & Pennebaker, 2006).

Conclusion

Because the trait and social cognitive perspectives are intimately connected to each other, they can inform each other in important ways (Fleeson, 2012). Traits have been criticized for being too descriptive. Warning us about the potential pitfalls of the trait perspective, Mischel (2009) noted that "put simply, I feared that the human personality in our science was in danger of becoming headless, brainless, self-less, decontextualized from the social world, lacking an unconscious, and missing an emotional/motivational system" (p. 285). The main tenets of the social cognitive perspective are likely to contribute to the trait perspective becoming more

rooted in the social world. Individual differences can be studied not just by comparing abstract trait standings but also by examining concretely, how people behave in certain situations and why.

Similarly, the social cognitive perspective can be informed by major trait perspectives such as the Big Five. The social cognitive perspective was developed with the intention to be a meta-theory. As a result, it has been criticized for being too general and nonspecific. Yet, as the present research suggests, the social cognitive perspective can provide a deeper analysis of traits. Given the close connection between traits and SBEs, and the relative lack of descriptive content of the social cognitive perspective, "there is no reason not to start with the Big Five, and in fact doing so would allow incorporating the extensive empirical knowledge about those traits" (Fleeson & Nofhle, 2008, p. 1677). We trust the challenges for personality research anticipated by Funder (2001) will and should be answered, at least in part, with an integrative view of trait and social cognitive perspectives on personality.

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Notes

- Calculations based on median scores of the other-ratings revealed very similar results across all the studies in the present research and are not discussed further.
- Although this comparison was done between-participants, we also conducted a separate study using a within-participants design. Twenty-four undergraduates rated each of the 100 situations, behaviors, and explanations (SBEs) on one corresponding and one noncorresponding Ten-Item Personality Inventory (TIPI) item. Results were highly consistent. Across these SBEs, the correlation between self-ratings of traits and averaged other-ratings of SBEs was significant for corresponding TIPI items, $r = .82, p < .01$, but not for noncorresponding TIPI items, $r = .05, p = .64$.
- Although this comparison was done between-participants, we also conducted a separate study using a within-participants design. Twenty-five undergraduates rated each of the 100 behaviors on one corresponding and one mismatched TIPI item. Results were highly consistent. Across these behaviors, the correlation between self-ratings of traits and averaged other-ratings

of behaviors was significant for corresponding TIPI items, $r = .76, p < .01$, but not for mismatched items, $r = .01, p = .74$.

- We thank an anonymous reviewer for making this point.

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