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Pers Soc Psychol Rev published online 24 June 2014
DOI: 10.1177/1088868314538548

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Personality Traits and Personal Values: A Meta-Analysis

Laura Parks-Leduc¹, Gilad Feldman², and Anat Bardi³

Personality and Social Psychology Review
1–27

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DOI: 10.1177/1088868314538548

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Abstract

Personality traits and personal values are important psychological characteristics, serving as important predictors of many outcomes. Yet, they are frequently studied separately, leaving the field with a limited understanding of their relationships. We review existing perspectives regarding the nature of the relationships between traits and values and provide a conceptual underpinning for understanding the strength of these relationships. Using 60 studies, we present a meta-analysis of the relationships between the Five-Factor Model (FFM) of personality traits and the Schwartz values, and demonstrate consistent and theoretically meaningful relationships. However, these relationships were not generally large, demonstrating that traits and values are distinct constructs. We find support for our premise that more cognitively based traits are more strongly related to values and more emotionally based traits are less strongly related to values. Findings also suggest that controlling for personal scale-use tendencies in values is advisable.

Keywords

personality traits, personal values, meta-analysis

Advancing an integrative view of the person is a major goal in current personality research (see Barenbaum & Winter, 2008; Cervone, 2005; McAdams & Pals, 2006; Sheldon, 2004). Although personality traits have often been viewed as central to the understanding of the person, the position of personal values has generally been more peripheral (see, for example, Bilsky & Schwartz, 1994; Buss, 1989; Hofstee, 1994). Some personality scholars have suggested the inclusion of values in an integrative model of characteristics of the individual (McAdams, 1996; McClelland, 1996; Shoda & Mischel, 2006; Winter, John, Stewart, Klohnen, & Duncan, 1998), yet, little theoretical or empirical work has been developed to accomplish this goal (Schwartz, 2011a). If traits and values are to be combined into a unified model, a starting point is to examine empirical links between personality traits and personal values.

In this article, we review and clarify conceptual issues regarding proposed models of relationships between personality traits and values, and use meta-analysis to summarize past findings regarding these relationships to advance a more integrative understanding of the person. We make the following contributions to the literature: First, we clarify definitions and describe various views on the nature of the relationships between traits and values; second, we propose a conceptual underpinning for understanding which traits should have stronger relationships with values and why; and third, we offer empirical support for the distinction between traits and values and explore their interrelations using meta-analysis. We position our discussion and analyses within the

context of the most researched models of traits and values, the Big Five (or Five-Factor) model and Schwartz's (1992) Value Theory (respectively).

Personality Traits and Personal Values

Personality traits are typically defined as descriptions of people in terms of relatively stable patterns of behavior, thoughts, and emotions (e.g., McCrae & Costa, 2003). The Five-Factor Model (FFM) is the most researched taxonomy of traits worldwide (e.g., Allik, 2005; McCrae & Costa, 1997); within this model, a large number of traits are combined into five broad trait dimensions that load onto orthogonal factors. The factors and descriptive traits for each are provided in Table 1.

Personal values (e.g., achievement, security) are generally described as rather stable broad life goals that are important to people in their lives and guide their perception, judgments, and behavior (e.g., Rokeach, 1973; Schwartz, 1992). Values are organized in personal hierarchies of

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Table 1. Five-Factor Model of Personality.

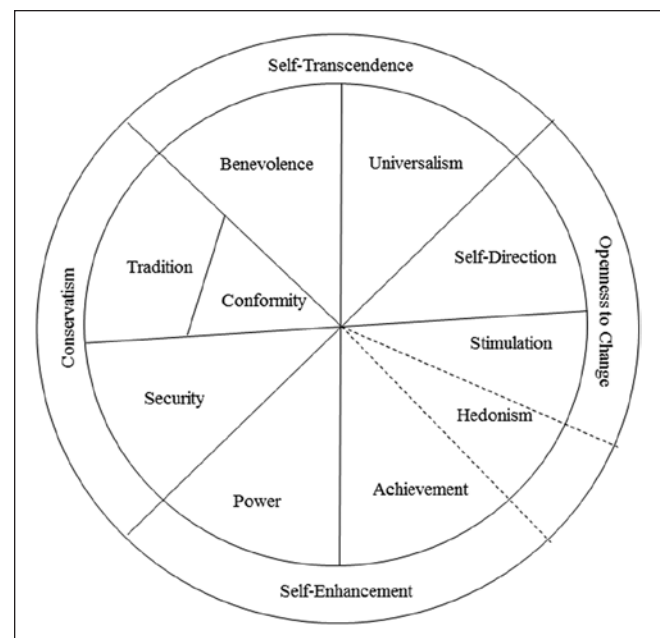
Construct	Description: The extent to which individuals tend to be . . .
Openness to Experience	. . .curious, intellectual, imaginative, creative, innovative, and flexible (vs. closed-minded, shallow, and simple)
Agreeableness	. . .helpful, good-natured, cooperative, sympathetic, trusting, and forgiving (vs. rude, selfish, hostile, uncooperative, and unkind)
Extraversion	. . . sociable, talkative, optimistic, ambitious, assertive, reward-seeking, outgoing, and energetic (vs. introverted, shy, reserved, quiet, and unadventurous)
Conscientiousness	. . .organized, responsible, dependable, neat, efficient, and achievement-oriented (vs. disorganized, lazy, irresponsible, careless, and sloppy)
Emotional Stability	. . . calm, self-confident, stable, resilient, and well-adjusted (vs. neurotic, nervous, insecure, fearful, and anxious)

Table 2. Schwartz Value Taxonomy.

Construct	Description/Items: Individuals who value this believe in the importance of . . .
Power	. . . being in charge of people and resources and having money (social power, wealth, authority)
Achievement	. . . socially recognized successes (ambition, competence)
Hedonism	. . .sensual pleasure (fun, enjoying life)
Stimulation	. . .having stimulating experiences (daring, exciting life)
Self-direction	. . .independence of thought and action (creativity, freedom, independent, curious)
Universalism	. . . promoting the welfare of all people and nature (equality, social justice, protecting the environment)
Benevolence	. . .promoting the welfare of people you are close to (helpfulness, loyalty, honesty, forgiving)
Conformity	. . .controlling impulses to fulfill others' expectations (self-discipline, obedience)
Tradition	. . .maintaining traditions (moderation, respect for tradition, devout)
Security	. . .safety and security of self, family, and nation (family security, social order, clean)

importance, so that different people consider some values as more important than others. The most widely used model of values is the Schwartz's (1992) Value Theory that identifies 10 broad values based on the motivations underlying them. Descriptions of these values are provided in Table 2.

According to Schwartz's theory and ample empirical evidence, values are structured in a circle based on their interrelationships, such that values that are more positively correlated are closer to one another and are thought to be based on compatible motivations (see Figure 1). For example, both self-direction and stimulation values are based on the motivation for novelty and are therefore positively correlated and adjacent to one another in the value circle. Values that emanate from opposite sides of the circle are negatively correlated and are thought to be based on conflicting motivations. For example, self-direction values stem from the motivation for independent thought and action that conflict with the motivation to fulfill others' expectations, the latter underlying conformity values. The 10 values can be further grouped into four higher order types of values organized on two bipolar dimensions: self-enhancement versus self-transcendence, and openness to change versus conservation (see Figure 1). This values structure has been examined in more than 75 countries worldwide and has been found to be largely universal (Schwartz, 2011b).

**Figure 1.** The theoretical structure of values (Schwartz, 1992).

Although traits and values are conceptually similar, researchers describe several distinctions between the two

constructs (for reviews, see Bilsky & Schwartz, 1994; Hitlin & Piliavin, 2004; Parks & Guay, 2009). The most basic difference between traits and values is that traits are descriptive variables whereas values are motivational variables. That is, traits describe how individuals tend to feel, think, and behave. They are therefore summaries of an individual's responses and behaviors. Unlike traits, values express a person's motivations that may or may not be reflected in behavior (Roccas, Sagiv, Schwartz, & Knafo, 2002). For example, a creative person (trait) tends to engage in creative thinking and in creative acts; otherwise, this person would not be labeled as having the trait of creativity. But valuing creativity may or may not result in creative thinking or behavior. Valuing creativity means that the person would like to be creative and thinks that creativity is important, whether or not he or she acts on this value. Hence, although it makes sense to expect that most creative people will view creativity as important in their lives, the trait and the value are not identical, and people can have different scores on a trait and a value that share similar content.

Many researchers (e.g., Olver & Mooradian, 2003) also propose the distinction that traits are more biologically based (Goldberg, 1993; McCrae & Costa, 2008), whereas values are more of a product of a person's environment, including culture, education, parental upbringing, and life events (Rokeach, 1973). We believe that this theoretical distinction has some merit, although it is most likely an oversimplification, and additional research is needed to test the accuracy of this claim. Although traits are known to be influenced by genetics, they do vary somewhat by culture and are influenced by environmental variables in addition to genetics (e.g., Heine & Buchtel, 2009; Kandler, 2012). In addition, research on heritability suggests that values have genetic origins in addition to environmental ones (Knafo & Spinath, 2011; Schermer, Vernon, Maio, & Jang, 2011). Understanding the relationships between traits and values has the potential to add clarity to continued research in this area.

The Nature of the Relationships Between Traits and Values

Researchers differ in the way they view the nature of the relationships between traits and values. They also differ on how they believe traits and values fit within the overall conceptualization of characteristics of the individual (which is often broadly termed "personality," even when it includes characteristics beyond traits). Although both traits and values share a common heritage in the lexical hypothesis (the idea that all important descriptors of an individual will be encoded in language, and can therefore be culled from a dictionary), the two constructs have been examined separately since at least the 1930s, when Allport (1937) took pains to remove values items from his research studies on personality. He referred to traits as temperament and values as character (Allport, 1937); these descriptors resurface at times

(see, for example, Cloninger, 1994), but it is not always clear whether the term "personality" is a reference to temperament only, or to both temperament (traits) and character (values).

Some researchers do not make the distinction between personality traits and personal values, using the terms largely interchangeably (e.g., K. Lee & Ashton, 2004). In contrast, others view traits and values as entirely separate constructs that exist at the same level of abstraction and prediction; these theorists tend to view psychological needs as antecedents to both (e.g., Parks & Guay, 2009; Roccas et al., 2002). They also tend to define personality as the aggregate of traits only (not values).

Other researchers view traits and values as different components of personality (e.g., Caprara, Alessandri, & Eisenberg, 2012; Saroglou & Munoz-Garcia, 2008), drawing on two integrative models of personality. The first model suggests three levels of personality components, differing in their level of contextualization (McAdams, 1995; see also Sheldon, 2004, for a broader variation of this model). In this model, traits are located in the first level as non-contextualized components of personality, whereas values are part of the second level of more contextualized elements of personality (the third level has to do with one's life narratives and personal identity; McAdams, 1995).

The second integrative model suggests that traits are basic tendencies that have a biological basis and that traits influence characteristic adaptations, which include values (McCrae & Costa, 2008). In this model, values are influenced both by traits and by external influences, such as culture and life events. Thus, values are influenced by traits but not solely determined by them. To illustrate, if an individual is naturally creative (trait), he or she might also value creativity as an important life goal to pursue. But this relationship is not deterministic—a person might value creativity even if he or she is not creative, perhaps as a result of culture or upbringing.

Neither of the integrative models suggest any reason to expect strong links between the levels of personality (i.e., McAdams, 1995; McCrae & Costa, 2008). Therefore, if traits and values are related, the relationships are not likely to be particularly strong. These models also both view traits as antecedent to values (see also Wijnen, Vermeir, & Van Kenhove, 2007). Yet, values might also influence traits (Roccas et al., 2002). Specifically, as values motivate behavior, if a value (e.g., benevolence) leads to recurrent behavior (e.g., caring for one's younger siblings), this recurrent behavior will later become a trait, because traits include recurrent patterns of behaviors.

To summarize, some researchers do not clearly distinguish between traits and values, some view them as distinct and separate constructs, and some view them as loosely related components at different levels of personality. This myriad of views, and the confusion it creates in the literature, needs to be acknowledged. As meta-analysis relies on correlations, we do not attempt to provide explanations regarding

the direction of relationships or superiority of one model over the others. However, before integrating traits and values into a comprehensive understanding of the individual, establishing the patterns and magnitudes of these relationships is an important first step.

Two Sources for the Strength of the Relationships Between Traits and Values

Although the links between traits and values are not expected to be strong, some of the traits of the FFM may be more closely related to values than are others, as found in previous research. Although researchers have developed hypotheses for these relationships based strictly on content similarity, we propose that the strength of the relationships between traits and values may be based on two sources of similarities—similarities in the *nature* of particular traits and values and similarities in the *content* of particular traits and values.

Similarities in the Nature of Traits and Values

All values are inherently cognitive (see, for example, Schwartz & Bilsky, 1987). Yet unlike values, traits may vary in the extent to which they are based on cognition (recall that traits are described as recurrent patterns of thought, behavior, and affect; McCrae & Costa, 2003). Supporting the stronger cognitive nature of values compared with traits, Roccas et al. (2002) found that values predicted a cognitively based outcome better than traits, and traits predicted an affectively based outcome better than values. We expect that traits that are more cognitive in nature will tend to have stronger relationships with values, because values are cognitive in nature. In contrast, values are not emotional variables—although they can elicit negative emotions when they are violated, or positive emotions when fulfilled (Locke, 1997; Schwartz, 1992; Sheldon & Elliot, 1999). We therefore expect weaker correlations with values for traits that have a large emotional component.

Which traits in the FFM are the most cognitive and which ones are the most affective? Using judges' ratings of items from multiple Big Five inventories, Pytlik Zillig, Hemenover, and Dienstbier (2002) found that openness to experience had a consistently strong cognitive component, and emotional stability had a strong affective component. The remaining three traits were all described primarily by behavioral items (defined as overt, directly observable actions). This finding suggests that openness to experience should have the strongest relationships with relevant values, whereas emotional stability should have the weakest. The remaining three traits should fall in between. Note that although extraversion is often defined as an affective trait, the typical measurement of extraversion is primarily in behavioral rather than affective terms, so we do not expect it to be similar to emotional stability in its relationships with values.

Additional support for this premise comes from research that examines the neuroscience of personality. Cloninger (1994) developed a personality taxonomy that includes seven major personality traits based on the different neurobiological processes that occur in the brain during trait expression. He retained Allport's terms of temperament and character as separate components of personality and defined temperament as "automatic associative responses to emotional stimuli that determine habits and moods, whereas character refers to the self-aware concepts that influence our voluntary intentions" (p. 266). The temperament traits relate to emotional and automatic processes—activities that are primarily associated with the mid-brain. The character traits involve the frontal lobe (frontal cortex) to a greater degree than the temperament traits, suggesting that the character traits are linked to higher levels of cognitive processing. Neurobiological research therefore supports the premise that traits vary in terms of the extent to which they are affectively or cognitively based. In a subsequent study, De Fruyt, Van De Wiele, and Van Heeringen (2000) correlated Cloninger's traits with the Big Five. They found that emotional stability (neuroticism in their study) was strongly correlated with one of Cloninger's temperament traits (mid-brain), supporting our expectations for a weak correlation for emotional stability with values. Openness to experience, extraversion, and conscientiousness all exhibited moderate positive correlations with both temperament and character traits, whereas agreeableness showed a strong positive correlation only with a character trait (frontal lobe), leading us to expect relatively strong links for agreeableness with values.

In summary, the FFM traits vary in the extent to which they are cognitively oriented, based on both research on the item-level content of Big Five traits and research on the neurobiological processes involved in personality expression. Taken together, we expect that openness to experience should have the strongest links with values, followed by agreeableness. Emotional stability should have the weakest links with values, and conscientiousness and extraversion should fall somewhere in between.

Similarities in the Content of Traits and Values

As research has demonstrated, the strength of relations between traits and values should also be somewhat determined by content similarity when comparing each trait with each value. We briefly review previous hypotheses for expected links between traits and values, focusing on links that have been hypothesized by at least two of these previous articles.

Openness to experience. As stated above, we expect openness to experience to have the strongest and most coherent patterns of relations with values, as compared with the other traits in the FFM. The content of this trait dimension is quite similar to the bipolar higher order value dimension of

openness to change versus conservation (see Figure 1), which contrasts openness to new ideas and experiences with a preference for rigid rules of actions and thoughts (Rohan, 2000). Hence, individuals who score highly on openness to experience are likely to value stimulation and self-direction and to ascribe low importance to conformity, tradition, and security values (Luk & Bond, 1993; Olver & Mooradian, 2003; Roccas et al., 2002). We expect the relationship between openness to experience and self-direction to be particularly strong, as both relate to curiosity and creativity. Individuals who score highly on openness to experience are also likely to value universalism, as universalism values include tolerance and openness to ideas and behaviors that are different from what one is accustomed to (Olver & Mooradian, 2003; Roccas et al., 2002; see also Schwartz, 1992). To summarize, we expect openness to experience to exhibit relationships with the following values: stimulation (+), self-direction (+), universalism (+), conformity (-), tradition (-), and security (-).

Agreeableness. Agreeable individuals are oriented toward helping others and cooperating with them (e.g., Graziano & Eisenberg, 1997; John & Srivastava, 1999). This orientation is similar to the motivation underlying benevolence values, which aims to enhance the well-being of people in one's immediate social environment (family, friends, etc.). Cooperation with others requires some willingness to adapt to group norms as well. Conformity values express the motivation to fulfill the expectations of others in one's social groups. Similarly, tradition values express the motivation to maintain the customs, traditions, and hierarchy of one's social groups. Therefore, both conformity and tradition are likely to be positively related to the cooperative aspect of agreeableness (Luk & Bond, 1993; Olver & Mooradian, 2003; Roccas et al., 2002). In contrast, power values express the motivation for dominance and control, sometimes at the expense of others. They are therefore incongruent with agreeableness (Olver & Mooradian, 2003; Roccas et al., 2002). We thus expect agreeableness to exhibit relationships with the following values: benevolence (+), conformity (+), tradition (+), and power (-).

Extraversion. Extraverts need stimulation. They are highly energetic, ambitious, assertive, and reward-seeking (e.g., Costa & McCrae, 1992; John & Srivastava, 1999). This tendency to seek rewards and to be ambitious is highly compatible with achievement values (Luk & Bond, 1993; Roccas et al., 2002). In addition, being energetic and having a high need for stimulation are highly compatible with stimulation values (Bilsky & Schwartz, 1994; Luk & Bond, 1993; Roccas et al., 2002). We therefore expect extraversion to be related to achievement (+) and stimulation (+) values.

Conscientiousness. This trait dimension describes socially prescribed impulse control that facilitates task and

goal-directed behavior (e.g., Fiske, 1994; Hogan & Ones, 1997; John & Srivastava, 1999). McCrae and John (1992) suggested that conscientiousness has two major components, each compatible with different values. The first is a proactive aspect of conscientiousness, which is related to the motivation for success according to social standards (Costa & McCrae, 1988). This motivation is also expressed in achievement values (Luk & Bond, 1993; Roccas et al., 2002). The second aspect of conscientiousness is inhibitive and is related to the motivation for impulse control (Costa & McCrae, 1988), expressed in conformity values (Olver & Mooradian, 2003; Roccas et al., 2002). Hence, conscientiousness should be related to achievement (+) and conformity (+) values.

Emotional stability. People who score highly on this trait tend to be less prone to negative affect (Costa & McCrae, 1988; John & Srivastava, 1999). They are not easily distressed and have healthy coping strategies (Gunther, Lawrence, & Armeli, 1999). As this trait is primarily affective, and as values do not tend to have direct relations to well-being or distress (Roccas et al., 2002; Sagiv, Roccas, & Hazan, 2004), this trait is likely to be unrelated to values.

Sinusoid Patterns of Correlations

According to values theory (Schwartz, 1992, 1996), if theory predicts that a certain variable (such as religiosity) is associated with a certain value (such as tradition), this variable should also exhibit positive relations with compatible types of values (those that are adjacent to it on the circle; in this example, conformity, security, and benevolence) and negative relations with conflicting types of values (those that are opposite to it on the circle; in this example, hedonism and stimulation). Because the value circle is based on a motivational continuum, related variables should have a systematic pattern of correlations with the entire value system. The variable of interest should be most positively related to the value that is most clearly positively linked with it, and the correlations should become less and less positive as one moves around the circle and away from that value, eventually moving to negative relationships. The negative relationships should reach their maximum with the value on the circle that directly opposes the value with the strongest positive correlation. If one graphs the correlations, with the values provided on the graph from left to right in order as one moves clockwise around the circle, the subsequent line should form a sinusoid curve (a sine wave, with one major peak and one major valley).

We expect openness to experience, agreeableness, and extraversion to display a sinusoidal pattern of correlations with the full set of values. Specifically, the highest positive correlation should be with the corresponding value according to the research reviewed above, and the correlations with other values should decrease monotonically going around the circle of values, creating a sinusoid shape. We do not

expect this pattern with conscientiousness, because it should be most positively related to two non-adjacent values (achievement and conformity).

Possible Moderators

What might affect the strength of relations between traits and values? We consider five moderators, starting with moderators based on theoretical considerations followed by moderators based on methodological issues.

Culture

Culture is often defined as a shared system of meaning (e.g., Smith & Bond, 1998), and cultures differ in the meanings they attribute to events. Different cultures may result in different trait–value relations. Of the possible cultural dimensions that one could consider, individualism versus collectivism and tightness versus looseness seem to have the potential to moderate the relationships between traits and values.

Individualism versus collectivism is the most studied cultural dimension (Taras, Kirkman, & Steel, 2010). According to Hofstede (1980), individualistic cultures emphasize individuality—the uniqueness of the individual and his or her right to pursue personal goals. In contrast, collectivistic cultures emphasize the importance of one’s group and, as a result, the obligations to one’s group. Cultures also differ in strength—in the pervasiveness of social norms and in the tolerance to deviant behavior from those norms (Pelto, 1968). Tight societies have a culture with very strong norms and severe sanctions for the violation of those norms, whereas loose cultures have more ambiguous norms and are more permissive of possible deviance (Gelfand, Nishii, & Raver, 2006; Gelfand et al., 2011). Cultures that are tighter or more collectivistic are thus likely to encourage more normative value endorsement, whereby individuals within the culture would be more likely to subscribe to the dominant values of the culture, rather than those consistent with the individual’s traits. In contrast, members of looser cultures or more individualistic cultures might be more likely to endorse values that are consistent with their individual personality traits, leading to higher correlations between values and traits in more individualistic or looser cultures (for a similar argument regarding the links between values and behavior, see Roccas & Sagiv, 2010).

Alternatively, the relationships between traits and values may be universal as they may stem from the same psychological processes across cultures. Indeed, although ample research demonstrates that the means of measures of values and traits vary cross-culturally (see, for example, Allik, 2012, regarding traits; Schwartz, 2011b, regarding values), the links between the two systems may be universal, just as the intercorrelations among traits and those among values are largely universal (see, for example, McCrae & Costa,

1997; Schwartz, 2011b). Finding that these relationships are universal would support the view that the links between traits and values are based on processes that are largely unaffected by culture. This moderator analysis is therefore particularly interesting, as its results may inform our fundamental understanding of the relationships between traits and values.

Values Instruments

Traits and values have been measured by different instruments, which makes results difficult to generalize because differences across studies may be the result of using different scales that assess traits or values in a somewhat different fashion. However, the variety of scales used, particularly for traits, meant that few studies used the same measures. As a result, we could not conduct fully hierarchical moderator analyses considering both the traits measure and the values measure. For values, however, most studies used one of two instruments: the Schwartz Value Survey (SVS; Schwartz, 1992) or the Portrait Values Questionnaire (PVQ; Schwartz et al., 2001). We therefore conducted a basic moderator analysis using the values instrument as a moderator.

The PVQ was developed from the SVS with the intention of creating an instrument that was less abstract and less cognitively complex. Rather than rating the importance of each value, respondents read descriptions of individuals (i.e., portraits) in terms of values and rate the extent to which the described person is similar to them. An important difference between these instruments for the purposes of the current investigation involves how directly they measure values. The SVS measures values directly, because participants rate abstract goals in terms of how important they are as a guiding principle in their lives. Unlike the SVS, in the PVQ, participants read a description of a person and rate how similar that person is to them. The description of the person includes two sentences. Often, one sentence describes the person in terms of a goal that is important to him or her. This is a direct measure of a value. For example, the first part of an item that measures security values is “It is important to her to live in secure surroundings.” Yet the other sentence sometimes involves trait-like elements. For example, the second sentence of the item above is “She avoids anything that might endanger her safety.” As the PVQ has trait-like elements, it is likely to result in inflated trait–value correlations compared with the SVS.

Personality Instruments

Although 11 personality instruments were utilized in the studies that we examine, two were used frequently enough to include them in a moderator analysis: the Neuroticism, Extraversion, and Openness to Experience (NEO; Costa & McCrae, 1992) and the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991). Arguably the best-validated of personality inventories, the NEO is commercially available

with differing versions based on age and gender, and it is widely used in a variety of settings (John & Srivastava, 1999). McCrae and Costa developed the NEO initially from the work of previous personality researchers, most notably Cattell. They later added Agreeableness and Conscientiousness, creating the NEO-PI-R. This inventory provides 240 items measuring six facets each for each of the five factors. Items are provided in sentence form, with participants rating their level of agreement (or disagreement). McCrae and Costa subsequently developed a short version (60 items; the NEO-FFI) that only assesses the five factor-level constructs. Although it is not identical, the NEO-PI-R and the NEO-FFI are substantially correlated (John & Srivastava, 1999), hence we group them together in our moderator analysis.

Researchers developed the BFI (John et al., 1991) in an effort to achieve some convergence among differing views of the content of the factors of the Big Five, which were conceptualized somewhat differently by different researchers. Ten judges with psychology backgrounds reviewed the literature on all the existing versions of the Big Five, and categorized 300 items from the Adjective Check List (ACL) into five categories. The researchers then retained the items for which there was a high level of agreement and from there, culled the list down to 44 representative items. Because adjectives can sometimes have more than one meaning, they created short phrases for items (John & Srivastava, 1999). The BFI and the NEO are highly correlated but not exactly the same; corrected correlations range from .83 (Extraversion) to .97 (Agreeableness; John & Srivastava, 1999). Because the NEO and the BFI are highly correlated and because both rely on longer descriptions (sentences or phrases), we expect them to yield fairly similar results.

Statistical Adjustments for Values Scale Use

Values research requires a somewhat different approach to data analysis compared with traits. People make decisions about how to behave not based on the absolute importance of a value but rather on its importance relative to other values. In other words, we cannot predict behavior based solely on how high a person's score is on benevolence values; we need to know how high it is relative to other values that the person also endorses. Moreover, individuals differ in their use of the scale such that some people tend to attribute high importance to values across items, and some low. Schwartz (1992) therefore recommended controlling for mean importance of values. Due to these theoretical reasons, we anticipate that the expected trait-value relations will be more accurate when scale-use tendency of values is controlled. Whereas the majority of studies controlled for scale use in the correlation matrix, some reported only the zero-order correlations (in some cases, these studies subsequently controlled for scale use in their regression equations or path estimates, which would typically be viewed as more critical to hypothesis testing).

Other Moderators

Many studies are conducted with university students, who are a more homogeneous group than the general population and can therefore generate somewhat different results in studies compared with the general population (Peterson, 2001). We therefore examined study population as a potential moderator. Because the studies included varied greatly in sample size, we also tested whether sample size moderates trait-value correlations. Finally, as is often done in meta-analyses, we tested whether publication status moderates trait-value relations to account for a possible publication bias.

Meta-Analytic Method

Literature Search

To locate articles for inclusion, we conducted searches using major electronic databases such as PsycINFO. We used the keywords "personality," "traits," and "values" to search for related articles. We additionally scanned the reference sections from the articles produced by the initial search to see whether additional studies could be located in this fashion. For studies located that did not include correlations tables, we contacted authors to request their raw data. Finally, we contacted researchers in this domain to request unpublished studies and posted requests for data on related list serves. Studies were collected up until April 2013; the search yielded 88 possible studies.

Inclusion criteria. We restricted our meta-analysis to the dominant taxonomies for categorizing traits and values reviewed above—the FFM and the Schwartz values theory (see Tables 1 and 2), and to those studies that examined traits and values at the individual (rather than group) level. One study (Wijnen et al., 2007) divided openness to experience into two facets, labeled "self-rated intelligence" and "creativity." Correlations were averaged across these facets to create a factor-level correlation for the meta-analysis. One study (von Collani & Grumm, 2009) grouped values into four broader categories rather than using the 10 value types; it was eliminated from our study (results of analyses for the four higher order value dimensions are available in supplementary files at <http://psr.sagepub.com/supplemental>).

Some studies were excluded because they did not provide the necessary quantitative data for a meta-analysis. Specifically, 8 studies did not include a correlation matrix (and we were unable to obtain a correlation matrix from the author[s]); two studies included only significant correlations; and 1 study used canonical correlations. These were excluded. This yielded a total of 60 studies (listed in Table 3), including 29 from published articles, 1 book chapter, 25 unpublished data sets, 2 data sets from conference presentations, and 3 samples from dissertations. Several studies had very large sample sizes; 10 studies had samples of more than

Table 3. Studies Included in the Meta-Analysis; Possible Moderators.

Study	N	Personality measure	Values measure	Country	Sample population	Method of analysis ^a	Publication status
1. Arthaud-Day, Rode, and Turnley (2012)	582	IPIP	SVS	United States	Students	Partialled	Published article
2. Bardi (2005)	103	BFI	SVS	United Kingdom	Students	Partialled	Unpublished
3. Bardi (2008)	677	TIPI	SVS	United Kingdom	Students	Partialled	Unpublished
4. Bardi, Buchanan, Goodwin, Slabu, and Robinson (2014)	136	BFI	SVS	United Kingdom	Police trainees	Partialled	Published article
5. Bardi, Bull, and Brown (2008)	65	BFI	SVS	United Kingdom	Students	Partialled	Unpublished
6. Bardi and Guerra (2011)	163	BFI	SVS	World	Students	Partialled	Published article
7. Bardi and John (2006)	110	BFI	SVS	United Kingdom	Students	Partialled	Unpublished
8. Bardi, Lee, Hofmann-Towfigh, and Soutar (2009) (a)	128	BFI	SVS	United Kingdom	Students	Partialled	Published article
9. Bardi et al. (2009) (b)	196	BFI	SVS	United Kingdom	Students	Partialled	Published article
10. Bardi, Levontin, and John (2011)	586	BFI, NEO, and Saucier's mini-markers	SVS and PVQ	United States	Students	Partialled	Unpublished
11. Bardi, Loader, Keen, and Martin (2004)	232	BFI	SVS	World	Students	Partialled	Unpublished
12. Barrick, Giluk, Shaffer, and Stewart (2006)	126	PCI	PCVS	United States	Students	Correlations	Unpublished
13. Barrick et al. (2005)	166	PCI	SVS	United States	Students	Correlations	Unpublished
14. Blickle, Schlege, Fassbender, and Klein (2006)	226	NEO	SVS	Germany	76 white-collar criminals; 150 managers	Correlations	Published article
15. Burns and Postlethwaite (2007)	159	PCI	SVS	United States	Students	Correlations	Unpublished
16. Caprara, Schwartz, Capanna, Vecchione, and Barbaranelli (2006)	4,349	BFQ	PVQ	Italy	General population	Unknown	Published article
17. Caprara and Vecchione (2006)	944	BFQ	PVQ	Italy	General population	Correlations	Published article
18. Caprara, Vecchione, and Schwartz (2009)	576	BFQ	PVQ	Italy	Students	Unknown	Published article
19. Cohrs, Kielmann, Maes, and Moschner (2005)	512	NEO	SVS	World	General population	Partialled	Published book chapter
20. Collins and Blum (2011)	199	IPIP	SVS	United States	Students	Centered	Unpublished
21. Dirilen-Gumus (2010) (a)	386	BFI	PVQ	United States	Students	Unknown	Published article
22. Dirilen-Gumus (2010) (b)	382	BFI	PVQ	Turkey	Students	Unknown	Published article
23. Dirilen-Gumus, Cross, and Donmez (2012)	278	BFI	PVQ	United States	General population and Students	Correlations	Published article
24. Dollinger, Leong, and Ulicni (1996) (a)	275	NEO	RVS	United States	Students	Standardized	Published article
25. Dollinger et al. (1996) (b)	198	NEO	RVS	United States	Students	Standardized	Published article
26. Goldberg (2008)	698	IPIP	SVS	United States	General population	Partialled	Unpublished
27. Haslam, Whelan, and Bastian (2009)	180	IPIP	SVS	Australia	Students	Partialled	Published article
28. Knafo (2007)	278	Saucier's mini-markers	SVS	Israel	Students	Correlations	Unpublished
29. Kusdil (2000) (a)	147	NEO	SVS	United Kingdom	General population	Partialled	Dissertation
30. Kusdil (2000) (b)	329	NEO	SVS	Turkey	General population	Partialled	Dissertation
31. Lonnqvist and Versakalo (2005)	498	NEO	SVS	Finland	Military (Reserve Officer School)	Correlations	Unpublished
32. Lonnqvist and Walkowitz (2010)	120	Short Five	PVQ	Germany	Students	Correlations	Unpublished
33. Luengo Kanacri, Rosa, and Di Giunta (2012)	563	BFQ	PVQ	Italy	General population and Students	Correlations	Published article

(continued)

Table 3. (continued)

Study	N	Personality measure	Values measure	Country	Sample population	Method of analysis ^a	Publication status
34. Luk and Bond (1993)	114	NEO	SVS	China	Students	Partialled	Published article
35. MyPersonality—100 items (Kosinski & Stillwell, 2011)	2,986	NEO	SVS	World	Internet	Partialled	Unpublished
36. MyPersonality—20 items (Kosinski & Stillwell, 2011)	1,487	NEO	SVS	World	Internet	Partialled	Unpublished
37. MyType (Wilson, Gosling, & Graham, 2012)	15805	BFI	PVQ	World	Internet	Correlations	Unpublished
38. Olver and Mooradian (2003)	255	NEO and Saucier's mini-markers	SVS	United States	Students	Correlations	Published article
39. Parks (2007)	367	IPIP	RSVS	United States	Students	Correlations	Dissertation
40. Parks (2008)	74	IPIP	RSVS	United States	Employees	Correlations	Unpublished
41. Parks-Leduc, Pattie, Pargas, and Eliason (2014)	420	IPIP	RSVS	United States	Students	Correlations	Unpublished
42. Poling, Woehr, Gorman, and Arciniega (2006)	266	Saucier's Unipolar Markers	PVQ	United States	Students	Correlations	Conference paper
43. Roccas, Sagiv, and Porat (2007)	217	Saucier's mini-markers	PVQ	Israel	Students	Partialled	Unpublished
44. Roccas, Sagiv, Schwartz, and Knafo (2002)	246	NEO	SVS	Israel	Students	Partialled	Published article
45. Saroglou and Munoz-Garcia (2008)	256	NEO	SVS	Spain	Students	Partialled	Published article
46. Stankov (2007)	1,255	IPIP	SVS	United States	Students	Unknown	Published article
47. Steca, Monzani, and Greco (2011)	4,285	BFQ	PVQ	Italy	General population	Unknown	Unpublished
48. Sverdluk and Sagiv (2007)	272	Saucier's mini-markers	SVS	Israel	Students	Partialled	Unpublished
49. Trapnell (2007)	249	BFI	PVQ	Canada	Students	Partialled	Unpublished
50. Uziel, Sagiv, and Roccas (2007)	170	Saucier's mini-markers	SVS	Israel	Students	Unknown	Unpublished
51. Vecchione, Alessandri, Barbaranelli, and Caprara (2011)	1,675	Unique to study	PVQ	Italy	General population	Correlations	Published article
52. Vecchione, Caprara, Schoen, Castro, and Schwartz (2012) (a)	981	BFQ	PVQ	Italy	General population	Partialled	Published article
53. Vecchione et al. (2012) (b)	352	BFQ	PVQ	Spain	General population	Partialled	Published article
54. Vecchione et al. (2012) (c)	190	NEO	PVQ	Germany	General population	Partialled	Published article
55. Vecchione and Mebane (2007)	1,089	BFQ	PVQ	Italy	General population	Correlations	Published article
56. Wijnen, Vermier, and Van Kenhove (2007)	311	Mervielde's Big Five Scale	SVS	Belgium	Students	Correlations	Published article
57. Wolfradt and Dalbert (2003)	212	NEO	SVS	Austria	104 students; 107 general population	Correlations	Published article
58. Xu (2005)	126	IPIP	SVS	United States and China	Employees	Correlations	Conference paper
59. Yik and Tang (1996)	216	Unique to study	SVS	Hong Kong	Students	Correlations	Published article
60. YourMorals.org (Graham et al., 2011)	7,543	BFI	SVS	World	Internet	Correlations	Unpublished

Note. BFI = Big Five Inventory; BFQ = Big Five Questionnaire; IPIP = International Personality Item Pool; NEO = Neuroticism, Extraversion, and Openness to Experience; PCI = Personal Characteristics Inventory; PCVS = Pairwise Comparison Values Survey; PVQ = Portrait Values Questionnaire; RSVS = Revised Schwartz Value Survey; SVS = Schwartz Value Survey; TIPI = Ten Item Personality Inventory.

a. Method of analysis refers to how the researcher(s) presented the correlations. While some researchers just provide the correlations without statistical adjustment, many values researchers control for scale use by partialling out the mean value score or via some other method.

1,000 participants. The largest 4 data sets were data gathered from web sites and social networks—MyType ($N = 15,805$; Wilson, Gosling, & Graham, 2012), YourMorals.org ($N = 7,543$; Graham et al., 2011), and 2 from MyPersonality.org ($N = 2,986$ and $1,487$; Kosinski, Stillwell, & Graepel, 2013). MyType and MyPersonality.org can be accessed from Facebook and include a variety of surveys designed to tell people more about themselves, including a Myers–Briggs test, a Big Five personality traits test, the SVS, and others. MyType surveys have been taken by more than 17,000 users. YourMorals.org is a site developed by social psychologists to enhance the study of various topics related to moral, social, and political psychology; it also includes a variety of surveys, including a Big Five measure and the SVS (Graham, Haidt, & Nosek, 2009; Graham et al., 2011).

Meta-analytic procedure. Meta-analytic procedures were based on Hunter and Schmidt (2004). We corrected correlations for unreliability and sampling error (SPSS syntax adopted from Field & Gillett, 2010). Two studies collected data on traits or values using more than one scale. This yielded two correlations that were not independent (because they came from the same respondents). For one of these studies (Bardi & John, 2006), composite correlations were calculated before inclusion in the meta-analysis. Composites were calculated based on formulas provided by Hunter and Schmidt (2004). Because composite calculations require that intercorrelations between all scales be provided, we were unable to perform the same procedure for the other study (Olver & Mooradian, 2003). For this study, therefore, the average correlations were calculated and these were included instead.

Most studies reported coefficient alpha reliabilities, but a few did not. When possible, correlations were corrected individually. When reliability estimates were not provided, artifact distribution was used to provide a mean reliability; this was then used to correct for unreliability (see Table 4 for average reliabilities). None of the studies reported reliability estimates accounting for transient error, and as a result, they are likely to overestimate the true reliability of the scales. No corrections were made for range restriction, as data were not available to calculate range restriction on values. Past research on traits has found little evidence of range restriction, however, and the same is likely to be true of values.

Moderator analyses. Hunter and Schmidt (2004) recommended hierarchical moderator analyses when a sufficient number of studies exists. If moderators are related and the analyses are not hierarchical, failing to conduct hierarchical moderator analyses can lead to false conclusions (i.e., moderation could be attributed to the wrong construct). However, the number of studies was insufficient to perform hierarchical moderator analyses considering all moderators. As a result, we conducted separate moderator analyses for each of

Table 4. Average Reliabilities (Coefficient α).

Construct	Reliability
Openness to experience	.76
Agreeableness	.73
Extraversion	.78
Conscientiousness	.80
Emotional stability	.81
Power	.72
Achievement	.76
Hedonism	.72
Stimulation	.73
Self-direction	.67
Universalism	.78
Benevolence	.72
Conformity	.68
Tradition	.63
Security	.65

the moderators, but we are cautious in our conclusions. Our cultural moderators were modeled as continuous variables; all other moderators were categorical.

Culture. The primary studies included in the meta-analysis were conducted in 13 countries in North America, Europe, and Asia. This provided cross-cultural variability that enabled us to consider whether cultural differences could create a moderator effect, that is, whether trait–value relationships might vary by culture. Several studies were conducted across multiple countries and cultures; these were removed from this set of analyses.

To conduct the individualism/collectivism moderator analysis, studies were assigned a number representing their level of individualism versus collectivism, based on data from Hofstede (1980; for previous use of this method, see Bardi & Guerra, 2011; Suh, Diener, Oishi, & Triandis, 1998). Based on his empirical data, Hofstede assigned culture scores ranging from 1 to 100, with 1 representing very high collectivism and 100 indicating very high individualism. For example, the United States is very individualistic and has a score of 91. Spain has a score of 51, about the middle of the scale. Hong Kong, with a much more collectivist culture, has a score of 25. Our studies were skewed toward the high end of the scale; the majority of the studies were conducted in countries with moderate to high individualism scores. Because this moderator was modeled as a continuous variable, weighted least squares (WLS) regression was used for the moderator analysis rather than sub-grouping, as recommended by Steel and Kammeyer-Mueller (2002). With WLS regression, the correlation is considered the dependent variable, and the moderator the independent variable, in a regression analysis (with each study weighted by the inverse of the sample error variance). Significant betas indicate that moderation has occurred.

To examine the tightness/looseness of culture as a moderator, studies were assigned a tightness score based on data from Gelfand and colleagues (2011), with higher scores representing a tighter culture. For example, Turkey had a relatively high score of 9.2, representing strong cultural norms. Israel, in contrast, scored a 3.1, suggesting more acceptance of behavior that is inconsistent with cultural norms. Included studies were fairly normally distributed in terms of this cultural moderator; most were in the middle, whereas a few studies were at either end of the range. As in the previous analysis, WLS regression was used to conduct the moderator analysis.

Values instruments. The SVS has a list of 56 (Schwartz, 1992) or 57 (Schwartz, Sagiv, & Boehnke, 2000) value items (e.g., social power, daring) that participants rate as a guiding principle in their own life on a 9-point scale, from -1 (*opposed to my principles*) to 0 (*not important*) to 7 (*of supreme importance*). The scale is asymmetric to capture discriminations between values, as all values are desirable in society (Schwartz & Bardi, 2001). Rather than rating the importance of each value, respondents to the PVQ (Schwartz et al., 2001) read two-sentence descriptions of individuals (i.e., portraits) in terms of values and rate the extent to which the described person is similar to them. There are two versions of the questionnaire—one for males and one for females—to allow for gender-specific pronouns. Sample items include “He likes to be in charge and tell others what to do. He wants people to do what he says” (power); “She looks for adventures and likes to take risks. She wants to have an exciting life” (stimulation). The PVQ includes 40 descriptive “portraits” (value items); respondents indicate how much the described person is similar to them on a 6-point scale ranging from 1 (*very much like me*) to 6 (*not like me at all*). A total of 30 studies used the SVS, and 18 used the PVQ (1 of those used the shortened, 20-item version of the PVQ, but was still included).

Personality instruments. As stated previously, 11 studies using the NEO (Costa & McCrae, 1992) and 14 studies using the BFI (John et al., 1991) were included in this moderator analysis. The NEO includes either 240 or 60 items depending on whether or not it is examining facets. A sample item is “I am a productive person who always gets the job done” (John & Srivastava, 1999); participants rate their level of agreement/disagreement with the statement. The BFI includes 44 short statements such as “Is original, comes up with new ideas,” for which participants utilize a 5-point scale to rate their level of agreement/disagreement in terms of how well the statement describes them.

Statistical adjustments to control for values scale use. To control for scale-use tendency, researchers often partial out the overall mean score of values. Twenty-eight of the studies included in the meta-analysis clearly used a partialling

method, and 22 clearly reported zero-order correlations (we were unable to code some studies due to missing information in the articles; these were eliminated from this analysis). Not all studies controlled for participants’ scale-use tendency in the same way: The majority reported correlations after partialling out the personal mean value score, but 1 study subtracted the mean value score from each value domain score (Collins & Blum, 2011), and 2 studies subtracted the mean value score from each value domain score and then divided that difference by the standard deviation of the scores (Dollinger, Leong, & Ulicni, 1996). Given that they were intended to fulfill the same purpose and probably would have resulted in similar correlations, we treated these methods as sufficiently similar to group them together for the moderator analyses.

Meta-Analytic Results

Individual Correlation Estimates

Tables 5 through 9 provide the results of the main meta-analysis (one table for each trait). As expected, traits and values are related in consistent ways. Openness to experience and agreeableness, in particular, exhibit several strong relationships with values. The meta-analysis reveals that openness to experience is strongly correlated with self-direction ($\rho = .52$); has moderate positive relationships with stimulation ($\rho = .36$) and universalism values ($\rho = .33$); and has a moderate negative relationship with tradition, conformity, and security values ($\rho = -.31, -.27, \text{ and } -.24$, respectively). Agreeableness relates most strongly with benevolence values ($\rho = .61$). It also has moderate relationships with power ($\rho = -.42$), universalism ($\rho = .39$), conformity ($\rho = .26$), and tradition values ($\rho = .22$).

Extraversion and conscientiousness exhibit fewer significant relationships (and no strong relationships) with the Schwartz value domains. Extraversion demonstrates moderate relationships with stimulation, power, achievement, and hedonism values ($\rho = .36, .31, .31, \text{ and } .20$, respectively). Conscientiousness is moderately related to security ($\rho = .37$), conformity ($\rho = .27$), and achievement values ($\rho = .17$). Finally, emotional stability did not demonstrate any significant relationships with the values domains. In total, 18 of the 50 correlations yielded generalizable relationships (those for which the 80% credibility interval around ρ did not include zero; see Table 10 for a summary of these relationships). Eleven of the 50 relationships have 90% confidence intervals (CI; around mean r) that do not include 0 (see Tables 5-9 for mean r and 90% CIs).

The strength of the relationships between traits and values was generally consistent with our theoretical expectations, as the more cognitively based traits tended to have more and stronger relationships with values, and the primarily affective trait (emotional stability) was unrelated to values. The specific relationships were also largely consistent with

Table 5. Meta-Analytic Results for Openness to Experience and Values.

Ten-factor value domains	<i>k</i>	<i>N</i>	Mean <i>r</i>	ρ	<i>SD</i> _{ρ}	<i>CV</i> _{LL}	<i>CV</i> _{UL}	<i>CI</i> _{LL}	<i>CI</i> _{UL}	% Var
Power	52	54,274	-.04	-.06	.11	-.20	.08	-.27	.15	13
Achievement	54	54,747	.08	.11	.12	-.04	.26	-.12	.34	11
Hedonism	53	54,165	.07	.09	.12	-.06	.24	-.14	.32	11
Stimulation	51	53,692	.27	.36	.13	.20	.52	.11	.61	8
Self-Direction	55	54,959	.37	.52	.11	.38	.66	.31	.74	11
Universalism	53	54,165	.25	.33	.10	.20	.46	.12	.53	12
Benevolence	54	54,747	.10	.13	.11	-.01	.27	-.08	.34	13
Conformity	55	54,959	-.20	-.27	.16	-.48	-.07	-.59	.04	6
Tradition	51	53,692	-.21	-.31	.15	-.50	-.12	-.60	-.02	8
Security	54	54,377	-.17	-.24	.17	-.45	-.02	-.56	.09	6

Note. Bolded mean *r* values have a 95% confidence interval that does not include 0. Bolded ρ values have an 80% credibility interval that does not include 0. *k* = number of studies; *N* = total number of individuals across all studies; Mean *r* = the average of the uncorrected correlations; ρ = the estimated true score correlation; *SD* _{ρ} = standard deviation of mean *r*; *SD* _{ρ} = the standard deviation of the corrected correlations; *CV*_{LL} and *CV*_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; 90% *CV* = the 90% Credibility Value—this is the upper limit of the 80% credibility interval; *CI*_{LL} and *CI*_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation; % Var = the percentage of variance that was accounted for by statistical artifacts (sampling error and unreliability of measures).

Table 6. Meta-Analytic Results for Agreeableness and Values.

Ten-factor value domains	<i>k</i>	<i>N</i>	Mean <i>r</i>	ρ	<i>SD</i> _{ρ}	<i>CV</i> _{LL}	<i>CV</i> _{UL}	<i>CI</i> _{LL}	<i>CI</i> _{UL}	% Var
Power	54	54,599	-.31	-.42	.21	-.70	-.15	-.84	.00	3
Achievement	55	54,946	-.18	-.24	.24	-.54	.07	-.71	.23	3
Hedonism	53	54,165	-.08	-.11	.11	-.24	.03	-.32	.10	13
Stimulation	51	53,692	-.04	-.05	.11	-.19	.09	-.26	.17	13
Self-Direction	55	54,959	-.04	-.07	.19	-.31	.18	-.45	.32	5
Universalism	54	54,364	.29	.39	.12	.23	.54	.15	.62	9
Benevolence	56	55,072	.45	.61	.17	.39	.82	.28	.94	4
Conformity	55	54,959	.18	.26	.11	.12	.39	.05	.47	14
Tradition	51	53,692	.15	.22	.12	.08	.37	.00	.45	13
Security	54	54,377	.00	.00	.17	-.22	.22	-.34	.34	6

Note. Bolded mean *r* values have a 95% confidence interval that does not include 0. Bolded ρ values have an 80% credibility interval that does not include 0. *k* = number of studies; *N* = total number of individuals across all studies; Mean *r* = the average of the uncorrected correlations; ρ = the estimated true score correlation; *SD* _{ρ} = standard deviation of mean *r*; *SD* _{ρ} = the standard deviation of the corrected correlations; *CV*_{LL} and *CV*_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; 90% *CV* = the 90% Credibility Value—this is the upper limit of the 80% credibility interval; *CI*_{LL} and *CI*_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation; % Var = the percentage of variance that was accounted for by statistical artifacts (sampling error and unreliability of measures).

expectations: The 14 predicted relationships all generalized, and 4 relationships generalized that we did not hypothesize (agreeableness with universalism; extraversion with power and hedonism; and conscientiousness with security). If we define “strong” relationships as those with a rho greater than .50 (see Cohen, 1988), then 2 of the 50 relationships are strong: agreeableness with benevolence ($\rho = .61$), and openness to experience with self-direction ($\rho = .52$). With only 2 strong relationships out of 50 (after correcting for statistical artifacts), traits and values are clearly distinct constructs. If we rely on the more conservative mean *r*, then none of the relationships would be classified as strong (the strongest would be agreeableness with benevolence; mean *r* = .45). In nearly every case, the percentage of variance accounted for by statistical artifacts was small, resulting in generally wide

credibility intervals. This indicates that moderators are likely present in the data, suggesting the need for a more fine-tuned analysis of the data.

Sinusoidal Pattern of Correlations

Schwartz (1992, 1996) suggested that correlations between values and any other variable should be represented graphically with a sinusoidal curve. In this type of analysis, values are listed on the horizontal axis in order (i.e., moving around the circle) and the correlations with the other variable of interest are then plotted on the vertical axis. Figures 2 to 6 provide plots of the meta-analytic estimates (rho) of the relationships between traits and values. With the exception of emotional stability, which does not exhibit any significant

Table 7. Meta-Analytic Results for Extraversion and Values.

Ten-factor value domains	<i>k</i>	<i>N</i>	Mean <i>r</i>	ρ	SD_{ρ}	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}	% Var
Power	54	54,599	.23	.31	.17	.09	.52	-.02	.63	5
Achievement	55	54,946	.23	.31	.16	.10	.52	-.01	.63	6
Hedonism	53	54,165	.16	.20	.09	.09	.32	.02	.39	15
Stimulation	51	53,692	.28	.36	.07	.27	.45	.22	.50	22
Self-Direction	55	54,959	.12	.17	.17	-.05	.38	-.16	.49	6
Universalism	54	54,364	-.05	-.05	.15	-.25	.14	-.35	.24	7
Benevolence	56	55,072	-.04	-.05	.25	-.37	.26	-.54	.43	3
Conformity	55	54,959	-.13	-.17	.20	-.42	.09	-.56	.23	4
Tradition	51	53,692	-.18	-.25	.20	-.51	.01	-.64	.15	4
Security	54	54,377	-.04	-.05	.17	-.27	.17	-.39	.29	6

Note. Bolded mean *r* values have a 95% confidence interval that does not include 0. Bolded ρ values have an 80% credibility interval that does not include 0. *k* = number of studies; *N* = total number of individuals across all studies; Mean *r* = the average of the uncorrected correlations; ρ = the estimated true score correlation; SD_r = standard deviation of mean *r*; SD_{ρ} = the standard deviation of the corrected correlations; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; 90% CV = the 90% Credibility Value—this is the upper limit of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation; % Var = the percentage of variance that was accounted for by statistical artifacts (sampling error and unreliability of measures).

Table 8. Meta-Analytic Results for Conscientiousness and Values.

Ten-factor value domains	<i>k</i>	<i>N</i>	Mean <i>r</i>	ρ	SD_{ρ}	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}	% Var
Power	54	54,599	.04	.05	.09	-.07	.17	-.13	.23	17
Achievement	55	54,946	.12	.17	.11	.02	.31	-.05	.39	12
Hedonism	54	54,391	-.15	-.19	.15	-.38	.00	-.49	.11	6
Stimulation	51	53,692	-.12	-.16	.18	-.38	.07	-.50	.19	5
Self-direction	55	54,959	.01	.01	.24	-.29	.31	-.45	.47	3
Universalism	54	54,364	-.01	-.02	.18	-.26	.22	-.38	.35	4
Benevolence	56	55,072	.05	.07	.16	-.14	.28	-.25	.39	6
Conformity	55	54,959	.20	.27	.11	.13	.41	.05	.49	12
Tradition	51	53,692	.07	.10	.12	-.05	.25	-.13	.33	13
Security	54	54,377	.27	.37	.19	.14	.61	.01	.74	5

Note. Bolded mean *r* values have a 95% confidence interval that does not include 0. Bolded ρ values have an 80% credibility interval that does not include 0. *k* = number of studies; *N* = total number of individuals across all studies; Mean *r* = the average of the uncorrected correlations; ρ = the estimated true score correlation; SD_r = standard deviation of mean *r*; SD_{ρ} = the standard deviation of the corrected correlations; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; 90% CV = the 90% Credibility Value—this is the upper limit of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation; % Var = the percentage of variance that was accounted for by statistical artifacts (sampling error and unreliability of measures).

relationships with values, the pattern shows the expected sinusoid patterns as predicted by the values theory. Especially for openness to experience and agreeableness, one clear peak and one clear valley is observed such that the relationships increase and decrease monotonously as one moves around the circle. Conscientiousness, as anticipated, has two peaks. Even the weaker meta-analytic effects provide meaningful information, as they follow the sinusoidal pattern predicted by the structure of a circle, so even effects that do not generalize are interesting within the larger picture of how values relate to other variables.

Moderator Analyses

Given the volume of data involved, we present our findings in an abbreviated format in Tables 11 to 15. Additional data

regarding moderator analyses are available from the first author.

Culture. The WLS regression results for individualism/collectivism as a moderator are summarized in Table 11. We proposed that more individualistic cultures would allow individuals greater flexibility in choosing values, such that they would be more likely to choose values consistent with their traits. Thus, we expected that trait–value relationships would be stronger in more individualistic cultures. However, only 4 of the 50 regression equations were significantly moderated by individualism/collectivism. The relationships for which the moderator effect was significant were agreeableness with hedonism and emotional stability with achievement, stimulation, and self-direction. None of these were hypothesized to be related, and none were strong relationships in the main

Table 9. Meta-Analytic Results for Emotional Stability and Values.

Ten-factor value domains	<i>k</i>	<i>N</i>	Mean <i>r</i>	ρ	<i>SD</i> _{ρ}	<i>CV</i> _{LL}	<i>CV</i> _{UL}	<i>CI</i> _{LL}	<i>CI</i> _{UL}	% Var
Power	52	54,274	.02	.03	.08	-.07	.13	-.13	.18	21
Achievement	54	54,747	-.01	-.01	.10	-.14	.12	-.21	.19	14
Hedonism	53	54,165	.01	.01	.05	-.05	.08	-.09	.12	35
Stimulation	51	53,692	.01	.02	.13	-.14	.18	-.23	.27	9
Self-direction	55	54,959	-.01	-.01	.09	-.13	.11	-.19	.18	18
Universalism	53	54,165	-.03	-.03	.07	-.12	.05	-.16	.10	25
Benevolence	54	54,747	-.01	-.01	.10	-.14	.11	-.20	.18	14
Conformity	55	54,959	-.04	-.05	.05	-.12	.01	-.15	.04	43
Tradition	51	53,692	-.02	-.03	.04	-.09	.02	-.12	.05	53
Security	54	54,377	-.02	-.03	.08	-.13	.07	-.18	.12	24

Note. Bolded mean *r* values have a 95% confidence interval that does not include 0. Bolded ρ values have an 80% credibility interval that does not include 0. *k* = number of studies; *N* = total number of individuals across all studies; Mean *r* = the average of the uncorrected correlations; ρ = the estimated true score correlation; *SD* _{ρ} = standard deviation of mean *r*; *SD* _{ρ} = the standard deviation of the corrected correlations; *CV*_{LL} and *CV*_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; 90% *CV* = the 90% Credibility Value—this is the upper limit of the 80% credibility interval; *CI*_{LL} and *CI*_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation; % Var = the percentage of variance that was accounted for by statistical artifacts (sampling error and unreliability of measures).

Table 10. Summary of the Main Meta-Analysis Results (ρ).

	Openness to Experience	Agreeableness	Extraversion	Conscientiousness	Emotional stability
Power	-.06	-.42	.31	.05	.03
Achievement	.11	-.24	.31	.17	-.01
Hedonism	.09	-.11	.20	-.19	.01
Stimulation	.36	-.05	.36	-.16	.02
Self-direction	.52	-.07	.17	.01	-.01
Universalism	.33	.39	-.05	-.02	-.03
Benevolence	.13	.61	-.05	.07	-.01
Conformity	-.27	.26	-.17	.27	-.05
Tradition	-.31	.22	-.25	.10	-.03
Security	-.24	.00	-.05	.37	-.03

Note. Generalizable results (in bold) refer to results for which the 80% credibility interval does not include 0.

meta-analysis (the strongest was agreeableness with hedonism, $\rho = -.11$). Graphing the line resulting from each of the regression results shows that in each case, the slope was positive, and that the line crosses the *x*-axis (such that the relationship goes from negative to positive as the culture goes from more collectivistic to more individualistic). The results do not support our premise that the relationship between personality and values is stronger in more individualistic cultures.

We also expected that looser cultures would allow for stronger relationships between traits and values. For tightness/looseness of culture, the results (Table 12) indicate that this aspect of culture significantly moderated 7 of the 50 relationships: openness to experience with hedonism; agreeableness with universalism and security; extraversion with tradition; conscientiousness with power and universalism; and emotional stability with power. Of those 7 significant effects, none were hypothesized relationships, although one relationship was moderate in strength and generalized in the

main meta-analysis (agreeableness with universalism; $\rho = .39$). For this relationship, the slope was positive and the line did not cross zero, suggesting that as the culture gets tighter, the relationship between the trait and the value gets stronger (counter to our expectations). Of the remaining six significant effects, all crossed zero. Three were negative, suggesting that as the culture became tighter, the relationships between traits and values went from positive to negative. The other three were positive, indicating that as the culture became tighter, the relationships went from negative to positive. Thus, the results of the tightness/looseness moderator do not suggest a consistent effect of culture on these relationships.

In sum, none of the hypothesized relationships (from the main analyses) showed evidence of moderation in our cultural moderator analyses. Those relationships that showed evidence of cultural moderation did not provide results that were either systematic or supportive of our hypothesis. The number of studies (which ranged from 41-47) was quite

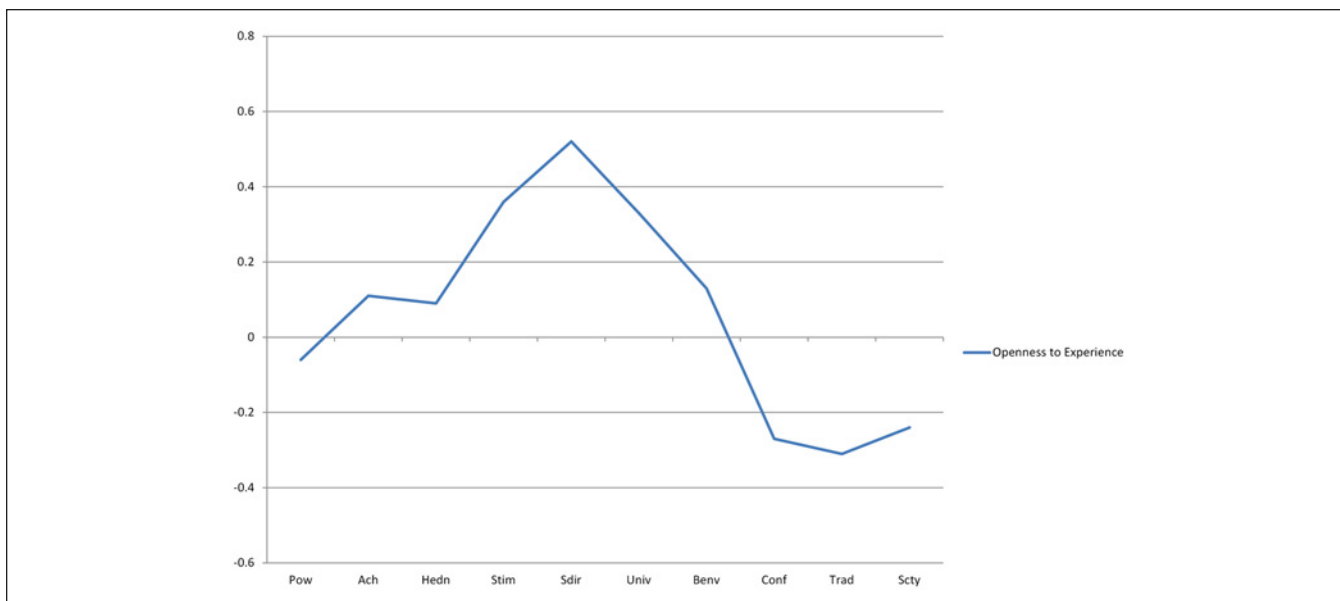


Figure 2. Plot of relationships between openness to experience and values.

Note: Pow = Power, Ach = Achievement, Hedn = Hedonism, Stim = Stimulation, Sdir = Self-direction, Univ = Universalism, Benv = Benevolence, Conf = Conformity, Trad = Tradition, Scty = Security.

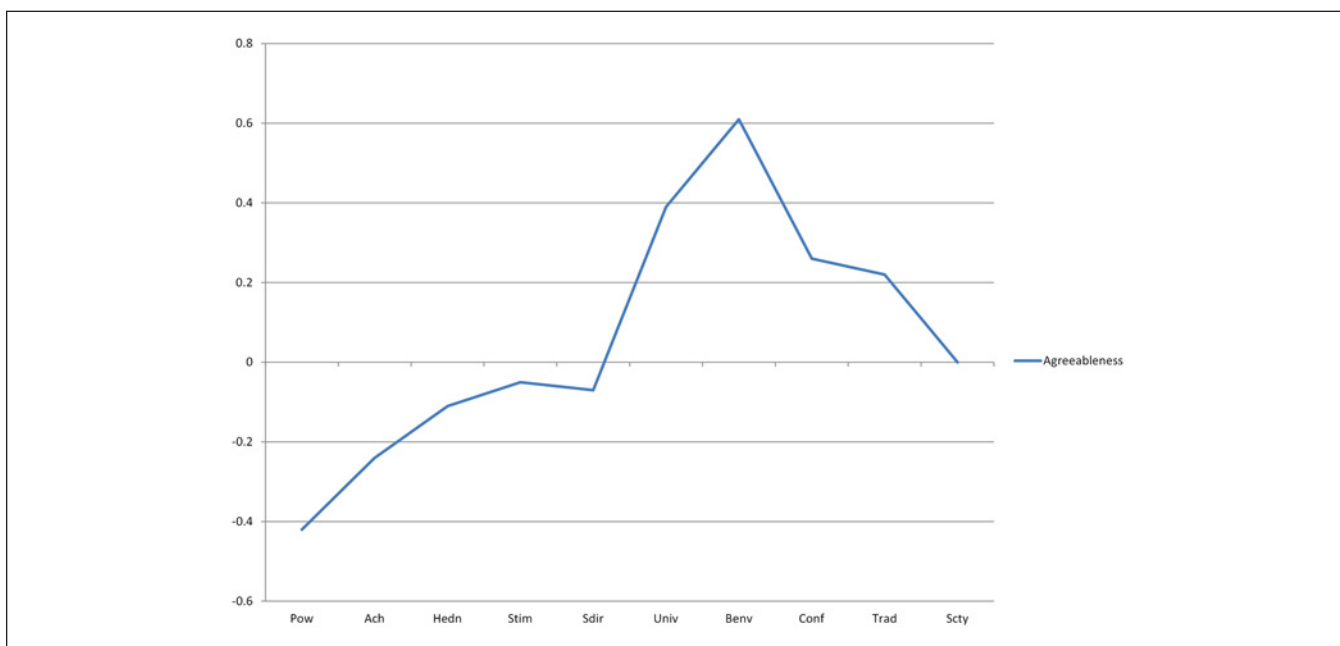


Figure 3. Plot of relationships between agreeableness and values.

Note: Pow = Power, Ach = Achievement, Hedn = Hedonism, Stim = Stimulation, Sdir = Self-direction, Univ = Universalism, Benv = Benevolence, Conf = Conformity, Trad = Tradition, Scty = Security.

modest to detect moderation using regression. With more studies, and studies from a wider range of countries, there may be greater potential for finding meaningful moderation effects by culture. Nevertheless, the current evidence does not support the idea that culture meaningfully moderates the relationships between traits and values.

Values instruments. Results of the analyses using the value instrument (SVS or PVQ) are provided in Table 13. Credibility intervals were still generally wide, and the percent variance accounted for relatively small, after taking into account the values scale that was used. We conducted a series of z tests to determine whether the 95% CI overlapped

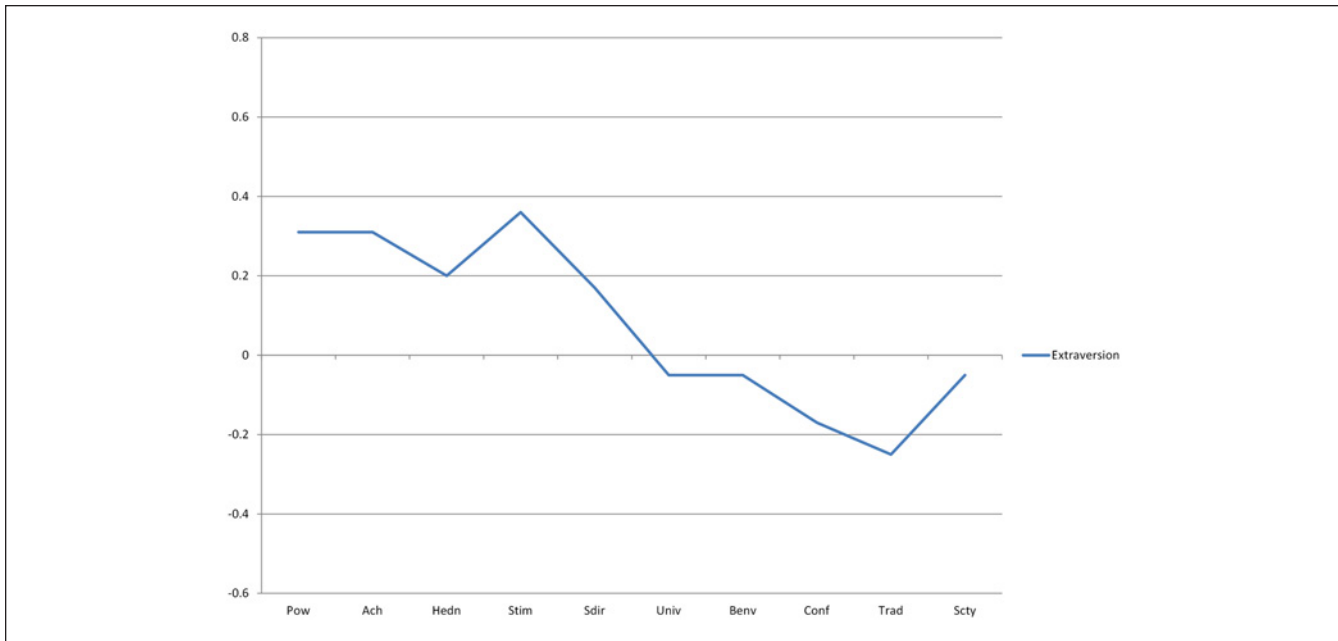


Figure 4. Plot of relationships between extraversion and values.

Note: Pow = Power, Ach = Achievement, Hedn = Hedonism, Stim = Stimulation, Sdir = Self-direction, Univ = Universalism, Benv = Benevolence, Conf = Conformity, Trad = Tradition, Scty = Security.

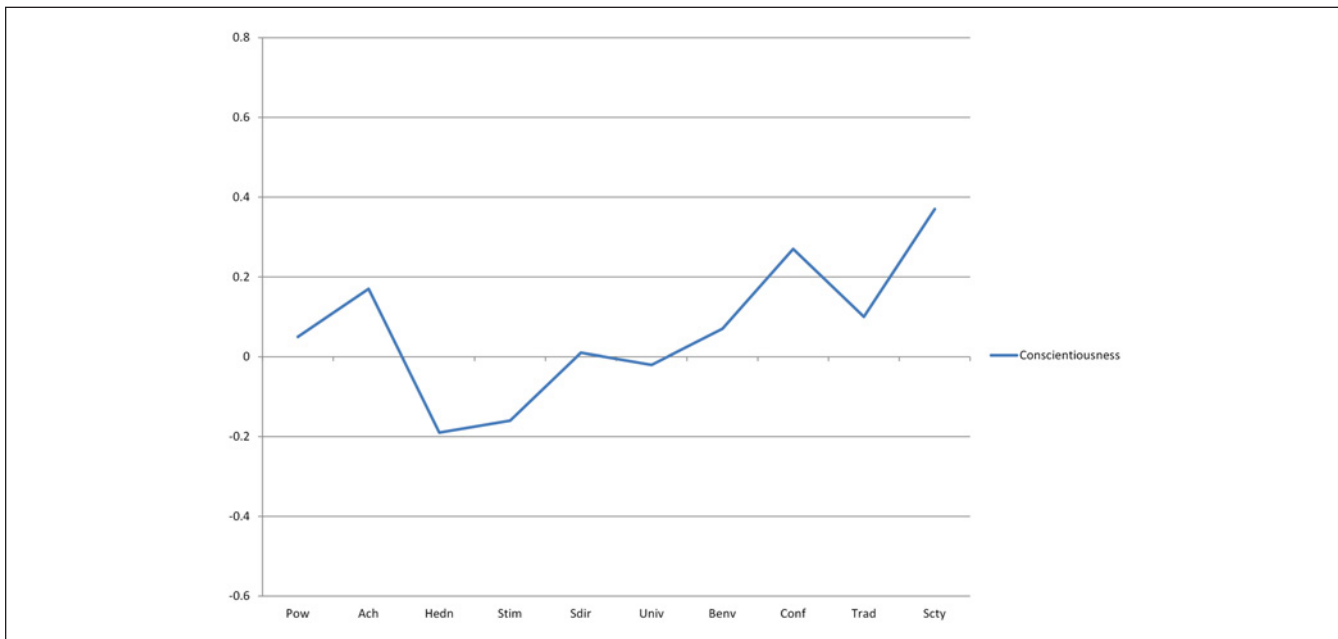


Figure 5. Plot of relationships between conscientiousness and values.

Note: Pow = Power, Ach = Achievement, Hedn = Hedonism, Stim = Stimulation, Sdir = Self-direction, Univ = Universalism, Benv = Benevolence, Conf = Conformity, Trad = Tradition, Scty = Security.

when comparing the two types of studies; results indicate that 29 of the 50 relationships are significantly different between studies using the SVS versus studies using the PVQ. Thus, the values measure appears to act as a

moderator. As additional evidence, more of the relationships generalize when we separate the studies based on values measure used (i.e., the credibility intervals are more narrow and less likely to include 0; so there is more similarity within

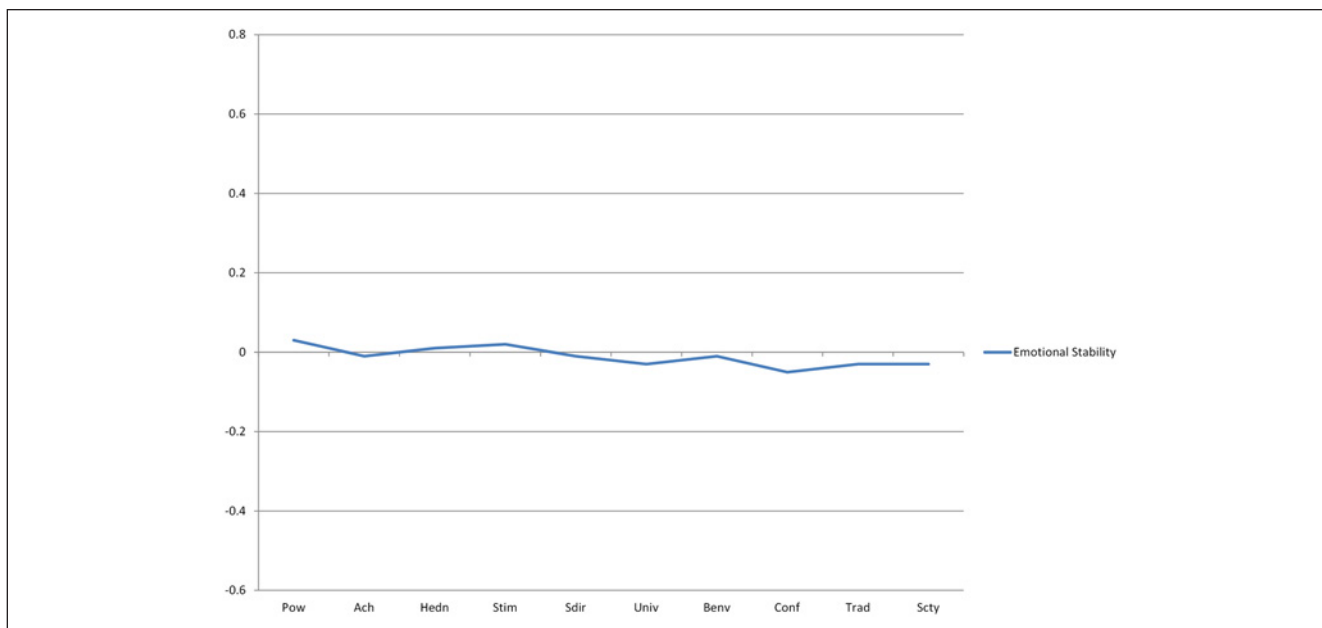


Figure 6. Plot of relationships between emotional stability and values.

Note: Pow = Power, Ach = Achievement, Hedn = Hedonism, Stim = Stimulation, Sdir = Self-direction, Univ = Universalism, Benv = Benevolence, Conf = Conformity, Trad = Tradition, Scty = Security.

Table II. Personality and Values; Individualism/Collectivism of Culture as a Moderator.

	Openness to experience			Agreeableness			Extraversion			Conscientiousness			Emotional stability		
	k	β	R^2	k	β	R^2	k	β	R^2	k	β	R^2	k	β	R^2
Power	44	-.01	.00	45	.14	.02	45	-.09	.01	45	-.07	.00	44	.20	.04
Achievement	46	.16	.03	47	.25	.06 [†]	47	-.03	.00	47	.16	.02	46	.38	.14*
Hedonism	45	-.07	.01	45	.30	.09*	45	-.04	.00	46	.14	.02	45	.21	.04
Stimulation	43	-.13	.02	43	-.07	.01	43	-.03	.00	45	.06	.00	43	.34	.12*
Self-direction	47	.14	.02	47	-.14	.02	47	-.05	.00	47	-.06	.00	47	.31	.10*
Universalism	45	.08	.01	46	-.04	.00	46	.08	.01	46	-.08	.01	45	-.03	.00
Benevolence	46	-.01	.00	47	-.02	.00	47	.20	.04	47	.11	.01	46	-.16	.02
Conformity	47	.00	.00	47	-.05	.00	47	.16	.03	47	.00	.00	47	-.09	.01
Tradition	43	.08	.01	43	.19	.03	43	.10	.01	43	.14	.02	43	-.20	.04
Security	46	.05	.00	46	.17	.03	46	.16	.03	46	.02	.00	46	-.01	.00

Note. k = the number of studies. β = the standardized beta weight of the independent variable (individualism/collectivism).

[†]Significant at $p < .10$.

*Significant at $p < .05$.

each of the two groups of studies than there is across all studies). While 18 relationships generalized in the overall analysis, 24 relationships generalized when using just the SVS, and 24 relationships generalize when using just the PVQ. This pattern suggests that the PVQ and the SVS are not measuring entirely the same content, and researchers should bear this in mind in future research. Although the intention in developing the PVQ was to develop a measure with identical content compared with the SVS, slight differences in the coverage of content may be present. For

example, the value item “wisdom” from the SVS (part of universalism) is not covered in the PVQ. This is probably the value item that relates most strongly to valuing intellect, and therefore, its absence from the PVQ may have weakened the relationships of the PVQ’s universalism with the trait openness; indeed, the PVQ’s universalism was more weakly linked with trait openness compared with the SVS’s universalism. In general, however, as we expected, the PVQ had stronger relationships with traits than the SVS. Specifically, of the 15 hypothesized relationships, 10 were stronger

Table 12. Personality and Values; Tightness/Looseness of Culture as a Moderator.

	Openness to experience			Agreeableness			Extraversion			Conscientiousness			Emotional stability		
	k	β	R ²	k	β	R ²	k	β	R ²	k	β	R ²	k	β	R ²
Power	42	.14	.02	43	-.27	.07 [†]	43	.06	.00	43	-.32	.10*	42	.39	.15*
Achievement	44	-.01	.00	45	-.27	.07 [†]	45	.22	.05	45	-.20	.04	44	-.01	.00
Hedonism	43	.33	.11*	43	-.29	.08 [†]	43	.10	.01	44	-.24	.06	43	.11	.01
Stimulation	41	.30	.09 [†]	41	-.05	.00	41	.19	.04	41	.17	.03	41	.08	.01
Self-direction	45	.03	.00	45	.25	.06	45	.27	.07 [†]	45	.22	.05	45	-.16	.03
Universalism	43	-.01	.00	44	.40	.16*	44	-.11	.01	44	.44	.19*	43	-.06	.00
Benevolence	44	.26	.07 [†]	45	.21	.05	45	-.08	.01	45	.02	.00	44	-.17	.03
Conformity	45	-.01	.00	45	-.16	.03	45	-.19	.03	45	-.14	.02	45	-.08	.01
Tradition	41	-.19	.04	41	-.31	.09 [†]	41	-.33	.11*	41	-.14	.02	41	-.21	.04
Security	44	-.11	.01	44	-.36	.13*	44	-.17	.03	44	-.12	.02	44	.19	.04

Note. k = the number of studies. β = the standardized beta weight of the independent variable (tightness/looseness of culture).

[†]Significant at p < .10.

*Significant at p < .05.

Table 13. Meta-Analytic Rho (and SD-rho) for Personality and Values; Values Measure as Moderator.

	Openness to experience					Agreeableness					Extraversion					Conscientiousness					Emotional stability				
	SVS		PVQ			SVS		PVQ			SVS		PVQ			SVS		PVQ			SVS		PVQ		
	ρ	SD _ρ	ρ	SD _ρ	z	ρ	SD _ρ	ρ	SD _ρ	z	ρ	SD _ρ	ρ	SD _ρ	z	ρ	SD _ρ	ρ	SD _ρ	z	ρ	SD _ρ	ρ	SD _ρ	z
	Power	-.11	.13	-.03	.06	2.82	-.26	.15	-.53	.17	5.56	.14	.10	.43	.07	11.8	.06	.09	.05	.09	.37	.05	.06	.01	.08
Achievement	.13	.15	.11	.06	.63	-.07	.16	-.36	.21	5.02	.20	.12	.39	.15	4.55	.22	.09	.12	.11	3.24	-.05	.04	.02	.12	2.39
Hedonism	.08	.05	.09	.14	.29	-.10	.13	-.12	.08	.64	.14	.06	.25	.08	4.97	-.14	.10	-.22	.17	1.81	.03	.05	.01	.06	1.17
Stimulation	.33	.10	.38	.13	1.38	-.03	.12	-.06	.10	.91	.30	.06	.40	.05	6.06	-.08	.05	-.21	.21	2.58	-.10	.05	.10	.10	7.86
Self-direction	.51	.12	.54	.09	.98	-.02	.19	-.10	.19	1.40	.12	.14	.19	.18	1.41	.04	.14	-.01	.29	.68	-.08	.05	.05	.07	6.87
Universalism	.37	.09	.30	.10	2.39	.29	.11	.45	.07	6.03	.06	.12	-.13	.12	5.24	.01	.14	-.03	.21	.71	.01	.04	-.05	.07	3.30
Benevolence	.10	.11	.16	.10	1.91	.46	.16	.71	.06	7.70	.12	.12	-.20	.24	5.28	.14	.09	.01	.18	2.86	-.03	.05	0	.12	1.01
Conformity	-.20	.14	-.32	.15	2.73	.28	.09	.26	.10	.69	.01	.10	-.29	.16	7.14	.30	.09	.25	.12	1.52	-.05	.03	-.06	.05	.77
Tradition	-.22	.11	-.38	.13	4.30	.27	.11	.20	.11	2.09	-.07	.10	-.40	.12	9.65	.12	.10	.08	.13	1.11	-.03	.04	-.04	.05	.71
Security	-.17	.17	-.28	.15	2.30	.14	.14	-.09	.12	5.94	.08	.13	-.13	.15	4.88	.28	.09	.44	.20	3.19	.01	.04	-.06	.07	3.86
Avg % Variance	18%		9%			14%		8%			20%		8%			22%		5%			55%		17%		

Note. Generalizable results (bolded ρ) refer to results for which the 80% credibility interval does not include 0. The number of studies for the SVS ranged from 27 to 30 (N ranged from 19,276 to 20,183); for the PVQ there were 18 studies (N = 32,707). The z test is used to test for whether the 95% confidence intervals overlap (Hunter & Schmidt, 1990); z > 1.96 indicates that the scores are significantly different at p ≤ .05; z > 2.56 indicates that the scores are significantly different at p ≤ .01. SVS = Schwartz Value Survey (Schwartz, 1992); PVQ = Portrait Values Questionnaire (Schwartz et al., 2001). SD_ρ = the standard deviation of the corrected correlations; Avg % Variance = the average percent variance accounted for.

with the PVQ compared with 5 that were stronger with the SVS, probably because the PVQ includes some trait-like elements in its items.

Personality instruments. Results of this moderator analysis are presented in Table 14. As with the values scales, the moderator analysis with personality scales yielded generally wide credibility intervals and results that did not account for a large percentage of variance. We again conducted a series of z tests to determine whether the 95% CIs overlapped; results indicate that 30 of the 50 relationships are significantly different. Contrary to our expectations, therefore, the personality measure significantly moderated the observed relationships between personality and values. In addition, more of the relationships generalized when using just the

BFI, although this was not true for the NEO (although this could be a result of combining two different versions of the NEO). Relationship with values also tended to be stronger for the BFI as compared with the NEO, although we would not have predicted this a priori, and it is not clear why this should be the case. Given that the NEO and the BFI were developed using different methods, perhaps it is not surprising that the results would differ.

Statistical adjustments to control for values scale use. Abbreviated results of this moderator analysis are provided in Table 15. The z test showed that 37 of the 50 relationships were significantly different when using different methods, so statistical adjustments act as a moderator. As further evidence, 28 of the 50 relationships generalized when limiting our

Table 14. Meta-Analytic Rho (and SD-rho) for Personality and Values; Personality Measure as Moderator.

	Openness to experience					Agreeableness					Extraversion					Conscientiousness					Emotional stability				
	BFI		NEO			BFI		NEO			BFI		NEO			BFI		NEO			BFI		NEO		
	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z
Power	-.08	.05	-.14	.20	.83	-.50	.23	-.46	.05	.63	.33	.13	.09	.02	6.77	.09	.04	.04	.11	1.24	-.02	.06	.02	.02	2.28
Achievement	.10	.08	-.05	.14	3.05	-.38	.25	-.14	.15	2.93	.27	.05	.10	5.94	.18	.08	.16	.09	.56	-.09	.03	-.06	.02	2.94	
Hedonism	.01	.07	.04	.07	1.04	-.14	.05	-.19	.10	1.46	.19	.04	.10	3.28	-.29	.09	-.18	.06	3.65	-.02	.04	.05	.03	4.90	
Stimulation	.31	.08	.22	.09	2.35	-.08	.07	-.15	.08	2.06	.36	.04	.27	.04	5.08	-.25	.16	-.15	.03	2.27	.07	.15	-.11	.02	4.42
Self-direction	.52	.08	.39	.11	3.29	-.17	.13	-.13	.07	.98	.11	.08	-.04	.09	4.34	-.11	.19	-.08	.06	.56	.02	.11	-.03	.05	1.51
Universalism	.33	.05	.39	.08	2.10	.39	.04	.21	.10	5.39	-.05	.15	-.07	.04	.48	-.11	.15	-.12	.11	.19	.01	.00	.03	.04	1.58
Benevolence	.13	.03	.05	.11	2.24	.68	.10	.32	.14	6.96	-.15	.30	.01	.08	1.90	-.02	.15	.08	.07	2.18	.07	-.04	.06	4.13	
Conformity	-.29	.10	-.32	.11	.70	.31	.04	.22	.12	2.39	-.21	.20	-.09	.06	2.13	.30	.04	.25	.05	2.71	-.04	.02	-.04	.00	.00
Tradition	-.29	.08	-.28	.08	.28	.30	.05	.21	.11	2.19	-.28	.21	-.12	.10	2.41	.14	.05	.04	.07	3.56	-.02	.02	-.02	.00	.00
Security	-.25	.10	-.33	.06	2.48	-.01	.18	-.03	.00	.42	-.06	.18	-.02	.06	.78	.50	.14	.17	.09	7.14	-.08	.04	.03	7.86	
Avg % Variance	20%		23%			15%		30%			13%		41%			15%		34%			46%		77%		

Note. Generalizable results (bolded ρ) refer to results for which the 80% credibility interval does not include 0. Fourteen studies used the BFI ($N = 25,776$); for the NEO, the number of studies ranged from 8 to 11 (N ranged from 6,289 to 6,974). The z test is used to test for whether the 95% confidence intervals overlap (Hunter & Schmidt, 1990); $z > 1.96$ indicates that the scores are significantly different at $p \leq .05$; $z > 2.56$ indicates that the scores are significantly different at $p \leq .01$. BFI = Big Five Inventory (John, Donahue, & Kentle, 1991); NEO = Neuroticism, Extraversion, and Openness to Experience, NEO-PI-R or NEO-FFI (Costa & McCrae, 1992). SD_{ρ} = the standard deviation of the corrected correlations; Avg % Variance = the average percent variance accounted for.

Table 15. Meta-Analytic Rho (and SD-rho) for Personality and Values; Method as Moderator.

	Openness to Experience					Agreeableness					Extraversion					Conscientiousness					Emotional stability				
	Partialled		Corr.s			Partialled		Corr.s			Partialled		Corr.s			Partialled		Corr.s			Partialled		Corr.s		
	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z	ρ	SD_{ρ}	ρ	SD_{ρ}	z
Power	-.10	.12	-.05	.08	1.68	-.57	.18	-.25	.13	7.13	.30	.19	.26	.09	0.95	.07	.09	.03	.09	1.53	-.03	.08	.07	.03	5.78
Achievement	.03	.11	.17	.07	5.36	-.37	.24	-.12	.14	4.57	.21	.13	.34	.10	3.96	.14	.07	.19	.16	1.34	-.07	.08	.01	.07	3.69
Hedonism	-.01	.07	.14	.04	9.22	-.16	.08	-.07	.12	2.95	.17	.07	.20	.09	1.25	-.27	.11	-.15	.15	3.11	0	.04	.02	.05	1.49
Stimulation	.28	.08	.39	.09	4.31	-.12	.08	.01	.06	6.21	.34	.06	.35	.05	0.61	-.27	.13	-.09	.14	4.45	.08	.14	-.08	.06	5.09
Self-direction	.46	.10	.55	.09	3.31	-.21	.13	.05	.08	8.59	.05	.12	.25	.10	6.36	-.16	.14	.14	.15	7.17	.05	.08	-.08	.07	6.06
Universalism	.33	.07	.33	.15	0	.35	.12	.37	.10	0.63	-.12	.08	.07	.14	5.55	-.16	.12	.11	.10	8.50	0	.04	-.03	.05	2.23
Benevolence	.10	.09	.14	.11	1.35	.59	.21	.59	.09	0	-.21	.21	.16	.15	7.26	-.04	.13	.20	.08	8.02	.05	.08	-.07	.06	5.94
Conformity	-.33	.11	-.18	.16	3.74	.27	.09	.27	.12	0	-.26	.14	.01	.18	5.76	.27	.07	.33	.09	2.56	-.04	.05	-.07	.05	2.09
Tradition	-.32	.09	-.24	.14	2.24	.25	.09	.25	.13	0	-.32	.18	-.10	.16	4.34	.11	.08	.16	.08	2.09	-.02	.03	-.06	.05	3.20
Security	-.30	.11	-.16	.15	3.36	-.09	.10	.15	.13	7.07	-.14	.11	.09	.17	5.45	.45	.20	.33	.14	2.43	-.06	.09	0	.06	2.75
Avg % Variance	17%		20%			12%		17%			12%		15%			14%		16%			30%		44%		

Note. Generalizable results (bolded ρ) refer to results for which the 80% credibility interval does not include 0. Partialled refers to studies that partialled out the mean value score; corr.s = studies that just provided the straight correlation. SD_{ρ} = the standard deviation of the corrected correlations; Avg % Variance = the average percent variance accounted for. There were 24 to 28 studies that clearly partialled out the mean value score (N ranged from 26,761 to 28,015) and 21 to 22 studies that clearly reported a straight correlation (N ranged from 15,698 to 15,910). The z test is used to test for whether the 95% confidence intervals overlap (Hunter & Schmidt, 1990); $z > 1.96$ indicates that the scores are significantly different at $p \leq .05$; $z > 2.56$ indicates that the scores are significantly different at $p \leq .01$.

analyses to studies using the partialling method, and 22 relationships generalized with studies using zero-order correlations. In comparing the methods, some relationships were stronger when partialling, some were stronger when using zero-order correlations, and some were about the same across the two methods. However, “stronger” does not necessarily mean better or more accurate. As the partialling method has strong theoretical support, partialling out the mean value score should provide a clearer picture of the relationships because correlations that are controlled for scale use are more accurate.

Other moderators. We also examined study population, sample size, and publication status as potential moderators. However, the three moderators were confounded with one another, as several of the larger studies were based on unpublished data from Internet studies involving the general population. None of these moderator analyses yielded clear results; in all three sets of analyses, some differences emerged between the subgroups, but across the 50 correlations, no subgroup was clearly superior to another. Given that the results are not particularly meaningful, in the interest of space, we have not included details from these analyses

(additional details regarding these moderator analyses are available on request from the first author).

Discussion

The current article presents the first meta-analysis of the relationships between personality traits and personal values, focusing on the most studied models of traits and values—FFM and the Schwartz (1992) value theory. The results show meaningful relationships, most of which were predicted a priori and generally follow the sinusoidal pattern predicted by the values circle. As we expected, the strength of these relationships was a product of two factors: the nature of the traits (more cognitively based traits have stronger relationships with values) and content overlap between the traits and values. The pattern of results also suggests that although values and traits are related, the two constructs are distinct. Moderator analyses suggest that the choice of instrument (for both traits and values) sometimes affects the results. Hypothesized links tend to be stronger when using the PVQ to measure values as compared with the SVS, and when using the BFI to measure personality as compared with the NEO. Furthermore, relationships are more consistent with theory when response tendencies for values are statistically controlled. Additional moderator analyses do not support the idea that culture (individualism vs. collectivism and tightness vs. looseness cultural dimensions) affects these relationships. We next elaborate on the specific meta-analytic results and discuss their theoretical and practical implications. We then discuss some limitations and point to important future directions for research.

Trait–Value Associations

In discussing the findings of associations between traits and values, we refer both to the strengths of the links found and to the patterns of associations. With regard to the latter, as values are structured in a circle, relations with other variables should generally follow a sinusoidal pattern of gradual change in correlations as one moves around the circle.

Openness to experience. We expected this trait to have the strongest correlations with values based on the nature of openness as the most cognitively based trait and on the overlap in content between openness and values. And indeed, of the five traits, openness to experience had some of the strongest correlations with values, showing the clearest pattern of correlations and with an almost perfect sinusoidal pattern of correlations. Individuals scoring high on openness to experience tend to value novelty (self-direction and stimulation values) and particularly novel ideas (self-direction) and broadmindedness (universalism values). In contrast, individuals who score low on openness to experience tend to value maintaining the world as it is and the safety it provides (tradition, conformity, and security values).

Agreeableness. Agreeableness is also strongly related to values. Individuals who score high on agreeableness tend to value being prosocial, particularly toward people in their close environment (benevolence values) but also toward people in society in general (universalism values). They also tend to value restraining their impulses to fit in (conformity and tradition), possibly to facilitate getting along with others. In contrast, individuals who score low on agreeableness tend to value having resources and being dominant (power values). Similar to openness, agreeableness had a perfect sinusoidal pattern of correlations with values.

Extraversion. As we expected, extraversion correlated less strongly with values than did openness and agreeableness, but these correlations are nevertheless theoretically meaningful and generally follow a sinusoidal pattern. Individuals who score high on extraversion tend to value excitement and variety (stimulation values), as well as value enhancing their own interests through dominance, success, and having fun (power, achievement, and hedonism values).

Conscientiousness. Conscientiousness is the only trait that was not expected to have a sinusoidal pattern of correlations with values; instead, it was expected to have two peaks of correlations with values that are not adjacent to one another in the value circle (i.e., conformity and achievement). Its correlations with values generally followed the expected pattern, but it was most strongly associated with security values. Hence, this meta-analysis established that conscientious people tend to value order, adherence to rules, and the avoidance of risks. They also tend, to a lesser degree, to value fitting in (conformity) and having socially recognized accomplishments (achievement). In general, however, conscientiousness is less strongly associated with values compared with openness and agreeableness.

Emotional stability. As expected, emotional stability did not correlate with values. This is consistent with our premise that an affectively based trait should not be strongly related to values, which are a cognitively based construct. Our meta-analysis also confirms the idea expressed in a review on values and well-being (Sagiv et al., 2004) that values are not directly related to well-being.

Moderators

Culture. Our analyses were the first to examine cross-cultural differences in the relationships between traits and values. The moderator analyses showed little evidence for a cultural effect on the strength of trait–value relationships, although a larger sample size is needed before drawing firm conclusions. Still, the occasional and unsystematic cultural effects found may suggest that although people in various cultures vary on their levels of traits (e.g., Costa, Terracciano, & McCrae, 2001) and values (e.g., Schwartz, 2011b),

the relationships between traits and values remain largely consistent across cultures, at least in the current range of cultures (see John, Naumann, & Soto, 2008, for traits; Schwartz, 2011b, for values) and for the cultural variables that we considered. Additional dimensions of culture do exist and could also be considered, although we tested those that we believed were most likely to moderate these relationships. As more samples accumulate, the statistical power for answering this important question will increase.

Survey instrument. Using the PVQ to measure values often results in stronger hypothesized trait–value correlations. The PVQ scale may inflate correlations between the two constructs because its items often include trait-like components. Should researchers continue to use it? If an important part of a study is to measure values alone without any traces of traits, strivings, or preferences (all exist in parts of some items), and if distinguishing between values and these other characteristics of the person is important, then researchers might want to use the SVS rather than the PVQ. In all other instances, the PVQ should be adequate for use, and it has some clear advantages over the SVS (detailed in Schwartz, 2005). A newly constructed measure of values (Schwartz et al., 2012) builds on the PVQ and fewer of its items have trait-like components compared with the PVQ, but it is still not completely trait-free. Researchers may also wish to bear in mind that the content of the two instruments may sometimes be slightly different.

Similarly, the choice of personality instrument is likely to have an impact on the strength of the observed relationships between traits and values. As with the values measure, researchers should choose personality measures based on a particular study's purpose and design. We also encourage researchers to evaluate personality instruments at the item level to determine whether the scale is accurately measuring traits or whether it also includes some value-laden items. We did not expect, a priori, for the BFI to exhibit stronger relationships with values as compared with the NEO—We cannot therefore say at this point which personality instrument yields more accurate results, just that the relationships differ.

Statistical adjustments to control for values scale use. Controlling for how respondents use the rating scales in statistical analyses of correlations should result in more accurate correlations between traits and values. Such treatment of the data is in line with the understanding that values exist in a system of values; therefore, the important element in linking to another variable is not so much the absolute importance given to the value but rather its importance compared with all other values—its prioritization over other values in one's value system. This consideration leads to the important recommendation for researchers to control for scale-use tendency in values when correlating values with other variables.

Theoretical Implications

The research literatures on personality traits and personal values share a common heritage: research on both sets of constructs originated with a reliance on the lexical hypothesis for identifying relevant content. The lexical hypothesis proposes that meaningful differences in the characteristics of individuals are encoded in language, such that a review of the dictionary for terms describing individuals will yield a comprehensive list of important characteristics (Goldberg, 1993; McCrae & Costa, 1997; Schwartz, 1994). When Allport (1937) undertook his study of personality traits based on the lexical hypothesis, he stated that personality traits should be non-evaluative and was explicit in his efforts to remove evaluative terms that related to an individual's "character," or values. Until quite recently, that separation of values and traits has led the two sets of constructs to be studied mostly independently of the other.

Traits and values are independently examined as important predictors of a multitude of outcome variables in numerous contexts in various areas such as educational psychology (e.g., Knafo & Schwartz, 2004; Poropat, 2009), organizational psychology (e.g., Berson, Oreg, & Dvir, 2007; Lim & Ployhart, 2004), health psychology (e.g., Bergin, 1991; Terracciano & Costa, 2004), political psychology (e.g., Saucier, 2000; Schwartz, Caprara, & Vecchione, 2010), environmental psychology (e.g., Grunert & Juhl, 1995; Ramanaiah, Clump, & Sharpe, 2000), sports psychology (e.g., Courneya & Hellsten, 1998; M. Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008), occupational psychology (e.g., Gottfredson, Jones, & Holland, 1993; Sagiv, 2002), social psychology (e.g., Cohrs, Moschner, Maes, & Kielmann, 2005; Sibley & Duckitt, 2008), and others. Only recently have researchers started to explore the combined effects of traits and values on various outcomes (see, for example, Parks & Guay, 2012; Roccas et al., 2002). The present article offers the first meta-analysis of the relationships between personality traits and personal values, thereby clarifying these relationships. The results demonstrate that traits and values are related in predictable ways based both on the extent to which the trait is cognitively based and on the extent to which the contents of traits and values are conceptually similar.

As noted previously, researchers tend to adhere to one of three basic views of traits and values: (a) They are different ways of measuring the same thing; (b) they are unique and separate constructs at the same level of abstraction; and (c) they are both part of a hierarchy of personality, but they exist at different levels in that hierarchy. This meta-analysis clearly demonstrates that the first viewpoint is inaccurate. If traits and values were different ways of measuring the same thing, then the correlations between them should have been much stronger, demonstrating convergent validity. Yet only 18 of the 50 relationships generalized, and of those, only 2

were strong relationships. The pattern of results therefore clearly demonstrates that although values are meaningfully linked to traits, the two constructs are distinct.

A review of the traits–values literature provides additional evidence in support of this premise; many studies have examined the differential impact of traits and values on various outcomes and constructs, providing evidence of divergent validity. For example, Roccas and colleagues (2002) found that values and traits have different patterns of correlations with religiosity (associated primarily with values but not traits) and with positive affect (associated primarily with traits but not values). Other researchers have replicated these findings with subjective well-being and life satisfaction (associated primarily with traits; Haslam, Whelan, & Bastian, 2009; Saiz, Alvaro, & Martinez, 2011) and with religiosity and spirituality (associated primarily with values; Saiz et al., 2011; Saroglou & Munoz-Garcia, 2008). Parks and Guay (2012) found that traits and values have differential relationships with the motivational processes of goal content and striving. Finally, several studies have shown that values are better predictors of voting preference and choice than are traits (Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2006; Caprara, Vecchione, & Schwartz, 2009; Dirilen-Gumus, Cross, & Donmez, 2012). Clearly, these are not just different ways of measuring the same thing, and including both traits and values in the same study has the potential to improve predictions of a wide array of outcomes.

As the different views on the nature of the relationships between traits and values can cause confusion in the literature, researchers who study traits and values should state their underlying assumptions and provide a consistent theoretical conceptualization connecting their work with other trait–value studies that conceptualize the link in a similar way. As an example, the HEXACO personality inventory (K. Lee & Ashton, 2004) is a six-factor model that includes Honesty–Humility (not included in our study because it is not a Big Five inventory). The Honesty–Humility factor seems to largely tap values; the developers of the scale state that the common adjectives used to define the factor are “Sincere, honest, faithful/loyal, modest/unassuming, fair-minded” (Ashton & Lee, 2007, p. 154). These descriptors overlap considerably with values items; “honest” and “loyal” are both benevolence items on the SVS, whereas the tradition scale includes the item “humble” (Schwartz, 1992, p. 7), which seems quite similar to modest and unassuming. Fair-minded would seem to fit with universalism values, which are concerned with equality and fairness in society (Schwartz, 1992). If one is of the opinion that traits and values are both aspects of personality, then the HEXACO scale may be a legitimate method for measuring personality. However, if a researcher views personality as an aggregate of traits (and not values), then this scale may not be appropriate for measuring personality. We therefore encourage researchers to make explicit their assumptions and definitions.

Limitations

It is important to outline the unavoidable limitations of this meta-analysis, which stemmed largely from lack of suitable studies. First, the reliability corrections, as stated previously, were based only on coefficient alpha, which does not take into account transient error. As a result, they are likely to be overestimates of the true reliability. Second, information was not available to determine whether range restriction occurred in the data, although we do not think that range restriction is a large issue in the studies examined here. Third, many of these studies were conducted in different languages, using translated scales. Given the number of studies available and the fact that not all studies indicated the language, we made no attempt to control for differences caused by the language of the instrument. Fourth, not enough studies were available in each category to enable conducting hierarchical moderator analyses, making it difficult to pinpoint which construct is causing the moderation, because moderators may be correlated (as noted above). Fifth, focusing exclusively on studies that used the FFM for traits and the Schwartz (1992) value circle for personal values led us to eliminate some studies that might be worth including when a sufficient number of such studies is available. Sixth, we examined only factor-level scores for traits, as most studies did not include facet-level scores. Finally, as noted, the moderator analyses regarding culture are likely to provide clearer results with more studies, especially studies of people from collectivist cultures. When more studies accumulate, a meta-analysis can be conducted that overcomes these limitations.

Future Directions

This meta-analysis points to the importance of three broad future directions that would enhance the integrative understanding of the person: (a) incorporating more elements of the person in one study to enhance the understanding of the structure of enduring psychological characteristics of the person, (b) examining causal directions of different characteristics of the person to enhance the understanding of life-span development of the person, and (c) integrating research from other domains, such as neuroscience, to further inform and develop our understanding of the constructs of traits and values and how they are related.

Incorporating more elements of the person in the same study. This meta-analysis established links between two enduring characteristics of the person: traits and values. However, more elements should be included in the same study, and the simultaneous relationships among multiple elements should be established empirically. In addition to traits and values, these could include goals, needs, beliefs, attitudes, and temperaments, among others. Some work has been conducted in this direction, mainly examining two types of constructs at a time (e.g., Calogero, Bardi, & Sutton, 2009; Goodwin, Polek, & Bardi, 2012; Roberts & Robins,

2000), but much more work is needed as well as the inclusion of more constructs.

Longitudinal directions of relations between enduring characteristics of the person. Although this meta-analysis provides an understanding of how traits and values relate to one another, it represents a “snapshot” of those relationships at one point in time, which may not reflect how the two influence one another across time. Theorists have suggested mechanisms for reciprocal effects of traits and values (Caprara et al., 2006; Roccas et al., 2002), and several researchers have begun to theorize and examine the possible interrelations between the two (e.g., Bilsky & Schwartz, 1994; Olver & Mooradian, 2003; Roccas et al., 2002; Schermer et al., 2011). Traits are often considered more innate; hence, one could argue that if one of these were to influence the other, it would be traits. Alternatively, one could argue that values influence traits—for example, when someone becomes a parent, the value domains of benevolence and security could become more important to them. This should change their behavior, and that behavioral change might, over time, lead to modest changes in traits. We do not, at this point, fully understand the reciprocal nature of these relationships over time, yet this is an important step for gaining an integrative view of the person and understanding how this integration comes about. We therefore encourage researchers to study this question in longitudinal research.

Integrating other research domains. The question of how traits and values are related may be more easily answered if we search broadly in the research literature for other ways to understand these constructs. Both traits and values are psychological constructs—they represent complex processes taking place within the brain. A better understanding of those neural processes may inform our understanding of how traits and values relate to one another, how much they influence one another, and how much they are influenced by genetics (nature) versus environment (nurture). For example, the frontal lobe develops later in life than the mid-brain, not reaching full maturity until early adulthood (Sowell, Thompson, Holmes, Jernigan, & Toga, 1999). This fact suggests that psychological processes involving the frontal lobe might be more influenced by external influences into early adulthood, whereas those that are processed primarily in the mid-brain may be less prone to such influence. If this is true, then stating that traits represent *nature* and values represent *nurture* is overly simplistic, because traits themselves appear to vary in the extent to which they involve the frontal lobe versus the mid-brain. Understanding at a more fundamental level how traits and values are related to one another should help move the field forward in developing a more integrated conceptualization of characteristics of the individual.

Conclusion

The past decade has seen initial attempts to clarify the similarities and differences between traits and values and a

preliminary exploration of the links between them. This meta-analysis establishes, for the first time, the relationships between personality traits (of the most widely used trait model—the FFM) and personal values (of the most widely used value model—the Schwartz value theory). It also establishes for the first time a conceptual underpinning for understanding these relationships, as more cognitively based traits demonstrate stronger relationships with values, and more emotionally based traits exhibit weaker (or no) relationships with values. We now know that openness to experience and agreeableness are the most strongly and coherently related to values; extraversion and conscientiousness also have some meaningful relations to values; and emotional stability is generally unrelated to values. We also have established that traits and values are distinct constructs and that their relationships show little variation cross-culturally. Our moderator analyses also resulted in a recommendation for researchers to control for scale-use tendency in values, and to consider carefully which survey instrument to use as some measures (i.e., the PVQ and the BFI) tend to yield stronger trait–value relationships than do others. The findings from this meta-analysis will enable researchers to use traits and values more effectively in their studies. Moreover, this new knowledge has prepared the ground for developing models that advance our integrative understanding of the person.

Acknowledgment

We wish to thank Frank Schmidt and In-Sue Oh for their feedback on various meta-analytic issues we faced in developing this article. Also, we are extremely grateful to the many researchers who shared their unpublished data sets with us for this study.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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