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A Large-Scale Meta-Analytic Investigation
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The Nomological Net of the HEXACO Model of Personality: A Large-scale Meta-analytic Investigation

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Abstract

Based on lexical studies, the HEXACO Model of Personality has been proposed as a model of basic personality structure, summarizing individual differences in six broad trait dimensions. Although research across various fields relies on the HEXACO model increasingly, a comprehensive investigation of the nomological net of the HEXACO dimensions is missing entirely. Thus, it remains unclear whether each HEXACO dimension accounts for individual variation across theoretically relevant outcome criteria. We close this gap by means of a large-scale meta-analytic investigation, testing whether each HEXACO dimension is uniquely linked to one broad and theoretically relevant outcome domain. Results from 426 individual meta-analyses, 436 independent samples, and 3,893 effect size estimates corroborate this unique mapping. Specifically, Honesty-Humility maps onto the outcome domain of Exploitation, Emotionality onto Insecurity, Extraversion onto Sociality, Agreeableness vs. Anger onto Obstruction, Conscientiousness onto Duty, and Openness to Experience onto Exploration. Overall, the current investigation provides a comprehensive empirical test of the (breadth of) content captured by the HEXACO dimensions, allowing for a broad specification of the nomological net of the HEXACO model overall.

Keywords: HEXACO model; meta-analysis; nomological net; personality traits
The Nomological Net of the HEXACO Model of Personality: A Large-scale Meta-analytic Investigation

Individual differences are omnipresent in all domains of thinking, feeling, and behaving. A seminal step in research on and understanding of individual differences has been the development of models of basic personality structure. These models describe which individual differences—in terms of personality traits—exist and how they can be summarized parsimoniously, yet comprehensively, in basic personality dimensions. Generally speaking, “personality traits are the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances” (Roberts, 2009, p. 140). Basic personality dimensions, in turn, capture several related specific trait characteristics in a single, broad dimension. As such, basic personality dimensions have been compared to latitudes and longitudes (Goldberg, 1993; Ozer & Reise, 1994) as they allow for locating any (more specific) trait in a comprehensive personality space.

Most recent advancements in the study of personality structure starting around 20 years ago (Ashton & Lee, 2001; Ashton Lee, & Son, 2000) have led to the development of a six-factorial model of basic personality structure, termed the HEXACO Model of Personality (Ashton & Lee, 2007). The HEXACO model encompasses six trait dimensions, namely, Honesty-Humility, Emotionality, eXtraversion, Agreeableness versus Anger (in the following termed Agreeableness), Conscientiousness, and Openness to Experience (in the following termed Openness). Research relying on the HEXACO model as a framework of individual differences has heavily increased in recent years, not only in personality psychology (e.g., Ruchensky, Donnellan, & Edens, 2018), but also across (psychological) disciplines such as behavioral economics (e.g., Zhao & Smilie, 2015), clinical psychology (e.g., Gaughan, Miller, & Lynam, 2012), educational psychology (e.g., Allgaier, Zettler, Wagner, Püttmann, & Trautwein, 2015; McAbee, Casillas, Way, & Guo, 2019), political psychology (e.g., Lee,
Ashton, Griep, & Edmonds, 2018), and work and organizational psychology (e.g., Lee, Berry, & Gonzalez-Mulé, 2019; Pletzer, Bentvelzen, Oostrom, & De Vries, 2019).

Despite these developments, there is still a lack of large-scale empirical evidence on the nomological net of the HEXACO dimensions. The nomological net of a construct or its operationalization comprises its interrelations with other (more or less related) constructs and outcomes. We herein simply refer to the latter as outcome criteria or outcomes. Stated differently, a nomological net consists of all the evidence on how a construct is linked to any outcome criteria. In turn, whether a construct’s nomological net corresponds to its theoretical conceptualization—in the sense that the construct is more strongly linked to more proximal outcomes, and more weakly linked to more distal outcomes—has been considered a crucial step for establishing construct validity (for a more detailed introduction, see Cronbach & Meehl, 1955).

Problematically, although the HEXACO dimensions have been linked to countless outcomes, there exist no large-scale empirical attempts to integrate these findings across various outcome domains (for meta-analyses on specific, single outcomes in relation to one or several HEXACO dimensions, see Lee et al., 2019; Moshagen, Thielmann, Hilbig, & Zettler, 2019; Muris, Merckelbach, Otgaar, & Meijer, 2017; Pletzer et al., 2019). As a consequence, it remains open whether each HEXACO dimension—at the broad, aggregate level—accounts for individual variation across outcome criteria that are theoretically relevant in terms of each dimension’s conceptualization. Crucially, given that each HEXACO dimension is meant to represent a unique class of individual differences, each dimension should be particularly linked to—or: map onto—one specific outcome domain, that is, a broad set of theoretically relevant outcome criteria. Evidence on such a mapping—in the sense that each HEXACO dimension maps onto one outcome domain in particular—is necessary (and arguably overdue)
in order to test whether each dimension actually represents its theoretical core, and, in turn, to illuminate the nomological net of the HEXACO model as a whole.

As a remedy, we herein provide the first comprehensive summary of evidence linking the HEXACO dimensions to several criteria and criterion classes representing six distinct outcome domains. Specifically, we theoretically derived outcome domains from the Situation, Trait, and Outcome Activation (STOA) model (De Vries, Tybur, Pollet, & Van Vugt, 2016). This model specifies six key domain-specific situational affordances—*Exploitation*, *Insecurity*, *Sociality*, *Obstruction*, *Duty*, and *Exploration*—that provide a basis for the expression of personality traits in behavior. We test whether the HEXACO dimensions show differential relations with these outcome domains compatible with their theoretical conceptualizations. Overall, we provide 426 individual meta-analyses across 436 independent samples and 3,893 effects to test whether and to what extent each of the six HEXACO dimensions particularly maps onto one specific, theoretically relevant domain of thinking, feeling, and behaving (and vice versa).

In so doing, we provide the first broad overview of the relations between the HEXACO dimensions and various outcomes, both self-reported (referring to the majority of effects) and non-self-reported (e.g., behavioral, observer reports). Indeed, especially in light of the recent “replicability crisis” in psychology, meta-analyses are crucial because they can provide insights into the robustness of effects across studies (Asendorpf et al., 2013; Braver, Thoemmes, & Rosenthal, 2014; Funder et al., 2013; Maxwell, Lau, & Howard, 2015). In the following, we will first briefly introduce the HEXACO model and then derive our hypotheses about which outcome domain each HEXACO dimension should be linked to in particular.

**The HEXACO Model of Personality**

The most influential and common approach to derive models of basic personality structure is to consider results across lexical studies. In lexical studies, researchers select all
personality-descriptive adjectives from a dictionary and collect self- and/or observer ratings on (a subset of) these adjectives. The ratings are then factor-analyzed to obtain a small number of unrelated factors which can explain as much of the covariance in the ratings as possible. Each of the factors contains strongly related adjectives (the specific trait characteristics). As such, the overall aim is to extract/retain as many factors (basic personality dimensions) as necessary but as few as possible to account for a large proportion of individual differences.

For many years, research has predominantly suggested that five basic personality dimensions provide the best solution to summarize individual differences in a comprehensive yet parsimonious way (Digman, 1990; John & Srivastava, 1999; McCrae & Costa, 2008). These so-called “Big Five” dimensions—Neuroticism/low Emotionality Stability, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience/Intellect—have guided research on individual differences in psychology (e.g., Allen & Walter, 2018; Costa, McCrae, & Löckenhoff, 2019; Kim, Jörg, & Klassen, 2019) and beyond (e.g., Huang, 2019; Lodi-Smith, Rodgers, Cunningham, Lopata, Thomeer, 2019). More recently, however, results from several newly conducted or reanalyzed lexical studies across various languages (Ashton et al., 2004; De Raad et al., 2014; Lee & Ashton, 2008; Saucier, 2009) have suggested that six basic personality dimensions can be identified across languages. This finding is most prominently reflected in the HEXACO model (Ashton & Lee, 2007). In the most common operationalization of this model, the HEXACO Personality Inventory-Revised (HEXACO-PI-R; Ashton & Lee, 2009; Lee & Ashton 2006, 2018), each HEXACO dimension is measured

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\[^1\text{For comparisons between the HEXACO model and similar six-factor models of personality see, for example, Thalmayer, Saucier, and Eigenhuis (2011), and Thielmann, Hilbig, Zettler, and Moshagen (2017).} \]
via four facets. Table 1 provides an overview of the HEXACO dimensions, including defining adjectives from lexical studies as well as definitions (for more information on the HEXACO model, see www.hexaco.org).

Comparing the HEXACO model to five-factor models, three basic trait dimensions—Extraversion, Conscientiousness, and Openness—are conceptualized in largely the same way, although the models differ with regard to the facet structure of these dimensions. Correspondingly, correlations between these “similar” HEXACO and Big Five dimensions are typically very large, around \( r = .70 \) to \( .80 \) (e.g., Hilbig, Moshagen, & Zettler, 2016; Lee & Ashton, 2013; Thalmayer et al., 2011).

With regard to the remaining dimensions, however, differences are more substantial. That is, part of the variance of Big Five Neuroticism and Agreeableness is differently assigned to HEXACO Emotionality and Agreeableness, respectively. For instance, some temper-related aspects are typically assigned to Neuroticism in the Big Five, but to Agreeableness in the HEXACO model, whereas some sentimentality-related aspects are typically assigned to Agreeableness in the Big Five, but to Emotionality in the HEXACO model. Moreover and most prominently, the HEXACO model adds a sixth dimension—Honesty-Humility—that comprises some content captured by the Big Five (mostly so by Big Five Agreeableness), but also some content not captured by the Big Five—at least partially due to the persistent omission of content related to ethics, honesty, integrity, and morality in

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2 Because the HEXACO-PI-R and its predecessor, the HEXACO Personality Inventory (HEXACO-PI, Lee & Ashton, 2004), are very similar, we will exclusively use the abbreviation HEXACO-PI-R in what follows, although we also include studies using the HEXACO-PI in our meta-analyses.

3 Note that there are different five-factor/Big Five models (Digman, 1990; Goldberg, 1990, 1993; McCrae & Costa, 2008) which we treat largely interchangeable herein.
corresponding (earlier) lexical analyses (Saucier, 2019). Support for this conceptualization based on six basic trait dimensions has, in addition to the results from lexical studies, been accumulated by two other lines of research in particular. Indeed, both these lines of research suggest that the HEXACO model provides explanatory power over and above other personality models, most prominently the Big Five. First, there is evidence that the personality space as captured by the HEXACO model—and measured via the HEXACO-PI-R—cannot be sufficiently accounted for by measures of the Big Five (Ashton & Lee, 2019; Ashton, Lee, & Visser, 2019; Lee & Ashton, 2019). That is, even after controlling for the fact that the HEXACO model is less parsimonious in terms of the number of proposed basic personality dimensions, the HEXACO-PI-R has been found to account for variance outside the personality space captured by measures of the Big Five.

Second, and arguably even more importantly, evidence shows that the HEXACO dimensions explain unique variance in relevant outcome criteria beyond the Big Five. Most of this evidence focused on criteria that are theoretically linked to Honesty-Humility given that this dimension reflects the main difference between the HEXACO and other models of basic personality structure. Corresponding studies showed that Honesty-Humility outperforms other basic personality dimensions in predicting different outcome criteria, such as the Dark Triad personality traits (i.e., Narcissism, Machiavellianism, and Psychopathy; e.g., Muris et al., 2017), counterproductive work behavior (e.g., Pletzer et al., 2019), dishonesty and cheating (e.g., Heck, Thielmann, Moshagen, & Hilbig, 2018), and prosocial behavior (e.g., Thielmann & Hilbig, 2015; Zhao & Ferguson, & Smillie, 2016). Taken together, HEXACO Honesty-Humility, Emotionality, and Agreeableness cover variance comprised in Big Five Neuroticism and Agreeableness, but (1) part of this variance is assigned to different dimensions, and (2) the HEXACO model captures variance outside the Big Five, especially due to the addition of Honesty-Humility. As such, the HEXACO model represents an adapted
and extended variant of the well-known Big Five. It should be noted, however, that research on how to best structure and summarize personality traits in terms of a specific number of dimensions is still ongoing (e.g., Saucier, 2019).

**Mapping the HEXACO Dimensions onto Theoretically Relevant Outcome Domains**

Although prior research has provided support for (the usefulness of) a six-factorial representation of basic personality as structured in the HEXACO model, a crucial step in corroborating the HEXACO model is still missing: No study to date has provided a comprehensive investigation of its nomological net. As described above, investigating a constructs’ nomological net is crucial to test whether the construct actually represents its theoretical conceptualization. Arguably, the most comprehensive way to achieve such a test is via meta-analytically linking a construct to diverse outcome criteria (for examples, see, e.g., Gorman et al., 2012; Sleep, Weiss, Lynam, & Miller, 2019; Tornau & Frese, 2013).

Here, we apply this logic to test whether each HEXACO dimension accounts for variance across criteria representing one specific, theoretically relevant outcome domain. Such (meta-analytic) evidence allows for a broad understanding of the individual differences captured by a personality dimension: If a basic personality dimension (e.g., Conscientiousness) indeed accounts for individual differences in a specific class of traits (e.g., being diligent, organized, self-controlled), it must be linked to a certain outcome domain (e.g., Duty) comprising a variety of criteria that are theoretically relevant given the conceptualization of the personality dimension in question (e.g., performing at school or at work, forgoing impulse gratification for long-term benefit). In brief, such evidence is crucial to learn whether the dimension matches its (broad) theoretical conceptualization.

Beyond merely testing whether a dimension is linked to a specific outcome domain, it is also crucial to seek corresponding dissociations: Only if each dimension of a personality model such as the HEXACO is related to one theoretically relevant outcome domain in
particular—rather than to several domains—and only if a domain is linked to one dimension in particular—rather than to several dimensions—, the mapping of dimensions onto outcome domains provides insights into the unique class of individual differences captured by each dimension. Thus, to specify the nomological net of the HEXACO model in a comprehensive way, it is also necessary to test to what extent each HEXACO dimension accounts for variance in outcome domains that are not (so) relevant according to the conceptualization of the dimension in question.

To specify which HEXACO dimension should be linked to which outcome domain in particular, we adapt and extend the STOA framework of domain-specific situational affordances introduced by De Vries, Tybur et al. (2016). Specifically, De Vries, Tybur et al. proposed six domain-specific situational affordances that allow for the expression of certain personality traits in behavior in a situation. Although we do not focus on situational affordances, the STOA framework provides a valid theoretical basis for our investigation given that (a) the affordances proposed can arguably be understood to reflect key, distinct domains of human experiencing and behavior and (b) the STOA framework proposes that each HEXACO dimension is associated with one domain-specific situational affordance in particular. The model thus offers a theoretical basis that allows to derive clear hypotheses about which HEXACO dimension should map primarily onto which outcome domain.

In the description of our hypotheses below, we will use the following terms: Dimension refers to one of the six HEXACO personality dimensions (Ashton & Lee, 2007). Domain refers to one of the six outcome domains of thinking, feeling, and behaving (inspired by the STOA framework of domain-specific situational affordances; De Vries, Tybur et al., 2016). Criterion class refers to the way each domain is represented in our analyses, that is, which criterion classes constitute a domain; for instance, the domain Exploitation is represented by the criterion classes of immoral behavior, short-term mating, dark traits, (low)
active cooperation, and (low) environmental behavior. Finally, criterion refers to the specific outcome variables assessed in a study. As such, a criterion class subsumes several criteria; for instance, the criteria constituting the criterion class of immoral behavior are aggression, antisocial behavior, cheating/dishonesty, counterproductive behavior, criminality/delinquency, low integrity, unethical decision-making, and other immoral behaviors.

**Honesty-Humility/Exploitation**

The personality dimension of Honesty-Humility is defined as the “tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation” (Ashton & Lee, 2007, p. 156). It comprises characteristics such as being fair-minded, modest, and sincere versus boastful, deceitful, and greedy (Ashton & Lee, 2008). In the HEXACO-PI-R, Honesty-Humility is operationalized by the facets Fairness, Greed Avoidance, Modesty, and Sincerity.

Although the HEXACO model has been developed based on a data-driven approach (i.e., lexical studies), Ashton and Lee (2001, 2007) conceptualized the HEXACO dimensions so as to refer to concepts from evolutionary theory. At this juncture, Honesty-Humility has been linked to reciprocal altruism (Trivers, 1971). The basic idea of reciprocal altruism is that a person might situationally reduce one’s fitness by increasing another person’s fitness (e.g., via sharing resources), and that individuals can both show and profit from such altruistic behavior at some point. As such, Honesty-Humility essentially refers to one aspect of reciprocal altruism, namely, people’s inclination towards fairness and altruism, that is, non-exploitation and active cooperation, respectively (Ashton, Lee, & De Vries, 2014).

We expect Honesty-Humility to be linked to the outcome domain of Exploitation in particular. Exploitation subsumes thoughts, feelings, and behaviors related to individuals’ inclination to aim for personal gains (broadly defined) at the expense of others. We
operationalize *Exploitation* by means of the following criterion classes: immoral behavior, short-term mating, dark traits, active cooperation, and environmental behavior. The criterion class of immoral behavior comprises criteria characterized by the opportunity to gain personal benefits (both material and immaterial such as feelings of joy or pleasure) at the expense of other people or organizations. As such, immoral behavior comprises criteria such as cheating, counterproductive work behavior, and unethical decision-making. The criterion class of short-term mating involves criteria characterized by the opportunity to engage in sexual encounters without a long-term commitment, such as mating effort and sexual quid pro quo. The criterion class of dark traits encompasses traits that represent a “general tendency to maximize one’s individual utility—disregarding, accepting, or malevolently provoking disutility for others—, accompanied by beliefs that serve as justifications” (Moshagen, Hilbig, & Zettler, 2018, p. 657; e.g., Machiavellianism, narcissism, psychopathy). Active cooperation encompasses criteria representing cooperative, fair-minded, and loyal behavior (e.g., altruism, cooperation). Finally, the criterion class of environmental behavior involves criteria representing one’s willingness to contribute to the improvement of the environment, potentially even at personal costs (e.g., pro-environmentalism). Given that Honesty-Humility is conceptualized in terms of non-exploitation and active cooperation (Ashton & Lee, 2007; Ashton et al., 2014), it must be negatively linked to immoral behavior, short-term mating, and dark traits, and positively linked to active cooperation and environmental behavior.

**Emotionality/Insecurity**

The dimension of Emotionality is defined as representing “tendencies relevant to the construct of kin altruism, including not only empathic concern and emotional attachment toward close others (who tend to be one’s kin) but also the harm-avoidant and help-seeking behaviors that are associated with investment in kin” (Ashton & Lee, 2007, p. 156). It comprises characteristics such as being anxious, emotional, and sentimental versus brave,
stable, and tough (Ashton & Lee, 2008). In the HEXACO-PI-R, the facets of Emotionality are Anxiety, Dependence, Fearfulness, and Sentimentality. By definition, Emotionality is linked to the evolutionary concept of kin altruism/selection (e.g., Hamilton, 1964).

We expect Emotionality to be linked to the outcome domain of Insecurity in particular. Insecurity captures thoughts, feelings, and behaviors related to individuals’ inclination to avoid versus approach threats to themselves or (close) others, including seeking for help and support by others. Specifically, facing threats has uncertain (or insecure) outcomes, ranging from suffering from the threat to obtaining gains from overcoming them. Like the concept of gain related to Exploitation, threat is considered in a broad sense, including actual physical threats, hostile conditions like a stressful environment, situations in which people potentially worry about an outcome (e.g., making an investment, participating in a test), and others.

We operationalize Insecurity by the criterion classes of anxiety, avoidance, risk aversion, and stressors. Anxiety refers to nervousness or worries due to threats or uncertain outcomes, encompassing criteria such as different phobias. Avoidance refers to criteria representing that people actively avoid threatening or uncertain situations (e.g., avoidance motivation). Similarly, risk aversion encompasses variables indicating that people avoid (vs. approach) risks, primarily including risk-taking behaviors and attitudes. Finally, stressors refer to all kinds of variables representing potential stressors, and thus threatening environments. This criterion class encompasses criteria such as job stress and low friend support. Given that Emotionality subsumes individual differences in how anxious, dependent

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4 De Vries, Tybur et al. (2016) propose gender as a common example for testing the mapping between Emotionality and Insecurity. And, indeed, a recent meta-analysis based on the psychometric properties of the HEXACO-PI-R (Moshagen et al., 2019) found large gender differences in Emotionality, with women scoring around 1 standard deviation higher than men.
on others, or emotionally unstable people are, this dimension must be positively related to all criterion classes representing the domain of Insecurity.

**Extraversion/Sociality**

The personality dimension of Extraversion is defined as representing “engagement in social endeavors (such as socializing, leading, or entertaining)” (Ashton & Lee, 2007, p. 156), comprising characteristics such as being active, cheerful, and sociable versus reserved, shy, and withdrawn (Ashton & Lee, 2008). In the HEXACO-PI-R, the operationalized facets of Extraversion are Liveliness, Sociability, Social Boldness, and Social Self-Esteem.

Extraversion has been related to the evolutionary concept of social attention-holding power (Gilbert, 1989, 1992; Gilbert, Price, & Allan, 1995), a more human-oriented variant of the concept of resource-holding potential (Chance & Jolly, 1970). Here, the underlying idea is that engaging in social endeavors directs positive attention to oneself (e.g., being perceived as more dominant or liked), which, in turn, can result in obtaining resources that are dependent on the approval by or support of others.

We expect Extraversion to be linked to the outcome domain of Sociality in particular. Sociality captures thoughts, feelings, and behaviors related to individuals’ inclination between choosing rather solitary activities and social withdrawal as opposed to group activities and social attention. For instance, people can stay absent from social gatherings or, if attending, decide to remain quiet, or they can actively participate in group activities, even to the extent of trying to function as a leader.

We operationalize Sociality by the criterion classes of social network, leadership, and positivity. Social network encompasses criteria representing whether people invest in social activities or have a large social network, including popularity, hours spent with friends, and positive social exchanges. Leadership encompasses criteria representing whether people reach leadership positions or show behavior typically associated with leadership. Finally, positivity
encompasses criteria representing whether people have a generally positive outlook, such as happiness, positive affect, and satisfaction. Positivity can be considered to represent *Sociality* given that social activities usually provide an opportunity to express one’s liveliness and to engage in joyful and positive interactions. Given that Extraversion comprises characteristics related to engagement in social activities as well as enjoying social activities and life in general, this dimension must be linked to the domain of *Sociality*. As such, Extraversion is hypothesized to correlate positively with all criterion classes representing *Sociality*.

**Agreeableness/Obstruction**

The personality dimension of Agreeableness is defined as the “tendency to be forgiving and tolerant of others, in the sense of cooperating with others even when one might be suffering exploitation by them” (Ashton & Lee, 2007, p. 156). It comprises characteristics such as being lenient, patient, and tolerant versus ill-tempered, quarrelsome, and stubborn (Ashton & Lee, 2008). In the HEXACO-PI-R, the facets of Agreeableness are Flexibility, Forgiveness, Gentleness, and Patience. As such, Agreeableness complements Honesty-Humility as another aspect of reciprocal altruism (Trivers, 1971), referring to how people react to exploitative acts by others (e.g., with forgivingness vs. retaliation). This tendency has also been referred to as non-retaliation or reactive cooperation, respectively (Ashton et al., 2014; Hilbig, Zettler, Leist, & Heydasch, 2013).

We expect Agreeableness to be linked to the outcome domain of *Obstruction* in particular. *Obstruction* captures thoughts, feelings, and behaviors related to individuals’ inclination to be lenient and forgiving, or, conversely, to seek for revenge and retaliation. For instance, when being criticized by others, people might try to resolve the situation calmly, or they may respond aggressively. Similarly, some situations allow people to punish others who treated them (or others) badly; in these situations, some people might show forgivingness, whereas others may aim for revenge.
We operationalize *Obstruction* by the criterion classes of insensitivity to unfairness and reactive cooperation. Insensitivity to unfairness encompasses criteria representing an insensitivity towards being exploited by others, including variables such as a low tendency to perceive injustice and low victim sensitivity. Reactive cooperation encompasses criteria related to forgiving, lenient, or patient thoughts, feelings, and behaviors versus retaliation and revenge. As Agreeableness has been related to reactive cooperation in the realm of reciprocal altruism (Ashton et al., 2014), it must be linked primarily to the domain of *Obstruction*. Thus, we hypothesize that Agreeableness will correlate positively with both insensitivity to unfairness (coded such that high values indicate more lenience) and reactive cooperation.

**Conscientiousness/Duty**

The personality dimension of Conscientiousness is defined as representing “engagement in task-related endeavors (such as working, planning, and organizing)” (Ashton & Lee, 2007, p. 156), comprising characteristics such as being diligent, disciplined, and precise versus irresponsible, lazy, and sloppy (Ashton & Lee, 2008). In the HEXACO-PI-R, the facets of Conscientiousness are Diligence, Organization, Perfectionism, and Prudence. Conscientiousness relates to evolutionary notions about obtaining resources through organizing, planning, or working (Ashton & Lee, 2007; De Vries, Wawoe, & Holtrop, 2016). Specifically, engaging in task-related endeavors can result in obtaining resources that cannot be obtained otherwise (e.g., obtaining food based on farming or hunting).

We expect Conscientiousness to be linked to the outcome domain of *Duty* in particular. *Duty* captures thoughts, feelings, and behaviors related to individuals’ inclination to plan, organize, or work in general versus immediate impulse gratification or procrastination. Examples are situations in which people have to learn or work in order to accomplish things versus being tempted to follow their immediate desires instead of resisting and/or investing efforts.
We operationalize Duty via four criterion classes: achievement/performance, exercising, perfectionism, and self-control (vs. impulsivity). Achievement/performance encompasses criteria related to the expression of different levels of achievement or performance, including, for example, academic and job performance. Exercising involves criteria related to exercise behaviors which can be considered as one form of working for a long-term goal (in terms of health and physical fitness). Typical examples of corresponding criteria are physical activity and training hours per week. Further, we consider the criterion class of perfectionism, encompassing criteria representing people’s aim to be thorough and to do things correctly. As a more general form of forgoing immediate impulse gratification, we finally consider the criterion class of self-control (vs. impulsivity), mostly represented by criteria directly assessing self-control or (low) impulsivity. In the light of the traits captured by Conscientiousness, this dimension must be linked primarily to the domain of Duty. We therefore expect positive relations between Conscientiousness and achievement/performance, exercising, perfectionism, and self-control.

Openness/Exploration

The personality dimension of Openness is defined as representing “engagement in idea-related endeavors (such as learning, imagining, and thinking)” (Ashton & Lee, 2007, p. 156). It comprises characteristics such as being creative, ironic, and unconventional versus conventional, shallow, and unimaginative (Ashton & Lee, 2008). In the HEXACO-PI-R, the facets of Openness are Aesthetic appreciation, Creativity, Inquisitiveness, and Unconventionality. Openness relates to evolutionary theorizing about the importance of (cultural/social) learning (e.g., Kameda & Nakanishi, 2002, 2003). That is, engaging in idea-related endeavors can result in obtaining resources through discovery or learning (based on other’s experiences), like discovering new advantageous food or settlement options.
We expect Openness to be linked to the outcome domain of *Exploration* in particular. *Exploration* captures thoughts, feelings, and behaviors related to individuals’ inclination to discover, explore, and even change things, as compared to conservation or tradition and thus stability. We operationalize *Exploration* via the criterion classes of creativity, curiosity, conservatism, and prejudice. Creativity involves criteria representing a tendency for creative, novel, or unconventional approaches. Curiosity, in turn, encompasses criteria related to the opportunity to strive for *Exploration* in the sense of being curious about new things. A typical example (apart from curiosity itself) is openness to novel experiences. Conservatism encompasses criteria representing a tendency to strive for conservative, stable, or traditional thoughts, feelings, and behavior. This criterion class contains criteria such as conservative political orientation or right-wing authoritarianism. Finally, prejudice involves criteria related to a preference for one’s own group as compared to being open to other people or groups, including unfavorable attitudes toward contact with immigrants and general prejudice. Given that Openness captures creative and unconventional characteristics, this dimension must be linked primarily to the domain of *Exploration*. Therefore, we expect a positive correlation between Openness and both creativity and curiosity, and negative correlations between Openness and both conservatism and prejudice.

**The Present Investigation**

In summary, for each of the six HEXACO dimensions one can derive a clear hypothesis about which outcome domain the dimension should primarily map onto if its underlying conceptualization holds. However, variance in criteria—and, in turn, in criterion classes and outcome domains—is typically determined by multiple personality and situational characteristics as well as their interactions (Buss, 2009; Funder, 2009; Furr & Funder, 2018). Moreover, personality dimensions are usually interrelated to some extent (Van der Linden, te Nijenhuis, & Bakker, 2010), which also holds for the HEXACO dimensions (Moshagen et al.,
Thus, it is reasonable to assume certain secondary relations between HEXACO dimensions and outcome domains. Nonetheless, in our investigation we focus on the expected primary relations of each HEXACO dimension with its expected mapping (“counterpart”) domain. The reason is that we aim to provide a theory-driven test on the most aggregated level possible of whether each HEXACO dimension captures a unique class of individual differences that can account for one relevant outcome domain. Consequently, none of the secondary relations that can be expected for a certain HEXACO dimension should turn out stronger than the association between the HEXACO dimension and its counterpart domain.

Figure 1 provides a summary of our hypotheses concerning the mapping of dimensions onto domains, as well as to-be-expected secondary relations. For the sake of brevity and clarity, we do not go into detail with the expected secondary relations, and we also neglect any potential links between a HEXACO dimension and a criterion class or a criterion from another domain than a dimension’s counterpart domain. For instance, one can expect that Emotionality is related substantially to the criterion class of short-term mating within Exploitation, but there is no reason to expect Emotionality to be substantially related to Exploitation in general (which is why we do not consider this link in our expectations further).

Ultimately, our central hypothesis is that each HEXACO dimension is related most strongly to its counterpart domain, and that each outcome domain is related most strongly to its HEXACO counterpart dimension. On the criterion class and criterion level, we expect each HEXACO dimension to correlate substantially with all criterion classes and criteria within its counterpart domain.

Method

Literature Search

We aimed to include all data relevant for our research question from published articles, proceedings, and working papers, as well as unpublished dissertations and theses.
The literature search consisted of several steps performed in July 2016. First, we conducted a search using the string “HEXACO” OR “Big Six” (a keyword used in some articles referring to the HEXACO model) OR “honesty-humility” (based on the assumption that the HEXACO model has often been used primarily because of its inclusion of Honesty-Humility). We searched for documents made available from 2000 onwards, given that Ashton et al. (2000) represents the first article promoting the idea of six personality dimensions in line with the HEXACO model. We conducted this search in EBSCOhost/PsycINFO (searching in: all text; resulting in 560 hits) and in Scopus (searching in: Article Title, Abstract, Keywords; resulting in 508 hits). Further, we conducted three independent searches in Google Scholar, namely, one searching for HEXACO personality, one searching for “honesty-humility” personality, and one searching for “Big Six” personality (searching in: “with at least one of the words”, “anywhere in the article”). Each of the three Google Scholar searches resulted in more than 1,000 hits, from which Google Scholar shows the first 1,000 only, which we extracted.

Second, we copied all references listed on www.hexaco.org, a website hosted by the developers of the HEXACO model, Michael C. Ashton and Kibeom Lee, aiming to list all publications related to the HEXACO model. Third, we scanned all abstracts from in press-articles as well as from all articles in the two most recent issues of the following journals, searching for references to the HEXACO model: Assessment (2 hits), European Journal of Personality, Journal of Individual Differences, Journal of Personality (1 hit), Journal of Personality and Social Psychology, Journal of Personality Assessment (2 hits), Journal of Research in Personality, Learning and Individual Differences (1 hit), Personality and Individual Differences (5 hits), Personality and Social Psychology Bulletin, and Social Psychological and Personality Science.

Fourth, we searched for documents citing one of the following sixteen articles: Ashton and Lee (2007, 2009), Ashton et al. (2014), Ashton, Lee, and Goldberg (2007), Ashton et al.
(2000), Boies, Yoo, Ebacher, Lee, and Ashton (2004), De Vries (2013), De Vries, Ashton, and Lee (2009), De Vries, Lee, and Ashton (2008), Lee and Ashton (2004, 2006, 2008), Moshagen, Hilbig, and Zettler (2014), Romero, Villar, and López-Romero (2015), Sibley et al. (2011), and Wakabayashi (2014). These articles were chosen because they either represent a seminal theoretical article about the HEXACO model or introduce a questionnaire aiming to assess the HEXACO dimensions in a certain language. Overall, the search resulted in 1,288 hits excluding duplicates.

Because the coding of the extracted documents took longer than expected, we repeated all search steps in September and October 2017, limiting our search to findings published from 2016 onwards (EBSCOhost/PsycINFO, resulting in 150 hits; Scopus, resulting in 128 hits; Google Scholar, again resulting in several thousand hits; documents that cited one of the sixteen articles, resulting in 540 hits).

Combining all searches and excluding duplicates across the search strategies resulted in 2,371 references of which—based on the title, abstract, and keywords—1,208 references were identified as being potentially relevant for our investigation (other references referred to, e.g., the Big Six audit firms, chemical structures involving the respective search strings, or non-empirical discussions of the concept of humility). These 1,208 references were then screened thoroughly with regard to the inclusion criteria described in what follows. Whenever we had no access to a document or to relevant information concerning the inclusion criteria or the coding of the study variables (see below), we contacted the corresponding author via email and asked for the document or information, respectively.

**Inclusion Criteria**

To be included in one of the meta-analyses, documents needed to report empirical findings based on a self- and/or observer report version of the HEXACO Personality Inventory-Revised (HEXACO-PI-R). As such, we included studies based on the 60-item
HEXACO-60 (Ashton & Lee, 2009), the 100-item HEXACO-100 (Lee & Ashton, 2018), the full 200-item HEXACO-PI-R (HEXACO-200; Lee & Ashton, 2004, 2006), or an ad hoc created questionnaire based on HEXACO-PI-R items. For ad hoc questionnaires, we required the items to cover all four facets of a respective dimension, so as to ensure that a dimension was captured in sufficient breadth.⁵

Regarding the type of publications, we focused on journal articles, proceedings, dissertations, theses, and working papers published in English. We excluded book chapters and books based on a screening of 20 random exemplars, none of which reported empirical findings that had not previously been reported in a published article (and were thus already included). Note that the exclusion criteria often overlapped (e.g., a German book chapter) so that the following percentages are based on our coded exclusion criterion.

Based on the criteria, we excluded 364 (30%) documents that did not include a HEXACO-PI-R questionnaire or reported no empirical data at all, 77 (6%) documents that were published in a language other than English, 65 (5%) books/book chapters, and 59 documents because of data/sample overlap (5%). Another 87 documents (7%) had to be excluded because there was insufficient information available to code the data (see below), and the corresponding authors either did not respond to our requests to provide additional information (4%; note that 69 authors kindly responded to our request), or we were unable to obtain a valid contact information of the corresponding author (3%). Finally, for the current

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⁵ Originally, we aimed to also include studies using the Brief HEXACO Inventory (BHI, De Vries, 2013) or HEXACO scales based on the International Personality Item Pool (IPIP-HEXACO, Ashton et al., 2007). In the process of coding, however, it soon became obvious that the vast majority of relevant studies used the HEXACO-PI-R. We thus decided to neglect findings based on the BHI or the IPIP-HEXACO to obtain more straightforward results that do not bear the danger of biases due to outliers produced by other inventories.
meta-analyses, we excluded 235 (19%) documents because the reported studies did not address any criterion representing a domain as investigated herein (e.g., the Big Five).

In case a document fulfilled the criteria for inclusion, but effect size information was missing for (some) criterion variables of interest, we contacted the corresponding author and asked for the full correlation matrix of the variables of interest, including the intercorrelations between the HEXACO dimensions (if several HEXACO dimensions were assessed). In this process, we considered all criterion variables assessed in a study (as apparent from the document), even if these were neglected in the report of results. Thereby, we also included previously unpublished data in the meta-analyses. Further, we contacted the corresponding authors whenever we identified a possible overlap in the use of certain datasets in different documents, aiming to avoid repeated inclusion of the same data. More generally, great care was taken to ensure that documents were excluded the data of which had already been reported elsewhere. Overall, we included 321 documents (27% of the thoroughly screened documents) for at least one of the reported meta-analyses.

**Coding of Study Variables**

Coding of the data was conducted by the two first authors. The coding scheme including a brief description of all variables coded (Table O1) as well as the data used in the analyses are available in the additional materials on the Open Science Framework (OSF, link for peer-review: https://osf.io/3ykq8/?view_only=1a08815e35fd450fbab70166320ac869). The two coders first coded a random selection of 20 articles and resolved any disagreement, and then repeated this procedure for a second set of random 30 articles yielding very high agreement across the codings. All documents were then divided equally among the coders.

In order to ensure a valid representation of domains for our analysis, we combined a top-down and a bottom-up approach to assign criterion classes and criteria to the six theoretically derived outcome domains focused on herein. Specifically, the first and second
authors first independently proposed criterion classes representing a certain domain, and then
discussed their suggestions until agreement was reached. Then, the third and fourth author
critically evaluated the resulting suggestions and, in case of any disagreement, all authors
discussed until agreement was reached. Next, in the processes of screening and coding, the
coders considered all data potentially representing a domain. Once the coding of the data was
completed, but before any analyses were conducted, the first and second authors
independently assigned all available criteria to criterion classes, and discussed their
assignments until agreement was reached. This process was then repeated for the assignment
of criterion classes to domains. Next, the third and fourth author again evaluated the
assignments, and finally all authors discussed until complete agreement was reached.

Analytic Procedures

Our analyses are based on Pearson’s product-moment correlation coefficient $r$. Effect
sizes provided in different metrics were transformed into $r$ using appropriate conversion
formulas (e.g., Borenstein, Hedges, Higgins, & Rothstein, 2009). The corresponding R script
for effect size transformation and aggregation can be found in the additional materials on the
OSF. A single study could contribute multiple effect sizes as long as the sample for each
effect size was independent (e.g., if results for various subsamples were reported) and/or if the
effect sizes referred to different meta-analyses (e.g., when reporting correlations of several
HEXACO dimensions with a single criterion). If an independent sample of a single study
provided more than one effect size for the same criterion and personality dimension (e.g.,
reported correlations to various measures of counterproductive work behavior), these effects
were averaged while taking the intercorrelation of the criteria into account (Hunter &
Schmidt, 2004). This ensured that each independent sample contributed only once to a given
meta-analysis. If the intercorrelation between the criteria was not available, we conservatively
assumed perfect redundancy. The same procedure was applied to the effect sizes of a single
study when meta-analyzing on a higher level of aggregation. That is, in case a study reported multiple effects for the same domain, such as active cooperation and environmental behavior for *Exploitation*, these effects were aggregated when computing the overall effect for the domain, but the effects were not aggregated for the meta-analyses of the respective criterion classes (because these are independent analyses). Reliability composites were computed in a similar fashion (Hunter & Schmidt, 2004). If a study merely reported a range of reliabilities, we applied the lower bound of the reported range to all dimensions.\(^6\)

Effect sizes were aggregated using random-effects psychometric meta-analysis with sample-size weights according to Hunter and Schmidt (2004). Effect sizes were corrected for attenuation based on Cronbach's alpha estimate of internal consistency as reported in the corresponding study. If no such estimate was available (and for effect sizes involving single item measures), we conservatively assumed perfect reliability. We did not correct effect sizes that were derived from latent variable models (e.g., correlations between factors in a confirmatory factor analysis model), because such models inherently correct for measurement error. The presence of heterogeneity in effect sizes was assessed using the \(Q\)-statistic. A significant test outcome indicates that the observed variance in the effect size is at least partly due to true effect variance across studies (rather than being merely due to random fluctuations). In addition, we report \(I^2\) values indicating the percent of observed variance that is due to true effect size variance.

Although we tried to include as much unpublished data from the considered documents as possible, there is always the risk of selective publication of statistically

\(^6\) We relied on Cronbach’s alpha as a measure of reliability, because it is routinely reported (unlike, e.g., retest-reliabilities). However, given that Cronbach’s alpha is a lower-bound estimate of reliability, it is possible that the disattenuated correlations overestimate the true effect sizes.
significant results biasing the results of a meta-analysis. To detect the presence of publication bias, we resorted to the rank correlation method (Begg & Mazumdar, 1994), Egger’s regression test (Egger, Davey Smith, Schneider, & Minder, 1997), and the trim-and-fill method (Duval & Tweedie 2000a, 2000b). These methods are based on the rationale that the selective inclusion of studies showing significant outcomes is evident in a relation between the magnitude of effect and the precision of a study, such that larger effect sizes are to be expected from studies with lower precision.

All analyses were performed in R using the metafor package (Viechtbauer, 2010). For each meta-analysis on the relation between a HEXACO dimension and a domain, and criterion classes within a domain, and criteria within a criterion class, we report the number of independent samples ($k$) and the total sample size ($N$), and the meta-analytic correlation estimate corrected for attenuation ($\hat{\rho}$) along with its standard error. In the additional material on the OSF, we also report the uncorrected estimates (Tables O2-O8). Note that we created criterion groups for some criterion classes only, namely only if meaningful groups could be created and if there were at least 3 independent samples for each of these groups (finally, we created 43 criterion groups within 11 criterion classes). Further, note that the number of independent samples considered within a domain (criterion class) does not necessarily match the sum of independent samples across the criterion classes (criterion groups), because effects were aggregated whenever these referred to the same domain (criterion class; see above).

**Results**

Overall, we linked each of the six HEXACO dimensions to six domains, 22 criterion classes within the six domains, and 43 criterion groups within 11 criterion classes, resulting in $6^*(6+22+43) = 426$ single meta-analyses in total. Table 2 provides an overview of the dataset at large, showing that our analyses are based on 321 publications (78% journal articles) involving 402 independent studies, 436 independent samples, and 3,893 effects (in the
Appendix, we provide the complete list of publications included in the meta-analyses for the six domains. The overall sample size was 112,697 participants, with an average of $M = 258$ ($SD = 234$, range 19-2,631) participants per independent sample. The data stem from at least 31 different countries (some articles did not allow for unambiguously determining the country), with the majority of studies having been conducted in the USA (30%), Canada (16%), Germany (15%), and the Netherlands (11%; any other country < 10%). Most studies used the HEXACO-60 (48%), followed by the HEXACO-100 (34%) and the HEXACO-200 (13%). Concerning the assessment of both the HEXACO dimensions and the criteria under scrutiny, it is striking that a clear majority was solely based on self-reports, amounting to 95% for the assessment of the HEXACO dimensions and 80% for the assessment of the criteria. For 11% of the effect sizes, the criteria were assessed via observations of actual behavior.

Overall, there was only scattered evidence for publication bias in the data (Table 3). In particular, the rank-test was significant for only two of the analyses linking the HEXACO dimensions to the domains, and Egger’s regression test indicated the presence of publication bias for 3 out of 36 analyses only. Similarly, the trim-and-fill adjusted estimates of the mean correlations were highly similar to the unadjusted estimates (Tables 4-10). Altogether, these findings indicate that the results of the meta-analyses are not affected substantially by publication bias. In what follows, we first present the main results concerning the hypothesized unique mapping of the HEXACO dimensions onto the outcome domains. Then, we present the results for each domain in detail including findings for the criterion classes and criterion groups.

**Do the HEXACO Dimensions Map onto their Counterpart Outcome Domain?**

Table 4 provides an overview of the results as pertaining to the core hypotheses and Figure 2 yields a concise illustration of these results. Specifically, Table 4 shows the disattenuated correlations between each HEXACO dimension and its counterpart domain.
(e.g., Honesty-Humility–Exploitation), the range of correlations between the respective HEXACO dimension and the remaining domains (e.g., the correlations between Honesty-Humility and Insecurity, Sociality, Obstruction, Duty, and Exploration), as well as the range of correlations between the respective domain and the remaining HEXACO dimensions (e.g., the correlations between Exploitation and Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience).

In line with the main hypotheses, each HEXACO dimension was substantially linked to its counterpart domain. Specifically, the relations were Honesty-Humility–Exploitation $\hat{\rho} = -.48$; Emotionality–Insecurity $\hat{\rho} = .27$; Extraversion–Sociality $\hat{\rho} = .53$; Agreeableness–Obstruction $\hat{\rho} = .33$; Conscientiousness–Duty $\hat{\rho} = .41$; and Openness–Exploration $\hat{\rho} = .38$.

Further, each HEXACO dimension yielded substantially smaller (secondary) correlations with the remaining (non-counterpart) domains: The highest secondary relation emerged for Agreeableness–Exploitation, $\hat{\rho} = -.26$, which also resulted in the descriptively smallest discrepancy between a dimension’s primary and secondary relation (Agreeableness: $\hat{\rho} = .33$ with Obstruction, and $|\hat{\rho}| = .26$ with Exploitation).

In a similar vein, for all domains except Insecurity, correlations with the primary HEXACO-counterpart were substantially larger descriptively as compared to those with the other HEXACO dimensions. For Insecurity, the correlation with Emotionality ($\hat{\rho} = .27$) was only slightly larger than the correlation with Extraversion $|\hat{\rho}| = .25$ (correlations with all other dimensions were $|\hat{\rho}| \leq .13$). For the remaining domains, the descriptively smallest discrepancies ranged from $|\hat{\rho}| = .15$ to .28, with the smallest discrepancy occurring for Obstruction, for which we observed $\hat{\rho} = .33$ with its counterpart dimension Agreeableness, followed by $\hat{\rho} = .18$ with (non-counterpart) Honesty-Humility.
Overall, these results support the idea that each HEXACO dimension captures individual differences with regard to one domain in particular, although the support for the unique mapping of Emotionality onto Insecurity is weak, at best (and, to some degree, the unique mapping of Agreeableness onto Obstruction is less clear as compared to the other expected primary relations). Taken together, however, Honesty-Humility mapped best onto Exploitation, Emotionality onto Insecurity, Extraversion onto Sociality, Agreeableness onto Obstruction, Conscientiousness onto Duty, and Openness onto Exploration. Relations between the dimensions and their non-counterpart domains were most often negligibly small. Likewise, most domains were linked far more strongly to their HEXACO counterpart dimension than to the remaining (non-counterpart) ones.

The HEXACO Dimensions and Exploitation

Table 5 shows the disattenuated correlations between the HEXACO dimensions and Exploitation, represented by the criterion classes of immoral behavior (and eight corresponding criteria within), short-term mating, dark traits (seven criteria within), active cooperation (four criteria within), and environmental behavior. Each correlation between a HEXACO dimension and Exploitation was thereby based on a large number of independent samples (204 ≤ k ≤ 272) and participants (57,951 ≤ n ≤ 74,688), respectively.

As expected, out of the six HEXACO dimensions Honesty-Humility was most strongly linked to Exploitation (\( \hat{\rho} = -.48 \)), followed by Agreeableness (\( \hat{\rho} = -.26 \)) and Conscientiousness (\( \hat{\rho} = -.24 \)), whereas Emotionality (\( \hat{\rho} = -.15 \)), Openness (\( \hat{\rho} = -.11 \)), and Extraversion (\( \hat{\rho} = -.02 \)) showed only small links at best. Similarly, Honesty-Humility was linked substantially to all criterion classes within Exploitation; indeed, among all HEXACO dimensions, Honesty-Humility showed the strongest relation to four out of the five criterion classes. More detailed, Honesty-Humility was related most strongly to immoral behavior (\( \hat{\rho} = -.41 \)), the other dimensions .03 ≤ |\( \hat{\rho} | ≤ .27 \), short-term mating (\( \hat{\rho} = -.40 \), the other dimensions
.01 ≤ |\hat{\beta}| ≤ .20), dark traits (\hat{\beta} = -.69, the other dimensions .01 ≤ |\hat{\beta}| ≤ .40), and active cooperation (\hat{\beta} = .32, the other dimensions .06 ≤ |\hat{\beta}| ≤ .18). For environmental behavior, though, Openness (\hat{\beta} = .54) showed the strongest link, followed by Honesty-Humility (\hat{\beta} = .23), while the other dimensions showed only small links at best .04 ≤ |\hat{\beta}| ≤ .16). Notably, for almost all analyses, \(P\) and \(Q\) indicated a high level of heterogeneity, which, however, is rather typical for meta-analyses in psychological research (Stanley, Carter, & Doucouliagos, 2018).

Taken together, the findings are well in line with our expectations, providing strong support that Honesty-Humility specifically maps onto Exploitation. Moreover, Agreeableness and Conscientiousness revealed noteworthy links with this domain, though to a weaker extent.

The HEXACO Dimensions and Insecurity

Table 6 provides an overview of the relations between the HEXACO dimensions and Insecurity, represented by the criterion classes of anxiety, avoidance, risk aversion (and four corresponding criteria within), and stressors (three criteria within). Although the sample sizes were smaller as compared to the analyses for Exploitation, they were nonetheless substantial: On the domain level, results stem from 32 ≤ k ≤ 37 samples and 9,103 ≤ n ≤ 9,783 participants, respectively. As summarized above, Emotionality showed the strongest mapping onto Insecurity (\hat{\beta} = .27), though closely followed by Extraversion (\hat{\beta} = -.25); the remaining dimensions showed only small or no links at all (.00 ≤ |\hat{\beta}| ≤ .13).

Corresponding to the domain-level results, Emotionality was substantially linked to all criterion classes within Insecurity, namely, \(\hat{\beta} = .33\) with anxiety, \(\hat{\beta} = .71\) with avoidance, \(\hat{\beta} = -.29\) with risk aversion, and \(\hat{\beta} = .20\) with stressors. Likewise mirroring the results on the domain level, Extraversion correlated with all criterion classes within Insecurity (.18 ≤ |\hat{\beta}| ≤ .40). For the remaining dimensions, the pattern was more mixed, with correlations ranging between .05 ≤ |\hat{\beta}| ≤ .36 for Honesty-Humility, between .04 ≤ |\hat{\beta}| ≤ .12 for Agreeableness,
between \(0.06 \leq |\hat{\beta}| \leq 0.26\) for Conscientiousness, and between \(0.05 \leq |\hat{\beta}| \leq 0.23\) for Openness. Again, \(P\) and \(Q\) indicated substantial study heterogeneity with, across all analyses, the exception of the criterion class avoidance and some criteria within risk aversion.

Overall, the findings supported the central hypothesis and expectations: Emotionality was most strongly linked to Insecurity, and there was a substantial, but descriptively smaller secondary relation for Extraversion. Moreover, there were associations between Emotionality and all criterion classes and criteria representing Insecurity.

**The HEXACO Dimensions and Sociality**

The links between the HEXACO dimensions and Sociality, including the criterion classes of social network, leadership, and positivity, are shown in Table 7. Again, findings on the domain level were based on a relatively large number of samples \((57 \leq k \leq 61)\) and participants \((13,489 \leq n \leq 14,735)\). Supporting the main hypothesis, Extraversion was linked most strongly to Sociality \((\hat{\beta} = 0.53)\), followed by Conscientiousness \((\hat{\beta} = 0.25)\) and Agreeableness \((\hat{\beta} = 0.18)\); Openness \((\hat{\beta} = 0.13)\), Honesty-Humility \((\hat{\beta} = 0.11)\), and Emotionality \((\hat{\beta} = -0.11)\) yielded only small relations. On the criterion class-level, Extraversion was also linked most strongly to social network \((\hat{\beta} = 0.35)\), the other dimensions \(0.00 \leq |\hat{\beta}| \leq 0.23\) and positivity \((\hat{\beta} = 0.56)\), the other dimensions \(0.13 \leq |\hat{\beta}| \leq 0.27\), and it had a moderate relation with leadership \((\hat{\beta} = 0.26)\). Concerning the latter, Conscientiousness yielded the strongest link overall, \(\hat{\beta} = 0.31\) (the other dimensions: \(0.04 \leq |\hat{\beta}| \leq 0.12\)). There were some noteworthy differences concerning the links within some HEXACO dimensions and the criterion classes representing Sociality. Agreeableness, for instance, had no relation to leadership, but a moderate correlation with positivity, and Openness had a moderate correlation with social network, but small links at best to both leadership and positivity. Again, \(P\) and \(Q\) indicated substantial study heterogeneity altogether.
Overall, the results supported the hypothesis: Extraversion mapped onto Sociality. Indeed, across the domain, criterion class, and criterion level, Extraversion mostly yielded substantial correlations. The relations observed for the other dimensions were typically much weaker descriptively, except for the relation between Conscientiousness and leadership, which was slightly higher descriptively than the corresponding relation for Extraversion.

**The HEXACO Dimensions and Obstruction**

The relations between the HEXACO dimensions and Obstruction are reported in Table 8. Generally, the number of samples (18 ≤ k ≤ 27) and participants (3,670 ≤ n ≤ 6,001) was smaller as compared to the analyses for the other domains considered herein. In line with the hypothesis, Agreeableness showed the strongest relation with Obstruction (\( \hat{\rho} = .33 \)), followed by Honesty-Humility (\( \hat{\rho} = .18 \)). Interestingly, the range of relations for the other dimensions with Obstruction was comparably small: Emotionality: \( \hat{\rho} = -.10 \), Extraversion: \( \hat{\rho} = .14 \), Conscientiousness: \( \hat{\rho} = .11 \), and Openness: \( \hat{\rho} = .11 \). On the criterion class level, the pattern of relations was highly similar for both insensitivity to unfairness (Agreeableness: \( \hat{\rho} = .28 \), Honesty-Humility: \( \hat{\rho} = .20 \), the other dimensions: .06 ≤ |\( \hat{\rho} \)| ≤ .15) and reactive cooperation (Agreeableness: \( \hat{\rho} = .33 \), Honesty-Humility: \( \hat{\rho} = .17 \), the other dimensions: .10 ≤ |\( \hat{\rho} \)| ≤ .14), mirroring the results on the domain level. Study heterogeneity was again substantial for the analyses involving Honesty-Humility, Emotionality, Extraversion, and Agreeableness (across the levels), but not for any analysis involving Conscientiousness and Openness. Overall, Agreeableness mapped most strongly onto Obstruction on the domain, the criterion class, and the criterion level.

**The HEXACO Dimensions and Duty**

Table 9 shows the relations between the HEXACO dimensions and Duty, for which analyses were based on a rather large number of 46 ≤ k ≤ 57 samples and 11,743 ≤ n ≤ 13,985
participants. Again, the findings were in line with the hypothesis and expectations, showing a considerable link between Conscientiousness and Duty ($\hat{\rho} = .41$), and secondary relations of Extraversion ($\hat{\rho} = .19$) and Honesty-Humility ($\hat{\rho} = .18$; the other dimensions: $0.03 \leq |\hat{\rho}| \leq .15$). On the criterion class level, Conscientiousness yielded substantial and indeed the strongest relations for three of the four criterion classes, namely, achievement/performance ($\hat{\rho} = .26$, the other dimensions: $0.01 \leq |\hat{\rho}| \leq .14$), perfectionism ($\hat{\rho} = .46$, the other dimensions: $0.03 \leq |\hat{\rho}| \leq .38$), and self-control versus impulsivity ($\hat{\rho} = .75$, the other dimensions: $0.13 \leq |\hat{\rho}| \leq .43$). For the criterion class of exercising, however, Conscientiousness yielded no significant relation ($\hat{\rho} = .09$), whereas Extraversion yielded the only meaningful link with $\hat{\rho} = .17$ (all other dimensions: $0.01 \leq |\hat{\rho}| \leq .16$)—but note that the analyses for exercising as well as for perfectionism were based on a relatively small number of samples and participants, respectively. Considering $P$ and $Q$, most analyses were based on a heterogeneous set of samples, excluding on the criterion class level the meta-analyses between Emotionality and achievement/performance, exercising, and perfectionism, as well as the meta-analyses between Extraversion and both exercising and performance. Across all analyses, Conscientiousness thus mapped most clearly onto Duty, with Honesty-Humility and Extraversion showing secondary relations overall.

**The HEXACO Dimensions and Exploration**

Finally, we linked the HEXACO dimensions to Exploration, represented by the criterion classes of creativity, curiosity, conservatism (and three criteria within), and prejudice (two criteria within; see Table 10). On the domain level, analyses were again based on a large number of both samples ($40 \leq k \leq 50$) and participants ($11,822 \leq n \leq 15,997$). In line with the hypothesis, Openness ($\hat{\rho} = .38$) mapped most strongly onto Exploration. Contrary to our expectations, however, Conscientiousness had virtually no relation to Exploration at all ($\hat{\rho} =
NOMOLOGICAL NET OF THE HEXACO MODEL

Openness was also linked substantially to all criterion classes (and, indeed, all criteria) representing Exploration, that is, creativity ($\hat{\rho} = .48$; the other dimensions: $0.04 \leq |\hat{\rho}| \leq 0.29$), curiosity ($\hat{\rho} = .30$; the other dimensions: $0.01 \leq |\hat{\rho}| \leq 0.34$), conservatism ($\hat{\rho} = -0.34$; the other dimensions: $0.00 \leq |\hat{\rho}| \leq 0.10$), and prejudice ($\hat{\rho} = -0.39$; the other dimensions: $0.09 \leq |\hat{\rho}| \leq 0.28$).

Note that both Extraversion ($\hat{\rho} = 0.34$) and Conscientiousness ($\hat{\rho} = 0.33$) were descriptively more strongly linked to curiosity than Openness. On the domain and criterion class level, for all except three analyses (Honesty-Humility–curiosity, Conscientiousness–conservatism, and Openness–prejudice), $P$ and $Q$ indicated substantial sample heterogeneity.

Supplemental Analyses

We conducted two sets of supplemental analyses. First, we investigated whether the assessment mode of the criteria (i.e., self-reports vs. non-self-reports) moderated the relations between the HEXACO dimensions and outcomes. Specifically, we focused on the level of the criterion classes and performed moderation analyses whenever there were at least three studies on this level available in which the criterion was not based on self-report data (but on objective data, observations of behavior, or observer reports), and in which the HEXACO dimensions were assessed via self-reports. Data were sufficient for four criterion classes, namely, immoral behavior, active cooperation (both belonging to Exploitation), reactive cooperation (belonging to Obstruction), and achievement/performance (belonging to Duty).

As summarized in Table 11, results of the moderation analyses showed noteworthy differences in some correlations depending on whether self-reported (SR) versus non-self-reported (NSR) criteria were considered. Indeed, correlations were smaller for NSR criteria with their counterpart HEXACO domain in three out of four cases: The correlation of Honesty-Humility with immoral behavior dropped from $\hat{\rho} = -0.45$ (SR) to $\hat{\rho} = -0.24$ (NSR); of Honesty-Humility with active cooperation from $\hat{\rho} = 0.36$ (SR) to $0.25$ (NSR); and of
Agreeableness with reactive cooperation from $\hat{\rho} = .37$ (SR) to .10 (NSR).\(^7\) By contrast, the correlation between Conscientiousness and achievement/performance did not change as a matter of the type of criterion assessment ($\hat{\rho} = .25$ for SR vs. $\hat{\rho} = .24$ for NSR).

In addition to the moderation by assessment of the criteria, we considered it important to complement our main analyses with analyses taking into account the overlap between the HEXACO dimensions to gain a deeper understanding of the observed relations between the dimensions and the outcome domains. Specifically, given that the HEXACO dimensions are typically intercorrelated (Moshagen et al., 2019), partial correlations between a particular HEXACO dimension and a domain, controlling for the remaining dimensions, provide insights into whether a secondary loading of one dimension with a domain is (largely) due to this dimension’s correlation with another HEXACO dimension.

Following this logic, we estimated partial correlations from the zero-order correlations between the HEXACO dimensions and the domains (as reported above) and the intercorrelations between the HEXACO dimensions. The latter were meta-analytically derived based on the independent samples included in the meta-analyses that reported correlations between at least two HEXACO dimensions ($199 \leq k \leq 212; 53,571 \leq N \leq 57,429$), using the same meta-analytic procedures as detailed above; the intercorrelations between the HEXACO dimensions are reported in Table O9 on the OSF. This information also allowed us to obtain $R^2$-estimates, indicating the extent to which all basic personality dimensions combined can explain variance in a specific domain.

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\(^7\) Given the small sample size ($k = 11$ for SR and $k = 4$ for NSR), the moderation analysis concerning Agreeableness–Obstruction was not statistically significant.
For each HEXACO dimension the partial correlations were largest for the dimensions’ counterpart domain, ranging between \(0.23 \leq |\hat{\rho}_{xy,z}| \leq 0.46\) (Table 12). Except for the relation between Extraversion and Insecurity, the partial correlations revealed a strikingly clearer picture as compared to the zero-order results concerning the one-to-one mapping of HEXACO dimensions onto domains. Specifically, these secondary relations decreased to \(|\hat{\rho}_{xy,z}| \leq 0.15\), whereas Extraversion showed a secondary relation with Insecurity of \(\hat{\rho}_{xy,z} = -0.20\). Correspondingly, the (descriptive) differences between primary and secondary links were consistently larger as compared to the analyses involving zero-order correlation estimates. As also shown in Table 12, the range of explained variance differed across domains. Specifically, the \(R^2\) was .27 for Exploitation, .13 for Insecurity, .30 for Sociality, .12 for Obstruction, .19 for Duty, and .16 for Exploration.

**Discussion**

Individual differences play an important role in all aspects of human life, affecting how people perceive, act in, and shape the world. A seminal step for the understanding of individual differences has been the development of models of basic personality structure based on lexical studies (Goldberg, 1993; De Raad et al., 2014; Lee & Ashton, 2008; McCrae & Costa, 2008; Saucier, 2009). Such models provide a parsimonious yet comprehensive summary of the large number of (narrow) personality traits within a few basic trait dimensions. Structural models based on lexical studies are purely descriptive (e.g., Fleeson & Jayawickreme, 2015; Jayawickreme, Zachry, & Fleeson, 2019), however, placing labels on groups of adjectives or items. The actual constructs behind those labels, by comparison, remain somewhat vague until their nomological net is specified empirically, that is, how the conceptualized personality dimensions are related to different outcome criteria of thinking,
feeling, and behaving. Stated differently, to understand the meaning of personality dimensions at the construct level, it needs to be tested how they relate to different outcomes.

Here, we provide the first comprehensive investigation of the nomological net of the HEXACO Model of Personality (Ashton & Lee, 2007; Ashton et al., 2014). Using meta-analytic techniques, we linked the HEXACO dimensions to six outcome domains (comprising several criteria grouped into criterion classes), each of which should be related most strongly to a certain HEXACO dimension. We derived outcome domains from the Situation, Trait, and Outcome Activation (STOA) model (De Vries, Tybur et al., 2016), availing clear and specific hypotheses about which HEXACO dimension must map onto which outcome domain in particular if the underlying conceptualization (theorizing) about the construct behind each HEXACO dimension holds. Notably, we also investigated whether the correlation between a HEXACO dimension and its theoretically relevant outcome domain is stronger than (a) the correlation of the HEXACO dimension with the five other outcome domains and (b) the correlations of the other five HEXACO dimensions with the respective outcome domain. Overall, our approach allowed specifying the nomological net of the HEXACO dimensions and the HEXACO model at large in a theory-driven way.

**How Well Do the HEXACO Dimensions Map onto Outcome Domains?**

In a nutshell, the pattern of results yielded empirical support for the hypothesized mapping of the HEXACO dimensions onto corresponding outcome domains across all analyses: Each dimension particularly mapped onto its specific counterpart outcome domain. That is, Honesty-Humility mapped onto Exploitation, Emotionality onto Insecurity, Extraversion onto Sociality, Agreeableness vs. Anger onto Obstruction, Conscientiousness onto Duty, and Openness to Experience onto Exploration (see Figure 2 and Table 4). The descriptively largest discrepancy between the primary and a secondary correlation occurred for Honesty-Humility, which correlated $|\hat{\rho}| = .30$ weaker with another outcome domain.
(Obstruction and Duty) as compared to its theoretically compatible outcome domain (Exploitation). In turn, the smallest descriptive discrepancy between the primary and a secondary correlation occurred for Agreeableness, which correlated $|\hat{\rho}| = .07$ weaker with another outcome domain (Exploitation) as compared to its theoretically compatible outcome domain (Obstruction).

In a similar vein, each outcome domain correlated most strongly with the theoretically compatible HEXACO dimension. The descriptively largest discrepancy in correlations occurred for Sociality, which correlated $|\hat{\rho}| = .28$ larger with Extraversion as compared to Conscientiousness, the HEXACO dimension showing the second highest correlation with Sociality. The descriptively smallest discrepancy occurred for Insecurity, which correlated only marginally stronger ($|\hat{\rho}| = .02$) with Emotionality (the theoretically compatible HEXACO dimension) than with Extraversion; note, however, that the discrepancies between the Emotionality-Insecurity correlation and the correlations of the other HEXACO dimensions (except Extraversion) with Insecurity were considerably larger ($|\hat{\rho}| \geq .14$). Across all six outcome domains, the discrepancy between the primary correlation and all other non-primary correlations (five per outcome domain, thus 30 in total) was $|\hat{\rho}| = .27$ on average.

Although the results generally support the expected relations of each HEXACO dimension with theoretically relevant (classes and domains of) criteria, we observed some noteworthy differences in the strength of evidence across dimensions. In fact, the mapping between a personality dimension and its theoretically relevant outcome domain was very clear for four relations in particular, namely, Honesty-Humility–Exploitation, Extraversion–Sociality, Conscientiousness–Duty, and Openness–Exploration. By contrast, the mapping of Agreeableness onto Obstruction and, even more so, of Emotionality onto Insecurity was comparatively less clear.
With regard to the link between Emotionality and Insecurity, it is worth noting that there is a strong gender difference in Emotionality (with women scoring around one standard deviation higher on this dimension; Moshagen et al., 2019). It can thus be plausibly argued that Emotionality may not only have direct links to certain outcome criteria, but that these may also depend on gender, in turn obscuring the mapping between this dimension and Insecurity. Also, it should be noted that the secondary relation of Extraversion with Insecurity is in the same range as the secondary relations of Agreeableness (with Exploitation) and Conscientiousness (with Sociality), whereas the primary relation of Emotionality with Insecurity is the weakest of all primary relations. Thus, it appears that the mapping of Emotionality onto Insecurity is less unique due to relatively small relations between Emotionality and the outcome criteria, but not due to a particularly strong secondary relation.

With regard to the Agreeableness–Obstruction link, we can only speculate why this mapping turned out less clear. One potential explanation might be that criteria representing Obstruction typically involve reactions to exploitative acts and, thus, that it is difficult to find and assess criteria representing Obstruction in isolation without any link to Exploitation. Support for this reasoning can be gleamed from the finding that Honesty-Humility showed the highest secondary relation to Obstruction. We therefore suspect that some criteria representing Obstruction might be blurred by exploitative aspects to some extent, thus rendering the Agreeableness–Obstruction mapping less clear in comparison. However, the finding that the mapping between the HEXACO dimensions (including Honesty-Humility and Agreeableness) and their counterpart domains became clearer once taking the intercorrelations between the dimensions into account (i.e., partial correlations) supports that Honesty-Humility and Agreeableness both encompass a unique set of individual differences, which is relevant for the prediction of a specific outcome domain in particular (Exploitation vs. Obstruction). These potential explanations notwithstanding, it should be noted that our
analyses concerning *Obstruction* were based on the smallest number of studies among all six outcome domains. Consequently, more research is needed to provide further evidence on the double dissociation of Honesty-Humility and Agreeableness, especially because these two dimensions are theoretically and empirically related to each other. That is, they represent complementary aspects of reciprocal altruism (Ashton et al., 2014) and they show the strongest intercorrelation among all HEXACO dimensions (Moshagen et al., 2019).

Regarding secondary relations between the HEXACO dimensions and outcome domains, we observed that whenever these were substantial, they almost always followed the a priori expectations (see Figure 1). Out of the ten expected secondary relations, only the link between Conscientiousness and *Exploration* was non-significant, $\hat{\rho} = .03$, whereas all other secondary relations were substantial, $.11 \leq |\hat{\rho}| \leq .26$. Such secondary relations can be expected because the HEXACO dimensions overlap to some degree, because variance in criteria may be determined by (interactions between) several person and situation factors, and because some criteria across outcome domains arguably overlap.

Interestingly, the secondary relations were much weaker once considering the partial correlations of each HEXACO dimension with the outcome domains, controlled for the remaining HEXACO dimensions. Specifically, all secondary relations between a HEXACO dimension and an outcome domain except for Extraversion–*Insecurity* were small at best, with $|\hat{\rho}_{xy.z}| \leq .20$ for *Insecurity*, $|\hat{\rho}_{xy.z}| \leq .15$ for *Exploitation*, and $|\hat{\rho}_{xy.z}| \leq .11$ for *Sociality*, *Obstruction*, *Duty*, and *Exploration*. Even the ten a priori expected secondary relations diminished to $|\hat{\rho}_{xy.z}| = .085$ on average. In turn, four of the six HEXACO dimensions—Honesty-Humility, Agreeableness, Conscientiousness, and Openness—showed maximally small secondary relations at all, with all $|\hat{\rho}_{xy.z}| \leq .12$. Overall, the mapping between one
HEXACO dimension and one outcome domain was thus even clearer and more consistent once focusing on the unique variance of the personality dimensions.

In conclusion, the expected secondary relations were limited in strength, especially in comparison to the associations of the HEXACO dimensions with their respective counterpart domain. Thus, when considering main effects of basic (HEXACO) personality dimensions on diverse outcomes, variance in criteria seems to be attributable to one class of traits in particular which are summarized in one (lexically-derived) personality dimension. That is, whereas the plain meta-analyses provided support for most of the secondary relations that can be expected on a priori theoretical grounds, the partial correlations show that the majority of these can be attributed to the overlap between personality dimensions.

**Relations on the Level of Criterion Classes and Criteria**

The pattern of correlations between the HEXACO dimensions and the criterion classes and criteria representing the six outcome domains largely mirrored the picture on the domain level. Specifically, Honesty-Humility was substantially linked to all five criterion classes and all 19 criteria within *Exploitation* (.23 ≤ |\(\hat{\rho}\)| ≤ .69). Emotionality was substantially linked to all four criterion classes and six criteria within *Insecurity* (.15 ≤ |\(\hat{\rho}\)| ≤ .71), and it was weakly related to only one criterion, namely, job stress (\(\hat{\rho} = .12\)). Extraversion was substantially linked to all three criterion classes and all five criteria within *Sociality* (.26 ≤ |\(\hat{\rho}\)| ≤ .73). Agreeableness was substantially linked to both criterion classes and both criteria within *Obstruction* (.17 ≤ |\(\hat{\rho}\)| ≤ .44). Conscientiousness was substantially linked to three criterion classes and all five criteria within *Duty* (.18 ≤ |\(\hat{\rho}\)| ≤ .88), and it was weakly related to only one criterion class, namely, exercising (\(\hat{\rho} = .09\)). Finally, Openness was substantially linked to all four criterion classes and all five criteria within *Exploration* (.15 ≤ |\(\hat{\rho}\)| ≤ .48).
Although the HEXACO dimensions were thus substantially linked to most criterion classes and criteria within their respective counterpart outcome domain, it should be noted that the strongest relation of a criterion class or criterion did not always occur with the counterpart HEXACO dimension. Thus, the relatively clear one-to-one mapping between HEXACO dimensions and outcome domains cannot simply be transferred to a more narrow level of criterion classes or criteria—although the mapping across criterion classes and criteria within one domain mirrored the hypothesized mapping on the domain level more clearly.

Two additional findings regarding the criterion classes are noteworthy. One concerns the criterion class of environmental behavior within *Exploitation.* Although Honesty-Humility showed a small to medium-sized correlation with environmental behavior in line with expectations, the strongest correlation occurred for Openness, yielding a large effect size ($\hat{\rho} = .54$). Indeed, environmental attitudes and behavior have been conceptualized as instances of non-selfishness and cooperativeness, respectively (Hilbig, Zettler, Moshagen, & Heydasch, 2013), and thus arguably as a matter of Honesty-Humility in particular. Importantly, though, this has been shown to hold only for a subset of environmental behaviors whereas others actually require non-cooperation (Klein, Hilbig, & Heck, 2017). Moreover, a variety of socio-political attitudes and values beyond cooperativeness have been linked to environmentalism (Ojea & Loureiro, 2007; Reese & Kohlmann, 2015; Renger & Reese, 2017). Thus, environmental behavior can fall within the domain of *Exploitation,* but it may just as well represent *Exploration,* alongside other socio-political attitudes and behaviors such as (low) conservatism and prejudice.

Another noteworthy observation is that the criterion class of exercising within the domain of *Duty* did not correlate substantially with Conscientiousness. This is in contrast to previous meta-analyses linking the Big Five personality dimensions, which contain a very similar
representation of Conscientiousness as the HEXACO model (Ashton et al., 2014), to physical activity (Rhodes & Smith, 2006; Sutin et al., 2016). Note, however, that the current meta-analyses concerning exercising were based on a relatively small number of studies and participants. So, more studies are needed to clarify the relation of the HEXACO dimensions in general—and Conscientiousness in particular—to exercising.

Strength of Observed Effects

Although our results overall support a theory-consistent mapping of basic (HEXACO) personality dimensions onto specific outcome domains, some thoughts on the observed effect sizes seem in order. In absolute terms—that is, how much variance in outcomes (outcome domains, criterion classes, or criteria) is explained by one HEXACO dimension—most of the observed effects would typically be characterized as medium-sized, at best (when referring to Cohen, 1988). For example, considering the (lower-bound) extreme as observed for the mapping of Emotionality onto Insecurity implies that only around 7% of the variance in Insecurity can be attributed to a direct effect of Emotionality.

Moreover, results from the moderation analyses for the assessment mode of criteria suggest that (some of) the observed effect sizes may be positively inflated. Specifically, in three of the four moderation analyses, the size of the correlation between a (self-reported) HEXACO dimension and a “counterpart” criterion class dropped substantially when considering non-self-reported criteria. At least to the extent that one would consider observer reports and, in particular, observations of behavior and objective data less biased in terms of the overlap in method variance with personality self-reports, this suggests that, in absolute terms, the direct effect of any one basic (HEXACO) personality dimension on some outcome is medium-sized at best.

In any case, the results of the moderation analyses substantiate previous calls emphasizing the need to rely more on non-self-report data in (personality) psychology
Indeed, non-self-report data may often provide more realistic estimates of the strength of effects of personality dimensions on “real-life” outcome criteria. That is, self-reported criteria—much like self-reports of personality traits—may be prone to socially desirable responding and other response biases (e.g., Dunning, Heath, & Suls, 2004; Robins & John, 1997), potentially resulting in overestimation of “true” effect sizes. By implication, this will most likely occur when personality traits and outcomes are both assessed via self-reports.

Whereas these thoughts regarding the observed effect sizes imply rather moderate main effects of basic (HEXACO) personality dimensions on outcomes, Funder and Ozer (2019) recently proposed alternative ways on how to meaningfully interpret effect sizes, referring to either benchmarks (e.g., comparisons with “all” studies) or consequences (e.g., long-term effects). Indeed, concerning the former (“benchmark”) interpretation, recent estimates of average effect sizes in (social and personality) psychology research show that (uncorrected) correlations of around $r = |.20|$ can be considered typical (Fraley & Marks, 2007; Gignac & Szodorai, 2016; Richard, Bond, & Stokes-Zoota, 2003). Thus, from a relative perspective, most of the effects observed in our meta-analyses for relations between the HEXACO dimensions and their counterpart domains are arguably substantial. For instance, considering all (uncorrected) relations between the HEXACO dimensions and the respective counterpart criterion classes (e.g., between Honesty-Humility and the five criterion classes belonging to Exploitation) shows that 20 (out of 22) relations are $r \geq |.20|$. In fact, 10 of these relations are $r \geq |.30|$, thus implying a comparatively large effect according to the suggestions by Funder and Ozer (2019).

Finally, we stress that the effect sizes observed in our meta-analyses must also be considered in relation to the criteria in question. That is, some criteria are inherently more difficult to account for (by basic personality dimensions) than others and thus the same
absolute effect size estimate may carry very different implications: Some criteria may simply be more proximal to basic personality dimensions in terms of construct content. For instance, it might appear less surprising that personality traits are relatively closely linked to (self-reported) socio-political attitudes (e.g., Openness and right-wing authoritarianism), whereas criteria such as actual cheating behavior are arguably more distal. In this regard, it should also be noted that we focused on the influence of broad, basic personality dimensions on aggregate classes of outcomes, whereas links between more narrow personality aspects (e.g., trait facets) and more specific criteria can generally be expected to be larger (e.g., Ashton, Paunonen, & Lee, 2014; McAbee, Oswald, & Connelly, 2014; Steel, Schmidt, Bosco, & Uggerslev, 2018). Independent of the challenging issue of how to substantively interpret effect sizes, the latter certainly provide a useful basis for a priori power analyses in future studies targeting the effect of basic (HEXACO) personality dimensions on certain criteria.

Strengths, Limitations, and Future Research

The main strength of the present investigation is the large-scale approach linking six basic personality dimensions to criteria and criterion classes representing six broad outcome domains. This allowed us to provide uncommonly comprehensive support that the nomological net of the HEXACO model matches its theoretical conceptualization very well: On the aggregated domain level—and also mirrored on the narrower criterion classes and criterion levels—each HEXACO dimension was linked primarily to one set of outcomes, reflecting the theoretically implied construct behind each dimension.

Beyond providing support for the one-to-one mapping between HEXACO dimensions and outcome domains, our study extends current knowledge about consistent effects of (basic) personality dimensions on diverse outcome criteria. Specifically, previous meta-analyses already provided substantial support for the predictive validity of personality traits for outcomes such as clinical disorders (e.g., Malouff, Thorsteinsson, & Schutte, 2005), job
performance (Chiaburu, Oh, Berry, Li, & Gardner, 2011), parenting (e.g., Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009), political attitudes (e.g., Sibley, Osborne, & Duckitt, 2012), and longevity (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). As such, our investigation complements previous evidence showing that personality traits can account for variance in diverse outcome criteria (e.g., Ozer & Benet-Martinez, 2006), including a recent large-scale replication project suggesting a comparatively high level of replicable trait-outcome associations (Soto, 2019). In other words, relations between personality traits and outcomes might typically be limited in terms of effect sizes, but they appear to be robust in the sense of consistency, across virtually all domains of thoughts, feelings, and behavior.

Notwithstanding these advantages, it must be acknowledged as a limitation that there might be different ways on how to structure criteria into criterion classes and the latter into domains, respectively. We used the STOA framework (De Vries, Tybur et al. 2016) as a starting point because it argues that each HEXACO dimension should be theoretically linked to a specific set of (behaviors in) situations. Thus, relying on the STOA framework provided an optimal (theory-driven) testbed for examining the nomological net of the HEXACO dimensions, and, in fact, allowed us to derive and test clear a priori hypotheses about which HEXACO dimension should be related to which outcome domain in particular. However, other classifications of situations have been introduced (e.g., Brown, Neel, & Sherman, 2015; Kelley et al., 2003; Parrigon, Woo, Tay, & Wang, 2017; Rauthmann et al., 2014; Rauthmann & Horstmann, 2018; Rauthmann & Sherman, 2018; Reis, 2018; Saucier, Bel-Bahar, & Fernandez, 2007; Ten Berge, & De Raad, 2001, 2002), and might, for other purposes, also be useful to structure criteria into classes and domains, respectively.

Irrespective of how criteria are grouped into criterion classes and domains, another limitation of our investigation is the nature of the available data linking HEXACO personality dimensions to different criteria. First, the vast majority of studies (95%) assessed the
NOMOLOGICAL NET OF THE HEXACO MODEL

HEXACO dimensions via self-reports only. Although studies have indicated a relatively strong correspondence between self- and observer reports of personality traits in general (Connolly, Kavanagh, & Viswesvaran, 2007), and of the HEXACO dimensions in particular (Moshagen et al., 2019), research has also indicated some differences in personality judgements based on the rating source (e.g., Connelly & Ones, 2010; Vazire, 2010). The Trait-Reputation-Identity Model (McAbee & Connelly, 2016), for instance, “separates personality variance into consensus about underlying traits (Trait), unique self-perceptions (Identity), and impressions conveyed to others that are distinct from self-perceptions (Reputation)” (p. 569), implying that the self and others may have unique insights into one’s personality. Further, some meta-analyses have indicated different links between personality traits and criteria based on the rating sources of both the personality traits and the criterion of interest (e.g., Berry, Carpenter, & Barratt, 2012). Future research might therefore rely more strongly on observer ratings—at least as a complement to self-ratings—when assessing HEXACO trait levels.

Second, as discussed above, self-reports also dominated the assessment of the criteria, and moderation analyses testing the influence of the type of assessment of the criteria on the relation between HEXACO dimensions and counterpart criterion classes showed considerable differences for three of the four criterion classes for which sufficient data were available. Overall, we therefore echo previous calls (e.g., Baumeister et al., 2007; King, 2010) emphasizing the necessity to collect data across different rating sources and assessment modes. Finally, it was not possible to control for the potential overlap in criteria across criterion classes and outcome domains, simply because only very few studies assessed multiple criteria belonging to different criterion classes or outcome domains. As demonstrated by the partial correlation analyses (taking the HEXACO intercorrelations into account), controlling for the interrelations between criteria as well might have provided interesting
additional insights, for example for the distinction between the domains of *Obstruction* versus *Exploitation* (see above). It might thus be promising for future research to consider the overlap of a criterion under scrutiny with other (more or less related) criteria.

**Conclusion**

Our large-scale meta-analytic investigation on the links between the HEXACO personality dimensions and six distinct outcome domains specified the nomological net of the HEXACO model. Indeed, it provides strong support for the theoretical conceptualization of each HEXACO dimension on the construct level: Honesty-Humility explains variance in diverse criteria representing *Exploitation*, Emotionality in criteria representing *Insecurity*, Extraversion in criteria representing *Sociality*, Agreeableness in criteria representing *Obstruction*, Conscientiousness in criteria representing *Duty*, and Openness in criteria representing *Exploration*. Moreover, we have demonstrated that each HEXACO dimension primarily maps onto one specific outcome domain, supporting the notion that each HEXACO dimension subsumes a unique class of personality traits related to a specific set of criteria. To the best of our knowledge, this investigation represents the most comprehensive empirical attempt to specify the nomological net of the HEXACO model, providing a framework for future research that aims at understanding and investigating individual differences based on these basic, lexically derived personality dimensions.
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Table 1

Common Defining Adjectives Derived from Lexical Studies and Definitions for each HEXACO Dimension

<table>
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<th>Dimension</th>
<th>Common defining adjectives derived from lexical studies(^a)</th>
<th>Definition(^b)</th>
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| Honesty-Humility   | faithful/loyal, fair-minded, honest, modest/unassuming, sincere  
                      versus boastful, deceitful, greedy, hypocritical, pompous, pretentious, sly | Tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation. |
| Emotionality       | anxious, emotional, fearful, oversensitive, sentimental, vulnerable 
                      versus brave, independent, self-assured, stable, tough | Tendencies relevant to the construct of kin altruism, including not only empathic concern and emotional attachment toward close others (who tend to be one’s kin) but also the harm-avoidant and help-seeking behaviors that are associated with investment in kin. |
| Extraversion       | active, cheerful, extraverted, lively, outgoing, sociable, talkative  
                      versus introverted, passive, quiet, reserved, shy, withdrawn | Engagement in social endeavors (such as socializing, leading, or entertaining). |
| Agreeableness      | agreeable, gentle, lenient, mild, patient, peaceful, tolerant  
                      versus choleric, ill-tempered, quarrelsome, stubborn | Tendency to be forgiving and tolerant of others, in the sense of cooperating with others even when one might be suffering exploitation by them. |
| Anger              |                                                              |                                                                                  |
| Conscientiousness  | careful, diligent, disciplined, organized, precise, thorough  
                      versus absent-minded, irresponsible, lazy, negligent, reckless, sloppy | Engagement in task-related endeavors (such as working, planning, and organizing). |
| Openness to        | creative, innovative, intellectual, ironic, unconventional  
                      versus conventional, shallow, unimaginative | Engagement in idea-related endeavors (such as learning, imagining, and thinking). |
| Experience         |                                                              |                                                                                  |

\(^a\) Taken from Ashton and Lee (2007), p. 154, as well as Ashton and Lee (2008), p. 1953.

\(^b\) Taken from Ashton and Lee (2007), p. 156.
### Table 2

**Overview of Dataset**

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*Note.* NA = not applicable; HEXACO-PI-R = HEXACO Personality Inventory-Revised.

¹ The resulting number (439) is larger than the number of independent samples, because two versions of the HEXACO-PI-R were occasionally used within a sample (e.g., items of the HEXACO-60 for some dimensions, and items of the HEXACO-100 for other dimensions).
Table 3
Indices of Publication Bias and Corrected Effect Size Estimates

<table>
<thead>
<tr>
<th>Personality Dimension</th>
<th>Outcome Domain</th>
<th>Begg’s ( \hat{\tau} )</th>
<th>Egger’s ( z )</th>
<th>( k ) missing studies</th>
<th>trim-and-fill adjusted ( \hat{\rho} )</th>
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</table>

Note. Begg’s \( \hat{\tau} \) = Begg’s rank correlation, Egger’s \( z \) = \( z \) value from Egger’s regression test, \( k \) missing studies = estimated number of missing studies according to trim-and-fill method, trim-and-fill adjusted \( \hat{\rho} \) = trim-and-fill estimated mean true-score correlation corrected for unreliability.

* \( p < .05 \).
Table 4

Overview of the Mapping between HEXACO Dimensions and Outcome Domains

<table>
<thead>
<tr>
<th>Expected Mapping</th>
<th>$\hat{p}$ (SE)</th>
<th>HEXACO dimension and remaining outcome domains$^1$</th>
<th>Outcome domain and remaining HEXACO dimensions$^2$</th>
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<tbody>
<tr>
<td>Honesty-Humility– Exploitation</td>
<td>-.48 (.02)</td>
<td>$.06 \leq</td>
<td>\hat{p}</td>
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<tr>
<td>Emotionality– Insecurity</td>
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<td>Openness to Experience– Exploration</td>
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<td>$.11 \leq</td>
<td>\hat{p}</td>
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</tbody>
</table>

$^1$Refers to how the HEXACO dimension in a row is related to the outcome domains in the remaining rows (e.g., how Honesty-Humility is related to Insecurity, Sociality, Obstruction, Duty, and Exploration).

$^2$Refers to how the outcome domain in a row is related to the HEXACO dimensions in the remaining rows (e.g., how Exploitation is related to Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience).
Table 5

Meta-Analysis of Correlations between the HEXACO Dimensions and Exploitation

| Personality Dimension | Outcome: Exploitation | k   | N     | \( \hat{\rho} \) | SE  | \( F^2 \) | Q
|-----------------------|------------------------|-----|-------|----------------|-----|----------|---
| Honesty-Humility      | Outcome class: Immoral behavior | 125 | 28,949 | -0.41* | 0.05 | 78.46   | 876.56*
|                       | Criterion: aggression   | 4,013 | -0.40* | 0.06 | 77.67 | 54.45* |
|                       | Criterion: antisocial behavior | 2,483 | -0.45* | 0.03 | 26.79 | 33.93  |
|                       | Criterion: cheating/dishonesty | 3,073 | -0.25* | 0.05 | 86.45 | 267.79*|
|                       | Criterion: cooperatorive behavior | 10,193 | -0.41* | 0.05 | 77.03 | 75.51* |
|                       | Criterion: low integrity | 3,112 | -0.55* | 0.04 | 66.91 | 36.90* |
|                       | Criterion: unethical decision-making | 1,686 | -0.51* | 0.08 | 83.54 | 49.07* |
|                       | Criterion: immoral behavior other | 3,607 | -0.43* | 0.11 | 93.29 | 197.04*|
|                       | Criterion class: Short-term mating | 6,280 | -0.40* | 0.05 | 79.07 | 70.47* |
|                       | Criterion class: Machiavellianism | 30,764 | -0.69* | 0.03 | 84.77 | 615.37*|
|                       | Criterion: materialism | 2,394 | -0.63* | 0.06 | 76.04 | 37.98* |
|                       | Criterion: narcissism | 15,678 | -0.52* | 0.03 | 70.69 | 149.26*|
|                       | Criterion: psychological entitlement | 3,405 | -0.64* | 0.07 | 85.55 | 64.49* |
|                       | Criterion: psychopathy | 17,924 | -0.66* | 0.02 | 59.02 | 113.76*|
|                       | Criterion: sadism | 2,328 | -0.53* | 0.04 | 57.51 | 16.95* |
|                       | Criterion: dark traits other | 8,325 | -0.53* | 0.04 | 72.41 | 77.37* |
|                       | Criterion class: Active cooperation | 17,129 | -0.32* | 0.02 | 77.20 | 326.89*|
|                       | Criterion: altruism | 5,583 | -0.49* | 0.05 | 86.36 | 164.10*|
|                       | Criterion: cooperation in games | 7,213 | -0.25* | 0.02 | 29.84 | 55.78* |
|                       | Criterion: social value orientation | 3,519 | -0.25* | 0.02 | 16.74 | 19.38  |
|                       | Criterion: active cooperation other | 4,468 | -0.24* | 0.02 | 35.83 | 23.87* |
|                       | Criterion class: Environmental behavior | 3,682 | -0.23* | 0.07 | 90.41 | 87.19* |
| Emotionality          | Outcome class: Immoral behavior | 113 | 19,796 | -0.15* | 0.02 | 62.96 | 263.10*|
|                       | Criterion: aggression | 4,013 | -0.13* | 0.04 | 63.64 | 44.39* |
|                       | Criterion: antisocial behavior | 2,333 | -0.15* | 0.04 | 54.77 | 24.59* |
|                       | Criterion: cheating/dishonesty | 2,659 | -0.03 | 0.02 | 12.64 |     |
|                       | Criterion: cooperatorive behavior | 6,719 | -0.05 | 0.04 | 70.89 | 86.71* |
|                       | Criterion: criminality/delinquency | 3,741 | -0.13* | 0.03 | 58.89 | 32.21* |
|                       | Criterion: low integrity | 2,144 | -0.13* | 0.04 | 51.77 | 16.88* |
|                       | Criterion: unethical decision-making | 1,360 | -0.18* | 0.09 | 83.00 | 35.72* |
|                       | Criterion: immoral behavior other | 2,140 | -0.11* | 0.04 | 44.44 | 9.82* |
|                       | Criterion class: Short-term mating | 5,553 | -0.20* | 0.04 | 62.83 | 36.90* |
|                       | Criterion class: Dark traits | 24,442 | -0.21* | 0.03 | 88.76 | 620.27*|
|                       | Criterion: Machiavellianism | 11,976 | -0.15* | 0.03 | 75.33 | 120.89*|
|                       | Criterion: materialism | 2,391 | -0.01 | 0.04 | 62.74 | 24.38* |
|                       | Criterion: narcissism | 11,784 | -0.13* | 0.05 | 85.94 | 227.43*|
|                       | Criterion: psychological entitlement | 2,479 | -0.11* | 0.05 | 57.02 | 14.37* |
|                       | Criterion: psychopathy | 15,105 | -0.36* | 0.04 | 87.33 | 290.95*|
|                       | Criterion: sadism | 1,744 | -0.35* | 0.09 | 89.42 | 39.29* |
|                       | Criterion: dark traits other | 7,644 | -0.08 | 0.06 | 87.78 | 142.55*|
|                       | Criterion class: Active cooperation | 14,572 | -0.14* | 0.03 | 84.05 | 386.19*|
|                       | Criterion: altruism | 5,033 | -0.41* | 0.05 | 83.80 | 113.16*|
|                       | Criterion: cooperation in games | 5,575 | -0.03* | 0.02 | 20.00 | 25.44  |
|                       | Criterion: social value orientation | 3,052 | -0.01 | 0.02 | 10.27 |     |
|                       | Criterion: active cooperation other | 4,023 | -0.06* | 0.02 | 15.64 | 14.38  |
|                       | Criterion class: Environmental behavior | 2,115 | -0.04 | 0.06 | 78.66 | 24.85* |
| Extraversion          | Outcome class: Immoral behavior | 204 | 57,951 | -0.02 | 0.02 | 79.87 | 1,016.73*|
|                       | Criterion class: Environment behavior | 21,267 | -0.03 | 0.02 | 64.47 | 254.65*|
### NOMOLOGICAL NET OF THE HEXACO MODEL

#### Outcome domain: Exploitation

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<th>.02</th>
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| Criterion class: Short-term mating | 65 | 23.189 | -0.01 | .04 | 89.43 | 621.96* |
| Criterion: Machiavellianism | 29 | 11.972 | -0.07 | .07 | 93.51 | 461.56* |
| Criterion: Materialism | 8  | 2.160 | 0.12* | .06 | 78.68 | 37.99* |
| Criterion: Narcissism | 29 | 10.956 | 0.43* | .07 | 92.81 | 418.30* |
| Criterion: Psychological entitlement | 5  | 2.281 | -0.10 | .09 | 84.27 | 33.17* |
| Criterion: Psychopathy | 35 | 14.357 | -0.09*| .03 | 81.08 | 189.33* |
| Criterion: Sadism | 4  | 1.744 | -0.20*| .03 | 0.62  | 4.03  |
| Criterion: Dark traits other | 16 | 7.643 | -0.22* | .04 | 76.54 | 73.26* |
| Criterion: Active cooperation | 61 | 14.572 | 0.06* | .02 | 59.82 | 152.92* |
| Criterion: Altruism | 18 | 5.033 | 0.20* | .03 | 47.44 | 34.59* |
| Criterion: Cooperation in games | 32 | 5.575 | -0.03* | .01 | 0.00  | 31.21 |
| Criterion: Social value orientation | 13 | 3.052 | 0.01  | .02 | 0.00  | 9.06  |
| Criterion: Active cooperation other | 12 | 4.023 | 0.05  | .03 | 52.35 | 26.18* |
| Criterion: Environmental behavior | 5  | 2.115 | 0.16* | .03 | 34.50 | 7.82  |

#### Agreeableness

| Criterion: Aggression | 17 | 4.160 | -0.36* | .05 | 84.68 | 112.09* |
| Criterion: Antisocial behavior | 10 | 2.250 | -0.31* | .03 | 0.00  | 9.26  |
| Criterion: Cheating/dishonesty | 21 | 2.666 | -0.03 | .02 | 0.00  | 16.15 |
| Criterion: Counterproductive behavior | 26 | 7.304 | -0.20* | .03 | 59.78 | 65.19* |
| Criterion: Criminality/delinquency | 13 | 3.740 | -0.15* | .03 | 33.64 | 19.81 |
| Criterion: Low integrity | 8  | 2.144 | -0.31* | .06 | 72.72 | 30.07* |
| Criterion: Unethical decision-making | 6  | 1.360 | -0.19* | .05 | 45.82 | 11.14* |
| Criterion: Immoral behavior other | 5  | 2.140 | -0.21* | .04 | 45.68 | 10.08* |
| Criterion: Immoral behavior other | 13 | 5.553 | -0.11* | .02 | 33.81 | 20.19 |
| Criterion: Dark traits | 73 | 25.538 | -0.40* | .02 | 79.12 | 352.61* |
| Criterion: Machiavellianism | 33 | 13.007 | -0.38* | .03 | 75.92 | 140.38* |
| Criterion: Materialism | 9  | 2.391 | -0.30* | .05 | 71.01 | 31.34* |
| Criterion: Narcissism | 34 | 12.730 | -0.23* | .03 | 73.20 | 125.53* |
| Criterion: Psychological entitlement | 6  | 2.479 | -0.44* | .10 | 86.13 | 45.19* |
| Criterion: Psychopathy | 40 | 16.133 | -0.41* | .03 | 72.50 | 147.99* |
| Criterion: Sadism | 6  | 2.145 | -0.30* | .04 | 50.50 | 12.45* |
| Criterion: Dark traits other | 17 | 7.790 | -0.30* | .05 | 78.84 | 86.21* |
| Criterion: Active cooperation | 63 | 15.168 | 0.18* | .02 | 64.13 | 176.85* |
| Criterion: Altruism | 19 | 5.289 | 0.35* | .02 | 45.78 | 35.34* |
| Criterion: Cooperation in games | 34 | 6.171 | 0.10* | .02 | 7.16  | 36.66 |
| Criterion: Social value orientation | 13 | 3.052 | 0.12* | .02 | 0.00  | 4.04  |
| Criterion: Active cooperation other | 12 | 4.023 | 0.11* | .02 | 25.84 | 16.47 |
| Criterion: Environmental behavior | 6  | 2.363 | 0.13* | .04 | 45.13 | 11.36* |

#### Conscientiousness

| Criterion: Exploitation | 214 | 60.892 | -0.24* | .02 | 86.00 | 1533.35* |
| Criterion: Immoral behavior | 99 | 23.468 | -0.27* | .03 | 83.68 | 609.68* |
| Criterion: Aggression | 16 | 4.013 | -0.28* | .04 | 72.49 | 58.73* |
| Criterion: Antisocial behavior | 7  | 1.702 | -0.29* | .06 | 78.51 | 33.04* |
| Criterion: Cheating/dishonesty | 21 | 2.658 | -0.05* | .02 | 0.00  | 20.33* |
| Criterion: Counterproductive behavior | 28 | 7.668 | -0.38* | .04 | 80.70 | 146.64* |
| Criterion: Criminality/delinquency | 16 | 4.345 | -0.21* | .03 | 58.42 | 39.05* |
| Criterion: Low integrity | 9  | 2.462 | -0.47* | .08 | 88.31 | 78.86* |
| Criterion: Unethical decision-making | 6  | 1.360 | -0.25* | .06 | 65.37 | 17.46* |
| Criterion: Immoral behavior other | 5  | 2.140 | -0.18* | .05 | 60.14 | 13.99* |
| Criterion class: Short-term mating | 12 | 5.322 | -0.16* | 0.04 | 58.97 | 30.79* |
| Criterion class: Dark traits     | 67 | 24.128 | -0.32* | 0.03 | 87.34 | 534.59* |
| Criterion: Machiavellianism      | 29 | 11.971 | -0.24* | 0.04 | 84.61 | 193.85* |
| Criterion: materialism           | 8  | 2.160  | -0.04  | 0.05 | 71.43 | 28.33* |
| Criterion: narcissism            | 29 | 10.956 | -0.02  | 0.02 | 46.37 | 55.01* |
| Criterion: psychological entitlement | 6  | 2.479  | -0.23* | 0.11 | 88.77 | 55.98* |
| Criterion: psychopathy           | 36 | 15.099 | -0.43* | 0.03 | 78.14 | 167.89* |
| Criterion: sadism                | 4  | 1.744  | -0.34* | 0.09 | 88.63 | 36.86* |
| Criterion: dark traits other     | 16 | 7.644  | -0.35* | 0.07 | 89.60 | 167.04* |
| Criterion class: Active cooperation | 61 | 14.572 | 0.10*  | 0.02 | 72.25 | 221.82* |
| Criterion: altruism              | 18 | 5.033  | 0.23*  | 0.02 | 24.44 | 23.94 |
| Criterion: cooperation in games  | 32 | 5.575  | -0.02  | 0.02 | 26.53 | 43.73 |
| Criterion: social value orientation | 13 | 3.052  | 0.00   | 0.00 | 0.00  | 5.91  |
| Criterion: active cooperation other | 12 | 4.023  | 0.14*  | 0.05 | 76.90 | 55.19* |
| Criterion class: Environmental behavior | 5  | 2.115  | 0.12*  | 0.04 | 57.65 | 12.31* |

| Outcome domain: Exploitation     | 207 | 58.697 | -0.11* | 0.01 | 78.13 | 949.63* |
| Criterion class: Immoral behavior | 91  | 21.587 | -0.06* | 0.02 | 65.73 | 266.89* |
| Criterion: aggression            | 15  | 3.815  | -0.11* | 0.03 | 54.42 | 33.18* |
| Criterion: antisocial behavior   | 6   | 1.524  | -0.08* | 0.03 | 0.00  | 5.04  |
| Criterion: cheating/dishonesty   | 21  | 2.660  | -0.10* | 0.02 | 0.00  | 17.70 |
| Criterion: counterproductive behavior | 24 | 6.504  | -0.04  | 0.03 | 56.08 | 55.15* |
| Criterion: criminality/delinquency | 14 | 4.002  | 0.04   | 0.04 | 69.89 | 47.57* |
| Criterion: low integrity         | 8   | 2.144  | -0.09* | 0.03 | 0.00  | 3.62  |
| Criterion: unethical decision-making | 6  | 1.360  | -0.32* | 0.03 | 0.00  | 3.59  |
| Criterion: immoral behavior other | 5   | 2.140  | 0.01   | 0.06 | 67.57 | 17.52* |
| Criterion class: Short-term mating | 12  | 5.322  | -0.01  | 0.02 | 29.22 | 17.46 |
| Criterion class: Dark traits     | 65  | 23.190 | -0.10* | 0.03 | 83.02 | 386.61* |
| Criterion: Machiavellianism      | 29  | 11.970 | -0.11* | 0.04 | 85.40 | 204.81* |
| Criterion: materialism           | 8   | 2.160  | -0.18* | 0.05 | 66.46 | 24.11* |
| Criterion: narcissism            | 29  | 10.953 | 0.08*  | 0.03 | 71.32 | 103.98* |
| Criterion: psychological entitlement | 5  | 2.281  | -0.16  | 0.10 | 85.97 | 37.27* |
| Criterion: psychopathy           | 35  | 14.357 | -0.08  | 0.04 | 84.75 | 235.13* |
| Criterion: sadism                | 4   | 1.744  | 0.02   | 0.04 | 43.17 | 7.21  |
| Criterion: dark traits other     | 16  | 7.644  | -0.13* | 0.05 | 77.52 | 76.53* |
| Criterion class: Active cooperation | 61  | 14.572 | 0.15*  | 0.01 | 44.42 | 110.38* |
| Criterion: altruism              | 18  | 5.033  | 0.22*  | 0.03 | 62.42 | 48.57* |
| Criterion: cooperation in games  | 32  | 5.575  | 0.10*  | 0.02 | 0.86  | 32.28 |
| Criterion: social value orientation | 13  | 3.052  | 0.15*  | 0.02 | 0.00  | 8.79  |
| Criterion: active cooperation other | 12  | 4.023  | 0.12*  | 0.02 | 27.34 | 16.88 |
| Criterion class: Environmental behavior | 6  | 2.363  | 0.54*  | 0.05 | 65.98 | 18.67* |

Note. $k =$ number of statistically independent samples, $N =$ total sample size, $\hat{\rho} =$ mean true-score correlation corrected for unreliability, $SE =$ standard error, $\hat{I}$ = variation across samples due to heterogeneity rather than chance, $Q =$ Cochran’s $Q$ estimate.

* $p < .05.$
# NOMOLOGICAL NET OF THE HEXACO MODEL

## Table 6

Meta-Analysis of Correlations between the HEXACO Dimensions and *Insecurity*

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<th>Personality Dimension</th>
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<th>$N$</th>
<th>$\hat{\beta}$</th>
<th>$SE$</th>
<th>$I^2$</th>
<th>$Q$</th>
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### NOMOLOGICAL NET OF THE HEXACO MODEL

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### Openness to Experience

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*Note. k = number of statistically independent samples, N = total sample size, r̂ = mean true-score correlation corrected for unreliability, SE = standard error, I² = variation across samples due to heterogeneity rather than chance, Q = Cochran’s Q estimate.

* p < .05.
Table 7

Meta-Analysis of Correlations between the HEXACO Dimensions and **Sociality**

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<td>( I^2 )</td>
<td>Q</td>
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Criterion: satisfaction | 29 | 8,610 | 0.10*             | 0.03| 77.17    | 128.62*|
Criterion: well-being   | 8  | 2,007 | 0.21*             | 0.04| 27.34    | 11.30  |
Criterion: positivity other | 2  | 341   | 0.16*             | 0.07| 0.00     | 1.52   |

*Note.* \( k \) = number of statistically independent samples, \( N \) = total sample size, \( \hat{\rho} \) = mean true-score correlation corrected for unreliability, \( SE \) = standard error, \( I^2 \) = variation across samples due to heterogeneity rather than chance, \( Q \) = Cochran’s Q estimate.

* *p < .05.*
### Table 8

Meta-Analysis of Correlations between the HEXACO Dimensions and *Obstruction*

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<th>$\hat{\rho}$</th>
<th>SE</th>
<th>$I^2$</th>
<th>$Q$</th>
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*Note. $k$ = number of statistically independent samples, $N =$ total sample size, $\hat{\rho} =$ mean true-score correlation corrected for unreliability, $SE =$ standard error, $I^2 =$ variation across samples due to heterogeneity rather than chance, $Q =$ Cochran’s $Q$ estimate.*

* $p < .05.$
### NOMOLOGICAL NET OF THE HEXACO MODEL

#### Table 9

Meta-Analysis of Correlations between the HEXACO Dimensions and *Duty*

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### NOMOLOGICAL NET OF THE HEXACO MODEL

**Openness to Experience**

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*Note. k = number of statistically independent samples, N = total sample size, \( \hat{\rho} \) = mean true-score correlation corrected for unreliability, SE = standard error, \( I^2 \) = variation across samples due to heterogeneity rather than chance, \( Q \) = Cochran’s Q estimate. 

* *p < .05.*
Table 10

Meta-Analysis of Correlations between the HEXACO Dimensions and *Exploration*

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<td>86.33</td>
<td>36.90*</td>
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<tr>
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<td>.06</td>
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<td>0.90</td>
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<tr>
<td></td>
<td>Criterion: political orientation</td>
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<td>.03</td>
<td>0.00</td>
<td>4.02</td>
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<tr>
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<td>.02</td>
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<tr>
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<td>0.06</td>
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<tr>
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<td>1,448</td>
<td>.14*</td>
<td>.03</td>
<td>0.00</td>
<td>4.35</td>
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<td>Criterion: right-wing authoritarianism</td>
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<td>3,851</td>
<td>.08*</td>
<td>.02</td>
<td>2.46</td>
<td>13.34</td>
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<td>Criterion class: Prejudice</td>
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<td>.06</td>
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<td>Criterion: low humanity</td>
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<td>727</td>
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<td>.05</td>
<td>0.00</td>
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<td>1,811</td>
<td>-.10</td>
<td>.08</td>
<td>85.65</td>
<td>35.06*</td>
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</table>
### Nomological Net of the HEXACO Model

<table>
<thead>
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<th>Outcome domain: Exploration</th>
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<th>15,705</th>
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<th>.02</th>
<th>79.00</th>
<th>240.90*</th>
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<td>.06</td>
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<td>92.05*</td>
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<td>.03</td>
<td>70.52</td>
<td>78.98*</td>
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<td>.06</td>
<td>0.00</td>
<td>0.14</td>
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<td>.03</td>
<td>36.68</td>
<td>14.24</td>
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</table>

Note. $k = \text{number of statistically independent samples}, N = \text{total sample size}, \hat{\rho} = \text{mean true-score correlation corrected for unreliability}, \ SE = \text{standard error}, I^2 = \text{variation across samples due to heterogeneity rather than chance}, Q = \text{Cochran’s Q estimate}.$

* $p < .05.$
Meta-analytic, Disattenuated Correlations between HEXACO Dimensions and Criterion Classes, Separated for Self-reported vs Non-self-reported Assessed Criteria

<table>
<thead>
<tr>
<th>HEXACO Dimension</th>
<th>Criterion Class</th>
<th>(k)</th>
<th>Intercept ((\equiv SR))</th>
<th>Slope ((\equiv NSR))</th>
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</thead>
<tbody>
<tr>
<td><strong>Immoral Behavior</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honesty-Humility</td>
<td>SR</td>
<td>90</td>
<td>NSR</td>
<td>35</td>
</tr>
<tr>
<td>Emotionality</td>
<td>66</td>
<td>32</td>
<td>-.11</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Extraversion</td>
<td>60</td>
<td>31</td>
<td>-.04</td>
<td>.03</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>67</td>
<td>32</td>
<td>-.25</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>69</td>
<td>31</td>
<td>-.31</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Openness to Experience</td>
<td>60</td>
<td>32</td>
<td>-.05</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

| **Active Cooperation** |                |       |                 |                 |
| Honesty-Humility | 42 | 33   | .36 | < .01 | -.11 | .01 |
| Emotionality     | 35   | 28   | .18 | < .01 | -.14 | < .01 |
| Extraversion     | 35   | 28   | .10 | < .01 | -.12 | < .01 |
| Agreeableness    | 36   | 29   | .21 | < .01 | -.09 | < .01 |
| Conscientiousness| 35   | 28   | .14 | < .01 | -.14 | < .01 |
| Openness to Experience | 35 | 28   | .16 | < .01 | -.04 | .13 |

| **Reactive Cooperation** |                |       |                 |                 |
| Honesty-Humility | 12 | 5    | .22 | < .01 | -.15 | .18 |
| Emotionality     | 9    | 4    | .13 | < .01 | .24 | .02 |
| Extraversion     | 9    | 4    | .18 | < .01 | -.25 | .04 |
| Agreeableness    | 11   | 4    | .37 | < .01 | -.27 | .09 |
| Conscientiousness| 11   | 4    | .14 | < .01 | -.12 | .04 |
| Openness to Experience | 9  | 4    | .11 | < .01 | -.02 | .73 |

| **Achiev./Performance** |                |       |                 |                 |
| Honesty-Humility | 22 | 14   | .08 | < .10 | .02 | .74 |
| Emotionality     | 17   | 14   | .01 | .60  | .01 | .83 |
| Extraversion     | 17   | 11   | .21 | < .01 | -.14 | .03 |
| Agreeableness    | 19   | 11   | .09 | .03  | -.10 | < .10 |
| Conscientiousness| 21   | 14   | .25 | < .01 | -.01 | .94 |
| Openness to Experience | 17 | 12   | .18 | < .01 | -.13 | .02 |

*Note. SR = self-reported, NSR = non-self-reported; Achiev. = achievement.*
Table 12

Partial Correlations and Zero-Order Correlations of the HEXACO dimensions with Outcome Domains

<table>
<thead>
<tr>
<th></th>
<th>Exploitation</th>
<th>Insecurity</th>
<th>Sociality</th>
<th>Obstruction</th>
<th>Duty</th>
<th>Exploration</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$\hat{p}_{xy}$</td>
<td>$\hat{p}$</td>
<td>$\hat{p}_{xyz}$</td>
<td>$\hat{p}$</td>
<td>$\hat{p}_{xy,z}$</td>
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<td>.05</td>
<td>.11</td>
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<td>.27</td>
<td>-.03</td>
<td>-.11</td>
</tr>
<tr>
<td>Extraversion</td>
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<td>-.02</td>
<td>-.20</td>
<td>-.25</td>
<td>.46</td>
<td>.53</td>
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<tr>
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<td>.18</td>
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<td>-.24</td>
<td>.03</td>
<td>-.02</td>
<td>.11</td>
<td>.25</td>
</tr>
<tr>
<td>Openness to Experience</td>
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<td>-.11</td>
<td>-.09</td>
<td>-.13</td>
<td>-.01</td>
<td>.13</td>
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</tbody>
</table>

**Note.** Partial correlations ($\hat{p}_{xy,z}$) refer to the correlation between a HEXACO dimension ($x$) and an outcome domain ($y$) while controlling for the remaining HEXACO dimensions ($z$). See main text for details on how the partial correlations were obtained.
Figure 1. Expected primary (solid line) and secondary (dotted line) relations between the HEXACO dimensions and outcome domains.
Figure 2. Meta-analytic, disattenuated correlations between the HEXACO dimensions (H = Honesty-Humility, E = Emotionality, E = Extraversion, A = Agreeableness vs. Anger, C = Conscientiousness, O = Openness to Experience) and the outcome domains Exploitation, Insecurity, Sociality, Obstruction, Duty, and Exploration.
Appendix

Data from the following papers were used in the meta-analyses. Superscripts indicate in which meta-analysis the data were used: 1 = Exploitation, 2 = Insecurity, 3 = Sociality, 4 = Obstruction, 5 = Duty, and 6 = Exploration.

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https://doi.org/10.1080/13674676.2013.797956

https://doi.org/10.1016/j.paid.2013.08.037

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https://doi.org/10.1016/j.paid.2017.06.002


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