



## Full Length Article

What laypeople think the Big Five trait labels mean<sup>☆</sup>Judith A. Hall<sup>a,\*</sup>, Katja Schlegel<sup>b,1</sup>, Vanessa L. Castro<sup>a,1</sup>, Mitja Back<sup>c</sup><sup>a</sup> Department of Psychology, 125 NI, Northeastern University, Boston, MA 02115, USA<sup>b</sup> Institute of Psychology, University of Bern, Fabrikstr. 8, 3012 Bern, Switzerland<sup>c</sup> Department of Psychology, University of Münster, Fliegerstr. 21, 48149 Münster, Germany

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## ABSTRACT

We asked what laypeople think the commonly used Big Five trait labels mean, and how well their beliefs match the content of standard Big Five scales. Study 1 established participants' familiarity with the Big Five trait labels. In Studies 2 and 3, participants described persons high on the traits using a free response format. Responses were sorted into categories (facets), each of which earned a centrality index defined as the proportion of responses for the given trait that fell into that category. Studies 2 and 3 converged well. Comparisons with four standard Big Five inventories revealed substantial commonality but also notable areas of non-overlap consisting of content identified by laypeople that was not represented in the standard scales, as well as content in the standard scales that was not mentioned by laypeople.

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## 1. Introduction

In recent years the five-factor or Big Five framework has dominated personality measurement (Markon, 2009; John & Srivastava, 1999; McCrae & Costa, 1996, 2013). One common method for developing scale content has been factor analysis of lexical trait terms (natural language terms; e.g., adjectives gleaned from dictionaries) as applied by respondents to the self, combined with rational methods such as turning adjectives into descriptions of behavior and developing items based on theory. Although the lexical trait-rating approach is said to reflect lay conceptions of personality (McCrae & Costa, 2013), in fact the commonly followed methods of scale development do not incorporate direct inquiry about how the people who respond to such inventories think about the meaning of the superordinate Big Five trait terms that are used to label their responses (extraversion, conscientiousness, neuroticism, agreeableness, and openness to experience). While some

psychometricians might see the existence of such a gap as evidence of insufficient attention to content validity (i.e., not tapping representatively into the full domain of relevant content) (Campbell & Miller, 2013), the chief motivation behind the present research was simple curiosity: How do laypeople conceptualize the Big Five trait labels?

To the extent that the Big Five trait terms have also become commonplace outside of psychology (for example, from news headlines, popular movies, and television), a case can be made for incorporating—or at least discovering—laypeople's beliefs about these personality traits, in other words their naïve theories or “folk concepts” (Tellegen, 1993). Although Tellegen (1993) argued forcefully for drawing on laypeople's explicit beliefs in developing personality scales, we have not found evidence that this fully inductive approach has been used in the case of the Big Five scale development and explicitly was not done in the case of the NEO-PI-R (Paul Costa, personal communication, July 24, 2017).

Our first question was what are people thinking of when they label someone as extraverted (for example)? And second, if they call someone an extravert, are they thinking of the same behaviors and attributes that the researchers have included under that same label? Might laypeople be ignoring behaviors or characteristics that are part of standard scales, or including behaviors that are not typically measured by standard scales? Perhaps what the personality theorists, based on standard multi-item inventories, call “conscientiousness” (for example) does not accord perfectly with what regular people think of when they use that same word. Discrepancy between lay conceptions and the researchers'

<sup>☆</sup> The description of lay beliefs is based entirely on the contents of the tables, which contain all of the raw data from Studies 2 and 3. Comparisons of lay beliefs to the standard Big Five scales were performed qualitatively. The studies were not preregistered. Contributions of the authors were as follows: study conceptualization, JAH, KS, MB; data collection, JAH, KS, VLC; data preparation, JAH, KS, VLC; data analysis, JAH, KS, VLC; report writing, JAH, KS, VLC, MB. Author VLC was supported by NIA F32-AG048687 from the National Institute of Aging.

\* Corresponding author.

E-mail addresses: [j.hall@northeastern.edu](mailto:j.hall@northeastern.edu) (J.A. Hall), [katja.schlegel@psy.unibe.ch](mailto:katja.schlegel@psy.unibe.ch) (K. Schlegel), [vanessalopes.castro@gmail.com](mailto:vanessalopes.castro@gmail.com) (V.L. Castro), [mitja.back@wvu.edu](mailto:mitja.back@wvu.edu) (M. Back).<sup>1</sup> Katja Schlegel and Vanessa Castro share second authorship equally.

definitions could have scientific implications, in cases where respondents describe the self, or describe other people, using only the Big Five trait labels rather than multi-item inventories (e.g., Beer, 2014; Castro & Gramzow, 2015; Sutherland et al., 2015; Talamas, Mavor, & Perrett, 2016; Wolffhechel et al., 2014). Specifically, to the extent laypeople's understanding of the trait labels that are used as single-item measures differ from the content that these labels are intended to reflect (which is captured in the respective multi-item scales) their responses to the single-item measures will be biased: The meaning of their scores will be shifted towards their lay interpretation of the trait labels and be less reflective of the content the researcher had in mind.

The present studies are concerned with finding out what regular people (laypeople, as contrasted with psychology researchers) think the Big Five trait labels mean by asking them directly. To this end, in Study 1 we sought to confirm that laypeople from our target population had an acceptable understanding of the basic vocabulary in question, in other words the five Big Five trait labels. In the two main studies (Studies 2 and 3) we presented participants with the trait labels, for example extraversion, without providing any definition in order not to shape their responses. We then asked them to state any characteristics, qualities, cues, or behaviors that they associated with the labels. Following our analysis of their responses, we compared the conceptions that emerged from these open-ended responses to how the same traits are represented in four standard Big Five inventories.

One indirect method that has been used to learn about laypeople's beliefs regarding the content of personality traits is through their cue utilizations as documented in lens models (Back & Nestler, 2016; Brunswik, 1956). In this paradigm, the researcher correlates perceivers' ratings of targets' personalities with behaviors or appearance cues of the targets. These correlations (cue utilizations) are used to infer what information the perceiver used in rating the trait. This approach has revealed evidence of lay personality theories for a number of traits (e.g., Hirschmüller, Egloff, Nestler, & Back, 2013; Mehl, Gosling, & Pennebaker, 2006; Naumann, Vazire, Rentfrow, & Gosling, 2009; Nestler & Back, 2013; Scherer, 1978). However, the lens model cannot fully capture how people attribute traits because it relies on the specific behaviors or aspects of appearance that the researcher presents to perceivers, which clearly cannot capture the whole repertoire of tendencies, attitudes, or values—such as “trusting” or “appreciates art” or “is always on time for appointments”—that are typically considered aspects of personality. Furthermore, the lens model approach is not designed to capture perceivers' explicit personality conceptions but rather their implicit associations as inferred from the correlations between cues and ratings of the given trait.

In seeking to understand the bases on which trait attributions are made, some studies have indeed asked participants to nominate behaviors or other characteristics relevant to specific traits (e.g., Buss & Craik, 1980; Jackson et al., 2010; Wilt & Revelle, 2015; Wood, Gardner, & Harms, 2015; Yang et al., 2014). This literature varies in terms of the origin of items under consideration and the specific methods employed (e.g., asking participants to evaluate their own or other people's behavior; defining the trait construct for them or not). Because the present research is concerned with documenting people's explicit beliefs about how they apply the Big Five trait labels, we asked participants to write down their own views in an open response format. This method is reminiscent of the act frequency approach (Buss & Craik, 1980, 1983), wherein laypeople nominated concrete behaviors that they believed to characterize a trait. In that method, the nominated behaviors were then winnowed to eliminate redundancy and supplemented with behaviors from existing scales to form a set of items for administration to new participants who rated each item

on prototypicality. While the present research also focuses on lay beliefs and quantifies the centrality of different categories (facets) of behavior to the trait in question, our method and goals differ from those in the earlier line of research in several ways.

First, the act frequency approach winnowed laypeople's suggested items to eliminate redundancy, which we did not do because doing so removes the possibility of establishing the relative centrality or importance of different facets to laypeople; the act frequency approach also involved adding items not from the laypeople's suggested item pool. Second, the act frequency approach was highly focused on concrete behaviors, whereas in our research (especially Study 2) we invited respondents to nominate any kind of evidence they wished to, which could include higher-order tendencies. Third, whereas the previous approach determined centrality (prototypicality, in that tradition) using second-party ratings of the winnowed and supplemented list of behaviors, we based centrality on the original, complete set of descriptions provided spontaneously by laypeople, by calculating the number of descriptions falling into different categories (or facets) of the trait. Fourth, we had the goal of comparing lay beliefs to the contents of established inventories in order to find out about conceptual match or mismatch. And finally, we were concerned with the Big Five traits in particular.

Jackson et al. (2010) were interested in one of the Big Five traits—conscientiousness—and also used a method of item nomination from several groups of respondents, with the goal of creating a behaviorally referenced conscientiousness scale. Several differences from our method are notable. Nominations of items were made by individuals already familiar with the literature or who were given a definition of conscientiousness that was based on the literature. Prototypicality was rated by second parties, as in the Buss and Craik (1980) method. Finally, because the goal was scale development, further aspects of Jackson et al. (2010) research were based on new participants' self-ratings on the items and convergence of those with existing inventories. Our research did not have the goal of scale development and therefore no self-ratings were gathered.

Chapman and Goldberg (2017) introduced another variation on the act frequency approach by providing participants with an extensive list of behaviors and asking them to rate how frequently they have engaged in them from “never in my life” to “15 or more times in the past year.” The self-ratings were then compared to self-ratings on a standard Big Five inventory in order to determine which behaviors characterized each trait. While our studies also addressed frequency (as described below), we did so in terms of how often a given type of behavioral characteristic was mentioned by respondents; also, we used a free response format and we did not use a self-rating approach.

The present research had three goals: (1) to document laypeople's explicit beliefs regarding the meaning of the Big Five trait labels as they would use them in their daily life when describing other people, (2) to establish the relative centrality of the several categories that emerged within each trait, and (3) to compare the lay beliefs to the content of four commonly used Big Five inventories, providing context from which to evaluate laypeople's beliefs. In our two main studies (Studies 2 and 3), diverse laypeople in online samples were asked to generate their own list of qualities (attributes, behaviors, etc.) that they use when assigning the Big Five traits to others, in an open-ended format. These responses were sorted inductively into similarity categories within each of the Big Five traits by naïve independent judges. The categories thus derived are analogous to “facets” in standard scales such as the NEO-PI-R (Costa & McCrae, 1995). Studies 2 and 3 together facilitate the identification of replicable facets that were representative of a broad population of laypeople rather than an idiosyncratic sample. In addition, data were collected to establish the degree

to which laypeople say they understand the trait labels in question and demonstrate such understanding.

Although the fully inductive approach with regard to the meaning of the Big Five traits has not been used, there is precedent for exploring lay concepts about psychological constructs using an inductive, open-ended methodology. As examples, Sommers and Norton (2006) asked respondents to describe traits and characteristics of people whom they would label as “White racist,” and Sternberg, Conway, Ketron, and Bernstein (1981) used the open-ended format in asking laypeople about what the concept of intelligence meant to them.

Our methodology permitted not only a detailed description of laypeople’s explicit beliefs, but also a quantitative ordering of the prominence or centrality of various facets of each trait label according to laypeople (cf. Leising, Scharloth, Lohse, & Wood, 2014). In standard personality inventories that subdivide each Big Five trait into facets (e.g., the NEO-PI-R of Costa & McCrae, 1995; the IPIP-120 of Maples, Guan, Carter, & Miller, 2014; or the BFAS of DeYoung, Quilty, & Peterson, 2007), those facets, whether they be two or eight or some other number, are weighted equally in scoring the trait, although they can also be looked at separately. In scales that do not subdivide the traits into facets (e.g., BFI; John, Donahue, & Kentle, 1991), all items for a given trait are weighted equally when scoring. The present methodology, in contrast, offers insight into how prominent or central each facet (category) is that emerges from the participants’ data, simply by counting how many descriptions fall into it. Such information could prove useful to future research, for example, by highlighting facets of personality that may be particularly relevant to regular people in real life and/or by prioritizing facets within existing inventories for measurement in empirical studies.

The present studies therefore served as replicated documentation of laypeople’s explicit beliefs about what the Big Five trait labels mean to them. Based on this, we then compared these beliefs to the content of four standard inventories for measuring the Big Five traits—the NEO-PI-R (Costa & McCrae, 1995), IPIP-120 (Maples et al., 2014), BFI (John et al., 1991), and BFAS (DeYoung et al., 2007)—to see where there is and is not overlap. Non-overlap could take two forms: content that is present in laypeople’s minds but is not much, or at all, included in the standard inventories, and content that is in the inventories but not much, or at all, present in laypeople’s minds.

## 2. Study 1

The goal of Study 1 was to find out whether laypeople are generally familiar with the Big Five trait labels (extraversion, conscientiousness, neuroticism, agreeableness, and openness to experience).

### 2.1. Method

#### 2.1.1. Participants

One hundred eighty-three participants (49% female,  $M$  age = 37) were recruited on Amazon’s Mechanical Turk (MTurk) platform, using the Qualtrics survey software for data collection. Participants were in the USA and were native English speakers.

#### 2.1.2. Procedure

Participants were randomly assigned to respond about one of the Big Five trait terms. They were asked first to make a rating of their confidence that they understood the term (1 = not at all confident/don’t know the word to 9 = completely confident), and then to write down their personal definition of it. In each case they were

shown both the adjectival term (e.g., conscientious) and its associated noun (conscientiousness).

Two independent coders (undergraduate students) classified each definition into 1 of 4 categories of adequacy. The coders were familiarized with the trait concepts and the breadth of aspects available in the literature. The categories were (1) *Senseless, silly, not credible as a sincere answer*, (2) *Seems to misunderstand what it means, or says they have no idea*, (3) *Somewhat suggests the trait* [e.g., naming just one of several possible facets of the trait], and (4) *Fits an obvious way of defining the trait*.

## 2.2. Results

Out of the 183 participants, three participants (2%) gave a rating of 1 (not at all confident, don’t know the word), and five participants (3%) gave a confidence rating of 1, 2, or 3 on the 9-point scale (range of 0% for agreeableness and openness to experience up to 6% for extraversion).<sup>2</sup> On the other hand, 150 (82%) gave a confidence rating of 7, 8, or 9 (range of 64% for neuroticism up to 94% for agreeableness).

Turning to the coders’ classification of adequacy, eight participants were removed whose answers were given a “1” by both coders (*Senseless, silly, not credible as a sincere answer*). For the remaining participants, the following figures represent the percentage of definitions that were in the adequate range (i.e., given a code of 3 or 4 by one or both coders): extraversion, 94%; conscientiousness, 83%; neuroticism, 90%; agreeableness, 78%; and openness to experience, 100%.

The foregoing analyses indicate generally high self-reported familiarity with the Big Five trait terms in the population group studied in the present research. This legitimates our asking participants in Studies 2 and 3 for their detailed descriptions of the personal and interpersonal qualities that they think of when they apply the terms in daily life. (Also, as explained below, in Studies 2 and 3 the few responses that were silly or indicated no understanding of the terms, as well as very small, idiosyncratic categories, were not included in analysis.)

## 3. Studies 2 and 3

### 3.1. Study 2 method

#### 3.1.1. Participants

Two hundred forty-six (54% female) participants were recruited on Amazon’s Mechanical Turk (MTurk) platform, using the Qualtrics survey software for data collection. Participants were in the USA and were native English speakers. The mean age was 35 (range 18–70), and ethnicity was as follows: 74% White, 10% African American, 8% Asian/Asian American, 6% Hispanic/Latino, and 2% other. The highest level of education was: 8% high school, 31% some college, 53% college degree, and 8% post-graduate degree.

#### 3.1.2. Procedure

Participants were randomly assigned to respond about one of the Big Five traits. Open-ended responses were requested with the following instructions:

We are studying how people think about personality. Everyone has their concept of what different traits mean—for example, you might refer to a friend as “very neurotic” or “very introverted” or “very dominant.” Perhaps you have not explicitly

<sup>2</sup> For participants assigned the trait of extraversion, we did not include the alternative spelling “extroversion”; had we done so, the figure of 6% giving a confidence rating of 1–3 might have been lower because some people might have been familiar with one spelling but not the other.

defined for yourself what you mean when you refer to different personality traits. However, anytime you use a trait term, you are in fact applying an implicit definition about someone's behavior or other personal characteristics. We are asking you to think *explicitly* about how you make such judgments, and to write down . . . FIVE qualities or behavior patterns that, for you, define the trait. There are no right or wrong answers, because people differ in their personal definitions of traits and in what evidence they take into account when deciding on someone's traits. We want to know *your way* of defining different traits. DO NOT REFER TO A DICTIONARY OR THESAURUS, OR ANY OTHER RESOURCES, WHEN DOING THIS STUDY. WE ARE ONLY INTERESTED IN YOUR OWN, PERSONAL IDEAS, IN YOUR OWN WORDS.

Then, the instructions named the trait they were randomly assigned to think about:

If you would label someone you meet or know as \_\_\_\_\_, what behaviors or personal characteristics would you think about in order to reach such a conclusion? List FIVE such behaviors or personal characteristics, one in each of the boxes below, in as much detail as you wish.

Only one pole of the trait was given (i.e., extraverted, conscientious, neurotic, agreeable, or open to experience). Participants typed directly into the five textboxes provided.

### 3.1.3. Sorting of responses into categories

An inductive method was used whereby naïve undergraduate research assistants sorted the descriptions, for each trait separately, into similarity categories (see Hall, Roter, & Katz, 1988, and López, Atran, Coley, Medin, & Smith, 1997, for examples of this methodology). The participants' descriptions for a given trait were each printed on a separate slip of paper. As an example, for neuroticism there were 51 participants who each provided 5 descriptions, making for 255 (51 × 5) slips of paper for that trait. Three sorting teams, composed of two research assistants each, sorted the descriptions (for one trait at a time) into piles, with each pile representing conceptually similar descriptions. They were not told what trait the participants had been asked to describe, they were not told how many piles to produce, and they were not asked to label their piles. The sorting task was done sequentially by the three teams as follows. The first team sorted into piles of similar content as they saw fit; then the second team was given the first team's piles and told they should use the first team's piles as a starting point, but that they could make corrections and other rearrangements as they saw fit (for example, combining or splitting piles, or moving a description to a better fitting pile). Then, the third team worked with the second team's piles, following the same instructions. Hereafter, the piles are called categories.

As a last step, three of the authors examined the categories and made final adjustments and minor grammatical corrections, while remaining faithful to the descriptions. A small number of descriptions were considered ineligible because they did not fit any category, were nonsense (humorous or irrelevant responses), or described a reaction to someone's behavior rather than a description of that behavior (for example, annoying). Then the categories were given names corresponding to their general content; for example, three categories that emerged for extraversion were *Outgoing/social*, *Friendly/kind/compassionate*, and *Talkative*, and three categories that emerged for neuroticism were *Nervous/anxious*, *Negatively reactive/angry*, and *Sad/pessimistic/guilty*.

### 3.1.4. Calculation of frequencies and centrality indices

Finally, the number of descriptions in each category was counted. From these frequencies a centrality index was calculated

for each category, defined as the number of descriptions in the category divided by the total number of descriptions offered for the given trait (X 100 to form a percentage). For example, for openness to experience in Study 2, the 26 descriptions that were sorted into the category that we named *Outgoing/social* constituted 12% of the total of 218 descriptions offered by participants for that trait. The centrality indices can be compared across categories within a trait to understand the hierarchy of content in participants' minds: if a high percentage of behavior descriptions fell into one category but only a small percentage fell into another category, it is reasonable to infer that the first category is more central or defining than the second. We interpret this index as a reflection of how laypeople prioritize different kinds of content when conceptualizing a given trait.

### 3.1.5. Isolating participants' first response

As noted, participants were asked for five descriptions of the trait to which they were assigned. Because of the possibility that a participant's very first description was more central to their thinking than the succeeding ones, we performed an analysis that isolated the first from the remaining descriptions for each participant. Next, we re-calculated the centrality indices (i.e., how many descriptions fell into each category) for just the first responses. Then we correlated, across the categories for each Big Five trait, the first-response centrality indices with the centrality indices based on all five responses and also for the succeeding four responses (i.e., not including the first response). For the correlation between the first response and all five responses, the correlations ranged from  $r = 0.90$  to  $r = 0.96$  ( $Md = 0.93$ ). The analogous correlations based on the participant's other four descriptions rather than all five were also strong although somewhat less so due to removing the redundancy of having the first response represented in the correlation twice: these ranged from  $r = 0.81$  to  $r = 0.92$  ( $Md = 0.89$ ). These high correlations mean that there is considerable coherence between first and subsequent responses in terms of the centrality of the categories, suggesting that first responses were not in any way unique. Therefore, in all analyses presented below for both Studies 2 and 3, the centrality indices are based on all of the descriptions provided by participants, as these are both similar to the first-response results and more robust (i.e., based on much more data).

## 3.2. Study 3 method

### 3.2.1. Participants

Three hundred forty-nine (65% female) participants were recruited on MTurk; survey responses were collected as in Study 2 via Qualtrics software. All participants resided in the USA and had MTurk worker approval rates  $\geq 90\%$ . No participants were in Study 2. For this study, participants were recruited to represent the spectrum of ages along the adult lifespan (Castro & Isaacowitz, 2018), resulting in an older sample than in Study 2. Specifically, participants were on average 48 years old (range 21–81). Participants reported diverse ethnicities (78% White, 9% Black, 6% Asian American/Pacific Islander, 5% Hispanic/Latino, 2.0% multiracial). Education level was not measured, but participants reported a range of income levels ( $Md = \$48,000$ ; range \$0–\$240,000).

### 3.2.2. Procedure

Participants were randomly administered 10 blocks of questions pertaining to 10 different attributes that may be judged in other people; some of these attributes included the Big Five traits (others included discrete emotional states and characteristics like health and affluence, not discussed here). Thus, participants could have responded to questions about some or all of the Big Five traits.



For each of the 10 blocks, participants were asked to recall a time in the past three months when they made a specific judgment about someone else. For example, participants were asked to recall a recent time when they judged whether someone was extraverted or conscientious. As in Study 2, only one pole of the trait was given.

After anchoring their report to a specific interpersonal judgment event, participants provided some additional information that was not relevant to the present study (see Castro & Isaacowitz, 2018). Participants were then asked to describe the behaviors or cues they used to make their judgment (e.g., “In a few sentences, briefly describe the behaviors and cues you used to judge this person’s extraversion”). Participants typed directly into textboxes and they could list as many different behaviors or cues as needed.

### 3.2.3. Sorting of responses into categories

Before the sorting task, one of the authors split up descriptions containing several characteristics or behaviors into separate units that were then printed on separate slips of paper. The sorting task then proceeded exactly as in Study 2, but with new teams of research assistants. Final review of the categories was done by the authors as in Study 2.

### 3.2.4. Calculation of frequencies and centrality indices

These calculations were done as in Study 2.

## 4. Results of studies 2 and 3

Table 1 shows the categories of explicit beliefs and the centrality indices for extraversion, conscientiousness, neuroticism, agreeableness, and openness to experience for Study 2, Study 3, and both together. Very often, as we describe below, the same categories emerged in both studies. Tables 3–7 list all responses provided by participants for each trait in both studies. Throughout, we considered a category to be present if it contained five or more responses in at least one of the two studies.

### 4.1. Extraversion

As shown in Table 1, 10 categories emerged for extraversion, nine of which emerged in both studies. The two studies agreed well on how participants prioritized the categories, based on the correlation between the two studies’ centrality indices across the 10 categories that emerged,  $r(8) = 0.81, p = .004$ . For this and other such correlations, when a given category did not emerge for one of the studies, a centrality index of 0.00 was assigned for that category. The strong correlation indicates that participants in the two studies had a high degree of convergence in how they prioritized the different categories. Table 3 shows all of the responses for extraversion.

*Outgoing/social* was the most defining category for extraversion, with 30% of responses falling into that category. Less prominent, at 16% and 17% respectively, were the categories *Friendly/kind/compassionate* and *Talkative*. *Happy/funny* followed with 9%, and after that were the remaining categories with centrality indices ranging from 6% to down to 3% (*Energetic/active/zealous*, *Attention-getting/dominant*, *Assertive/confident/leader*, *Life of party*, *Forthcoming/expressive*, and *Loud/big personality*).

### 4.2. Conscientiousness

Table 1 gives the categories and centrality indices for conscientiousness. The same 11 categories emerged in both studies; however, across those 11 categories, the correlation between the two studies’ centrality indices was only moderate,  $r(9) = 0.41, p < .22$ ,

meaning participants in the two studies did not prioritize those 11 categories in exactly the same way. Table 4 shows all of the responses for conscientiousness.

Across both studies, *Friendly/kind/compassionate* and *Planning/detail oriented* were the most prominent categories, with centrality indices of 26% and 22% respectively. Next in line was *Determined/hardworking/motivated*, with a centrality index of 13%. The remaining categories ranged from 8% down to 2% in centrality (*Attentive/alert*, *Careful/cautious*, *Reflective/mindful*, *Intelligent/wise*, *Ethical/moral*, *Trustworthy/reliable*, *Concerned about others’ opinions*, and *Timid/reserved*).

### 4.3. Neuroticism

Table 1 shows the categories and centrality indices for neuroticism. Eight of the 13 categories showed up in both studies. The two studies were moderately correlated in terms of their centrality indices,  $r(11) = 0.43, p < .15$ . Table 5 shows all of the responses for neuroticism.

*Nervous/anxious* was the most prominent category, with 26% of responses across both studies falling into that category. Less prominent were *Negatively reactive/angry* (17%) and *Sad/pessimistic/guilty* (13%). Below those, ranging from 8% down to 1%, were *Obsessive/compulsive*, *Moody/unstable*, *Crazy/mental problems*, *Selfish/self-absorbed*, *Eccentric/weird*, *Reclusive*, *Odd thoughts and speech*, *Paranoid*, *High strung/high energy*, and *Indecisive/risk averse*.

### 4.4. Agreeableness

Table 1 shows the categories and centrality indices for agreeableness; the two studies had only six of the 11 categories in common. However, the two studies agreed strongly on the centrality of the categories,  $r(9) = 0.88, p < .001$ . Table 6 shows all the responses for agreeableness.

*Friendly/kind/compassionate* was the leading category with 32% of responses. The next group consisted of *Approval seeking/pushover* (21%) and *Happy/funny* (15%). Below that, ranging from 8% down to 1%, were *Easygoing/calm*, *Open/accepting*, *Passive/unaggressive*, *Cooperative/team player*, *Good listener*, *Timid/reserved*, *Defensive/evasive*, and *Indecisive/risk averse*.

### 4.5. Openness to experience

Table 1 shows the categories and centrality indices for openness to experience. The two studies had five of their total of 11 categories in common. The correlation between the two studies across all 11 categories was  $r(9) = 0.55, p < .08$ . Table 7 shows all the responses for openness to experience.

In both studies, the category *Risk taker/willing to try new things* (experiences, foods, jobs, places, etc.) was the pre-eminent category (31% in both studies). Farther behind with overall centrality indices of 14% and 13% respectively were *Friendly/kind/compassionate* and *Curious/inquisitive*. Below those, ranging from 10% down to 1%, were *Liberal/open-minded/impartial*, *Outgoing/social*, *Energetic/active/zealous*, *Flexible/free spirit*, *Impulsive/spontaneous*, *Creative/nonconforming*, *Good listener*, and *Intelligent/wise*.

### 4.6. Correlations between traits

Table 2 shows correlations among the five traits’ centrality indices for Studies 2 and 3 (combined), across the 46 categories, based on the data in Table 1. These correlations reflect the extent to which the traits are similar or different in terms of the weighting of the various categories. Categories not represented for a given trait were given values of 0.00 in calculating these correlations. As Table 1 showed, there was not a great deal of overlap between

**Table 1**  
The 46 Categories, with Centrality Indices for Each Big Five Trait.

Category	Extraversion			Conscientiousness			Neuroticism			Agreeableness			Openness to Experience		
	Study 2	Study 3	Both	Study 2	Study 3	Both	Study 2	Study 3	Both	Study 2	Study 3	Both	Study 2	Study 3	Both
Friendly/kind/compassionate	17%	15%	16%	31%	14%	22%				29%	36%	32%	9%	19%	14%
Energetic/active/zealous	6%	5%	6%										6%	12%	9%
Outgoing/social	35%	24%	30%										12%	9%	10%
Happy/funny	5%	13%	9%							12%	18%	15%			
Attention- getting/dominant	5%	8%	6%												
Loud/big personality	6%	-	3%												
Life of party	4%	3%	4%												
Talkative	14%	20%	17%												
Assertive/confident/leader	4%	8%	6%												
Forthcoming/expressive	4%	3%	4%												
Ethical/moral				6%	1%	4%									
Determined/hard working/motivated				6%	20%	13%									
Reflective/mindful				8%	4%	6%									
Timid/reserved				3%	2%	2%				3%	-	2%			
Intelligent/wise				6%	3%	4%							2%	-	1%
Trustworthy/reliable				4%	5%	4%									
Planning/detail oriented				14%	38%	26%									
Attentive/alert				12%	4%	8%									
Concerned about others' opinions				4%	3%	4%									
Careful/cautious				8%	5%	6%									
Obsessive/compulsive							15%	-	8%						
Reclusive							2%	3%	2%						
Indecisive/risk averse							2%	-	1%	2%	-	1%			
High strung/high energy							3%	-	2%						
Odd thoughts and speech							-	8%	4%						
Sad/pessimistic/guilty							9%	17%	13%						
Nervous/anxious							29%	24%	26%						
Paranoid							5%	-	2%						
Negatively reactive/angry							5%	29%	17%						
Eccentric/weird							3%	3%	3%						
Moody/unstable							11%	5%	8%						
Selfish/self-absorbed							5%	7%	6%						
Crazy/mental problems							11%	4%	8%						
Cooperative/team player										6%	3%	4%			
Open/accepting										11%	-	6%			
Good listener										3%	4%	4%	-	9%	4%
Passive/unaggressive										10%	-	5%			
Approval-seeking/pushover										15%	27%	21%			
Easygoing/calm										9%	7%	8%			
Defensive/evasive										-	4%	2%			
Impulsive/spontaneous													4%	-	2%
Risk taker/willing to try new things													31%	31%	31%
Liberal/open-minded/impartial													17%	-	8%
Curious/inquisitive													6%	20%	13%
Flexible/free spirit													9%	-	4%
Creative/non-conforming													4%	-	2%

Note: Entries are the centrality indices, expressed as percentages (number of descriptions in a given category divided by the total number of descriptions given for the trait, X 100). For extraversion: Study 2 denominator = 234; Study 3 denominator = 144; Both denominator = 378. For conscientiousness: Study 2 denominator = 199; Study 3 denominator = 117; Both denominator = 316. For neuroticism, Study 2 denominator = 218; Study 3 denominator = 132; Both denominator = 350. For agreeableness, Study 2 denominator = 216; Study 3 denominator = 135; Both denominator = 351. For openness to experience, Study 2 denominator = 218; Study 3 denominator = 75; Both denominator = 293. Not shown are categories with fewer than five responses that showed up in only one of the two studies. See Tables 3–7 for full list of descriptions that went into each category for each trait.

**Table 2**  
Correlations Between Centrality Indices for the Traits (Studies 2 and 3 Combined), Across 46 Categories.

Trait	E	C	N	A	O
E	-	0.10	-0.17	0.22	0.31*
C		-	-0.17	0.38**	0.05
N			-	-0.14	-0.18
A				-	0.17
O					-

Note: E = extraversion, C = conscientiousness, N = neuroticism, A = agreeableness, O = openness to experience.

\* p ≤ 0.05.

\*\* p ≤ 0.01.

**Table 3**  
Study 2 and 3 Responses for Extraversion.

**Outgoing/social**

Study 2

Outgoing (23), Gregarious (7), Social (5), Sociable (3), Quite sociable, Outgoing in everything one does, Always willing to meet new people, Always meets new people, Will talk to anyone, Can start conversations with people they don't know, Speaks to people easily in social situations, Can strike up a conversation with anyone anywhere, Strikes up conversations with people, Engages with many people, Has a great conversation with most anyone, Conversation starter, Not shy, Not usually shy, Socially engaged, Social and likes to go out and do things, Easy to talk to, Socially adept and very much a people person who not only likes to get to know others but the others like to get to know them as well, Great social skills so that the person can communicate in a great way, Personable, Popular, Has an active social life, Likes going out to events and interacting with many things, Has a lot of friends and used to other people and different situations, Invites friends together for social activities frequently, Has a large group of friends and acquaintances, Has lots of friends, Gets along well with other people, Social butterfly, Friends with everyone, Big on social media, Enjoys being with people, The company of others is something they enjoy and look forward to, Enjoys being in a group, Enjoys crowds, Constantly around people, Loves to be around other people, Likes to be with people, Rarely spends time alone, Most comfortable in social situation, Comfortable in social situations, Comfortable with other people, Gains energy from the crowds, Derives social energy from being around people, Keeps in touch with friends and calls to check in on people and doesn't need a lot of alone time TOTAL: 83 (35%)

Study 3

Outgoing (4), Very social (2), Immediately started talking to me, Ready to engage in conversation, Someone approaching you whom you don't know, The stranger tried to start a conversation with me and kept talking to me, Would go up to people and start talking, Talking to bartender and other people, Loves talking to strangers, Ability to speak to new people, Striking up conversations with everyone, Talks to everyone, Makes stranger comfortable, Never meets a stranger but she just started talking to random people, Not wary or timid, Makes acquaintances first, Able to talk and laugh with strangers as if he's known them a lifetime, Included themselves in conversation with people they had just met, Affable and didn't have any trouble talking to the waiter at the restaurant we were at, Eager to engage in conversation, Speaking with a number of people at the same time in different conversations, Involved in many conversations with many people, Sociable, Social, Wants to make friends with everyone, Worked very hard at being popular, Can blend in anywhere and be comfortable, A people person, Engaging others around him, Asked me to drop by sometime TOTAL: 34 (24%)

**Friendly/kind/compassionate**

Study 2

Friendly (20), Kind (3), Caring (2), Nice (2), Very friendly, Overly friendly, Friendly and makes friends easily and friendships are important, Welcoming, Very much someone that you want to be around, Embraces others, Helps others with whatever they are doing, Always tries to help, Listens to others well, Interested in other people, Respectful, Polite TOTAL: 39 (17%)

Study 3

Friendly (6), Very friendly, Very friendly and excitable, Very nice and exuberant around me even though we had just met, Flirtatious, Waving, Constantly waving and saying hello, Always saying hello, As other people walked by she would shout hi or bye to them loudly, Remembers things about each patient—family, work, etc., Helping, Going beyond the call of duty, Willing to work with anyone, Doing someone a favor, Always willing to help a stranger, Responds to questions or provides service, Buying everyone drinks and handling trays and food at their own dinner party TOTAL: 22 (15%)

**Talkative**

Study 2

Talkative (23), Talkative and adding more to the conversations around them, Talks a lot, Loves to talk, Communicative, Chatty, Always in conversations no matter where they are at, Vocal, Speaks more than usual, Keeps conversations going TOTAL: 32 (14%)

Study 3

Talkative (7), Lots of talking (6), Constantly/always nonstop talking (4), Very talkative, Talking nonstop about nothing in particular, Loves to talk, Talking to people, Fast talking, Speaking more quickly, Talked sports and politics and his son's new car in less than 15 min, Very chatty, Did talk more than usual, Talkative with people she barely knows, Kept talking about my bag and what I was buying and about my kids, Constant conversation about her daily life and her thoughts TOTAL: 29 (20%)

**Energetic/active/zealous**

Study 2

Energetic (5), Full of energy, A lot of energy for everything, Enthusiastic, Excitability (enthusiasm) so a certain energy is felt through their presence, Busy, Always busy and always doing something, Active, Very active, Hyper, Spirited TOTAL: 15 (6%)

Study 3

Always on the go (2), Always up to go somewhere, Excitement, They became very animated, They do not cringe and not want to do something, Chasing their dreams TOTAL: 7 (5%)

**Assertive/confident/leader**

Study 2

Assertive (3), Confident (2), Leader of group (2), Assertive and really being confident and associating self with someone who is equal to others on the same wavelength, Has low to no insecurities, Leadership TOTAL: 10 (4%)

Study 3

Not afraid to say what was on their mind, Led events during a meeting, Speaking up at church meeting, No fear of speaking in front of a crowd, One to speak out if need be, Bold and can stand up for oneself, Stand one's ground and be downright assertive, Needing to have all the answers, They know what they are talking about, Had very strong opinions, Confident TOTAL: 11 (8%)

**Life of party**

Study 2

Life of the party (4), Party going (2), Loves to be at parties, Partier, Likes to have fun, Fun loving TOTAL: 10 (4%)

Study 3

Desire to go to a dance with friends, Going out to dances a lot, Going out with friends, Hosting a party and mingling with all the guests, Not shy to dance first TOTAL: 5 (3%)

**Attention-getting/dominant**

Study 2

Center of attention (2), Attention seeking, Likes attention, Needs to be the center of attention, Enjoys being the center of attention, Attention seeking and domineering, Dominant, Self-centered, Approaches everyone without much thoughts on them, Unaware of their effect on others TOTAL: 11 (5%)

Study 3

Trying to dominate all conversations, Wants to be the center of attention, Drawing attention to himself, Eager for attention, Acts like they need to be the center of attention, Interrupting conversations, Taking charge of the conversation, Making himself visible and hard to ignore, Soaking up that people were giving her looks, Boastful, Invites us to go places but only gives us a 30-minute heads-up and we have four kids, Desire to celebrate publicly after a success TOTAL: 12 (8%)

**Forthcoming/expressive**

Study 2

Outspoken (3), Would not hide their thoughts much, Expressive, Expressive and always showing their emotions, Always expresses what they are feeling, Honest, Easy communicator TOTAL: 9 (4%)

Study 3

Conversation is easy with this person, Talking very openly about themselves, Gives her personal information to others very easily, Appeared not to be holding back from genuine expression of personal information, Able to express thoughts and feelings in a setting where they were unfamiliar with others in the group TOTAL: 5 (3%)

**Loud/big personality**

Study 2 (only)

Loud (10), Boisterous, Big personality, Dramatic TOTAL: 13 (6%)

**Happy/funny**

Study 2

Happy (3), Happy persona, Cheerful, Cheery mood, Positive outlook, Funny (2), Has a good sense of humor, Amused, Does not take self too seriously TOTAL: 12 (5%)

Study 3

Smile (4), Always smiling (2), Laughing (2), Happy facial expression, Above-average smile, Clapping, Good spirits, Upbeat, Cheerful, Very cheerful, Had jokes to tell, Humorous, Laughed a lot, Jovial TOTAL: 19 (13%)

Note: Numbers after a description are the count of identical or virtually identical responses. Percentages are the number of descriptions in a given category divided by the total number of descriptions given for the trait. Some categories occurred in only Study 2 or only Study 3. Not shown are categories with fewer than five responses that showed up in only one of the two studies.

traits; in other words, there was more uniqueness than overlap in terms of which categories appeared for which trait. Nevertheless, the correlations are instructive. Conscientiousness and agreeableness had the most, and significant, overlap between centrality indices, with extraversion and openness to experience showing a significant degree of overlap as well. None of the other between-trait correlations approached significance.

The correlations in Table 2 can be compared to findings from studies that reported correlations between participants' self-reported traits based on standard inventories. For this comparison we located studies reporting between-trait correlations for the BFI, BFAS, or different versions of the NEO (Cellar, Miller, Doverspike, & Klawnsky, 1996; DeYoung et al., 2007, two samples; Egan, Deary, & Austin, 2000, two samples; Paunonen, 2003). After calculating the median correlation across the six samples for each pairwise combination of traits (e.g., one pair would be extraversion correlated with openness to experience), the 10 correlations thus obtained were correlated with the corresponding pairwise correlations in Table 2. The resulting correlation was  $r(8) = 0.92$ ,  $p < .001$ . This indicates a very high degree of correspondence between how previous participants' self-described traits are associated with each other and how our participants' beliefs about the meaning of the trait labels are associated with each other.

## 5. Comparison of lay beliefs with standard Big Five scales

The foregoing analysis implies substantial commonality between standard scales and our participants' conceptions of the trait labels. In this section, we make the explicit comparisons based on actual item content, by comparing the Study 2 and 3 categories of explicit beliefs to the content of four standard and widely used Big Five inventories (NEO-PI-R, IPIP-120, BFI, and BFAS), describing areas of overlap and non-overlap. Non-overlap could consist both of lay beliefs that are not reflected in the standard scales, and the reverse. Comparison was accomplished using a two-stage process: in stage one the first author made the comparisons, and in stage two the second and third authors, working together, reviewed and confirmed (or corrected, as needed) the stage one comparisons.

### 5.1. Extraversion

More often than not, the Study 2 and 3 participants' descriptions of an extravert converged with one or more of the standard scales, although sometimes in only one or two of the standard scale items. Our categories *Outgoing/social*, *Energetic/active/zealous*, and *Assertive/confident/leader* were represented in all four (NEO-PI-R, IPIP-120, BFI, and BFAS), for at least one of their items. *Happy/funny*

and *Friendly/kind/compassionate* were represented in the NEO-PI-R, IPIP-120, and BFAS; however, only the "friendly" aspect of this last category of ours was in those standard scales, not the "kind/compassionate" aspect that was very evident in our category with responses from both Studies 2 and 3 such as *Helps others with whatever they are doing*, *Always tries to help*, *Caring*, *Going beyond the call of duty*, *Willing to work with anyone*, *Doing someone a favor*, and *Always willing to help a stranger* (see Table 3).

Other content contributed by our participants was also unevenly represented in the standard scales. *Talkative* was represented in the NEO-PI-R and the BFI, while *Life of party* appeared in the NEO-PI-R and IPIP-120. *Forthcoming/expressive* and *Loud/big personality* both had representation in the BFAS. One of our categories, *Attention-getting/dominant*, showed little overlap with standard scales. Although the term "dominant" appears in one NEO-PI-R item (I am dominant, forceful, and assertive), neither that item nor any of the standard scales captures the negative tone of our category, which is clearly describing an individual who is self-centered and attention-getting in an insensitive, unattractive way (see Table 3). Such responses from both Studies 2 and 3 include *Attention seeking and domineering*, *Self-centered*, *Approaches everyone without much thoughts on them*, *Unaware of their effect on others*, *Interrupting conversations*, *Trying to dominate all conversations*, *Making himself visible and hard to ignore*, and *Boastful*.

### 5.2. Conscientiousness

Four of our categories showed up in most of the standard scales: *Planning/detail oriented* (all four standard scales), *Determined/hard working/motivated* (all four standard scales), *Trustworthy/reliable* (NEO-PI-R, IPIP-120, BFI), and *Reflective/mindful* (NEO-PI-R, IPIP-120, BFAS). Our categories *Careful/cautious*, *Ethical/moral*, and *Intelligent/wise* were in the NEO-PI-R and the IPIP-120. However, our *Careful/cautious* category had an overtone of anxiety that was not suggested by the standard scales, with our category having items such as *Careful how they act around others*, *Cautious*, *Not talking and being very careful in what they are saying*, *Spouse checks on what I do*, and *Doublechecked the locks on all the doors each night when she left*. Similarly, our categories *Attentive/alert*, *Timid/reserved*, and *Concerned about others' opinions*, which were all not reflected in the standard scales, also connote a degree of hypervigilance or neuroticism with descriptions such as *Keeps an eye out at all times*, *Shy*, *Timid*, *Anxious*, *Worried about how others think of them*, and *Concerned about the way he or she looks*. Although these categories were not individually large in terms of centrality, they clearly indicate that conscientiousness may have a downside in laypeople's opinions.



**Table 4**  
Study 2 and 3 Responses for Conscientiousness.

**Friendly/kind/compassionate**

Study 2

Caring (6), Kind (3), Giving (3), Considerate (2), Charitable (2), Empathetic (2), Compassionate (2), Polite (2), Respectful (2), Understanding (2), Aware of the ways in which their behavior not only affects others but also the world, Looks out for others not just themselves, Aware of the needs of others, Mindful of other people's feelings, Considers others' needs and feelings when appropriate, Asks others how they are feeling, Asks about your day, Wants to make others comfortable, Sensitive to others' feelings, Thinks about others' feelings, Considers others before making a decision, Will notice you in public and speak to you instead of walking right by you not even noticing you are there, Doesn't want to inconvenience others, Concerned about their behavior's effects on others, Shows concern for others' well-being, Maternal/paternal, Thinks about others first, Nice, Warm, Warm welcome, Generally a happy person around others, Good natured, Agreeable, Overly polite, Uses polite language, Holds the door for other people, Tries to overly please someone, Respects others' space, Well-mannered, Well behaved, Helpful, Selfless, Altruistic, Volunteer, Displays unselfish behaviors TOTAL: 61 (31%)

Study 3

Packed lunch for son, When I was not home for a couple of days my friend came to feed the cats and take care of the house, Helping, Making sure the customer is happy, Said he would help me with things, Seeing to someone's well-being (feeding them, cleaning them, ensuring they've taken their medicine), The stamp apparently fell off the letter I was mailing and the mail lad fixed it and left me a sweet note, Paying attention to others' needs, Nurse was asking if I needed anything, Cared about others more than herself, Doctor feels bad if he thinks it's his fault a patient that was under his care died, Earnest reaction to bad news about patients, Emotionally supportive, Saying thank you, Always courteous, Kind, Patient TOTAL: 17 (14%)

**Planning/detail oriented**

Study 2

Thorough (3), Detailed (2), Organized (2), Pays attention to detail (2), Planner, Well prepared, Disciplined, Has a schedule, Pays attention to even the smallest of details, Thorough in their decisions, Thinks about the tasks at hand, Attempts to complete a task with thought, Takes their time instead of rushing in order to make sure that something is done right, Doublechecks their work and takes pride in it, Double checks work to make sure there are no errors, Doublechecks their shopping list before moving on to the checkout line, Deliberate, Calculating, Meticulous, Methodical, Wants to do things in a strict way, Will not deviate from how they do things, Very orderly TOTAL: 28 (14%)

Study 3

Doublechecks everything (4), Organized (2), Very thorough, Attention to detail, Making a list of things needed to do to clean house, Breaking work into tasks per day, Always organized, Very thorough in analysis of everything, Attention to organization and planning, Everything has to be done in order, Completing a task within a given time frame, Began working on project right away, Always checks work before submitting, Doublechecking my recent history, Doublechecking her calendar to be sure she was on schedule with tasks, Always doublechecks math answers in the end of the math book pages, Watched coworker doublecheck work, Doublechecked everything to make sure it was done right, Checked work over twice before handing in, Very adamant about going over bills more than once making sure the totals were accurate, Time he took to check out everything for our flight, Taking the time to study their notes from school for a test, Pays attention to homework, Went up to their room in order to have quiet to review results, Took control of a situation and made all the plans, We talked over all the details of what needed to be done, Took task very seriously, Spent the entire evening organizing his notes and looking through his computer for additional information, Making sure not to miss anything, Following instructions correctly, Loading UPS trucks properly, Wanted to be sure that procedure was followed correctly, Thoroughly performed task at hand, Asking a long time to review lab results and complete physical and exam and make statements about medications and other medical needs, Rarely makes mistakes, Work filled out correctly, Would write and rewrite what they wanted to accomplish and get done, Making sure all was right in items they were selling, Followed up when package went missing from post office, Likes to make sure all of her signatures and typing are perfect and will take a very long time triple checking it TOTAL: 44 (38%)

**Attentive/alert**

Study 2

Attentive (7), Aware (5), Alert (3), Aware of their surroundings (2), Very aware of things, Aware of others, Aware of what's going on, Mindful of what is going on around them, Pays attention when driving and not texting or talking on their phone, Keeps an eye out at all times TOTAL: 23 (12%)

Study 3

Paid attention when I gave instructions, Gives a sufficient amount of attention to project, Pays attention, Alert, Aware TOTAL: 5 (4%)

**Careful/cautious**

Study 2

Careful (8), Cautious (2), Really careful about things, Watches what they say, Usually very careful about what they do and often paying attention to detail, Careful how they act around others, Not talking and being very careful in what they are saying TOTAL: 15 (8%)

Study 3

Took extra precautions to take care of the medical needs of dog she was fostering, Spouse checks on what I do, Very careful with her work, Careful, My husband was taking our oldest grandson out fishing and he made sure he was as safe and secure and prepared as he could be, Doublechecked the locks on all the doors each night when she left TOTAL: 6 (5%)

**Reflective/mindful**

Study 2

Thoughtful (12), Mindful, Reflective rather than impulsive in action, Thinks before they act TOTAL: 15 (8%)

Study 3

Put thought into what they wanted to do, Thoughtful, They would talk out loud and try to figure out different ways a situation could play out, Doesn't just fix the first thing he suspects but really studies and tries out different things and tries very hard to fix the true problem, Confidence in recommendations and planning TOTAL: 5 (4%)

**Intelligent/wise**

Study 2

Intelligent (2), Smart, Wants to know more, Knowing, Strives to keep learning and improving, Interested, Problem solver, Studious, Intuitive, Wise, Informed, Always thinking TOTAL: 13 (6%)

Study 3

Knowledge of the situation and how to proceed, Great businessman, Was able to give me the information I was seeking, Being in the right place at the right time TOTAL: 4 (3%)

**Ethical/moral**

Study 2

Ethical, Moral, Morally advanced, Has high morals, Fair, Principled, Wishes to do what they think is right, Tries to do the right thing, Good sense of what is right and wrong, Aware of right and wrong, Obeys the 10 commandments, Honorable, Worries about doing the correct thing for all concerned TOTAL: 13 (6%)

Study 3

Honest TOTAL: 1 (1%)

**Trustworthy/reliable**

Study 2

Reliable (3), Trustworthy, Steady, On time, Responsible TOTAL: 7 (4%)

Study 3

Showing up on time to work, Always on time, Doing assigned tasks, Completing tasks, Work done on time, Trustworthy TOTAL: 6 (5%)

**Determined/hardworking/motivated**

Study 2

Hard-working (3), Diligent (3), Works hard at their job, Consistently sticks with something through setbacks and hardships, Gives everything their all, Usually quite determined and carries on until their tasks are complete, Bound by their own goals and duties TOTAL: 11 (6%)

Study 3

Works diligently (2), Makes sure the employees understand their directions and have all the information they need, When cleaning up his work task I didn't have to nag him about it, Asks questions when something was not understood, Asking questions about the details of their work assignments, Spending time explaining things to me, Asked me questions to be sure I had all the information needed for report, Asked questions a lot to see if they were doing the right thing, Interest, Shows interest in work besides just taking an order, Communicates issues to the team, Professional (2), Works late in order to accomplish their job, Coworker stayed several hours late and also came in early the next day in order to monitor a problem and make sure it came out okay, Spent a lot of time at the office and my coworkers have logged a lot of hours, Looking for additional things to do, Doesn't sleep until all tasks are done, Willing to get their job done, Engaged in work, Dedicated to a project, Studies almost from the moment she gets home until she goes to bed every day of the week and most of the day on the weekends—basically holes up in her room with her homework and is studying whenever we pop in to see her TOTAL: 23 (20%)

**Concerned about others' opinions**

Study 2

Worried about how others think of them, Concerned about the way he or she looks, Worried about how they look, Aware of his or her appearance, Looks their best when going out in public and wears make-up (not rollers in hair, blouse not wrinkled etc.), Checks how many people are watching him or her, Follows the latest trends and fashions TOTAL: 7 (4%)

Study 3

Was/looked concerned, Asked other people for their opinion on their work, Has to be perfect, Very careful about her appearance and her environment and how she presents herself TOTAL: 4 (3%)

**Timid/reserved**

Study 2

Not overly loud, Acts almost in a shy way, Shy, Timid, Introverted, Anxious TOTAL: 6 (3%)

Study 3

Quiet, Unresponsive TOTAL: 2 (2%)

Note: Numbers after a description are the count of identical or virtually identical responses. Percentages are the number of descriptions in a given category divided by the total number of descriptions given for the trait. Some categories occurred in only Study 2 or only Study 3. Not shown are categories with fewer than five responses that showed up in only one of the two studies.

Another interesting feature of our categories is that there was little reflecting the concepts of orderliness or organization regarding one's possessions or physical environment, whereas the NEO-PI-R, IPIP-120, and BFAS all allude to this. Instead, our participants repeatedly referred to organization of time and task management, in other words mental order as compared to physical order. Relatedly, although the *Planning/detail oriented* category was represented in our findings and the standard scales, the nature of responses varied: Our participants tended to mention activities that require a high level of attention to detail (e.g., double-checking their work), whereas such activities were not typically mentioned in the standard scales.

For conscientiousness, the most notable discrepancy between our categories and the content of the standard scales occurred for our category *Friendly/kind/compassionate*, which garnered a full 22% of responses across Studies 2 and 3, with our participants offering descriptions such as Caring, Charitable, Empathetic, Respectful, Seeing to someone's well-being, Always courteous, Helping, and Agreeable. None of the standard scales have content of this kind. Although such qualities may be associated with other socially valued qualities such as ethicality and duty, which are on the standard scales, none of the standard scales includes items that specifically portray the conscientious person as interpersonally sensitive and prosocial.

### 5.3. Neuroticism

Three of our Study 2 and 3 categories were represented in all four of the standard scales (*Nervous/anxious*, *Sad/pessimistic/guilty*, and *Moody/unstable*), and another, *Negatively reactive/angry*, was in the NEO-PI-R, IPIP-120, and BFAS. Our *Reclusive* category showed some overlap with the IPIP-120. However, our remaining categories did not appear in the standard scales: *Obsessive/compulsive*,

*Crazy/mental problems*, *Selfish/self-absorbed*, *Eccentric/weird*, *Odd thoughts and speech*, *Paranoid*, and *High strung/high energy*. Except for *Obsessive/compulsive*, with 8% of responses overall, most of these categories were small in centrality; nevertheless, collectively they describe the neurotic person as much less functional and much weirder and more interpersonally unpleasant than the standard scales would suggest.

Also, the NEO-PI-R and the IPIP-120 had items suggesting lack of self-control in the realm of food, which our participants never mentioned. Generally, impulsivity did not much appear in our participants' views of neuroticism. Finally, the NEO-PI-R, IPIP-120, and BFAS included self-consciousness (prominently on the NEO-PI-R and IPIP-120), which was a quality that essentially did not appear in Studies 2 and 3.

### 5.4. Agreeableness

Two of our categories were represented on all four standard scales (*Friendly/kind/compassionate* and *Passive/unaggressive*). Our category *Easygoing/calm* appeared in the NEO-PI-R and the IPIP-120, and the category *Cooperative/team player* appeared in the NEO-PI-R and the BFI. Our category *Approval seeking/pushover* was also represented, up to a point, in the BFI and the BFAS; many responses in our category suggested that an agreeable person is weak-willed and insecure, along with other negative qualities, while the standard scales convey a more socially desirable and constructively accommodating interpersonal style (for example, Hate to seem pushy from the BFAS and Has a forgiving nature from the BFI). Our *Approval seeking/pushover* category included descriptions such as Yes-man, Pushover, People-pleaser, Agrees to anything that you say even if it doesn't make sense, Does things they do not always like to do, Afraid to disagree or share his or her own thoughts or feelings, Was agreeing with everything I said,

**Table 5**  
Study 2 and 3 Responses for Neuroticism.

**Nervous/anxious**

Study 2

Anxious (13), Nervous (6), Worries a lot (2), Always nervous (2), Nervous about everything, Very nervous, Always is or seems to be nervous, Nervous unproductive inner energy, Nervous and often twitchy and restless and doesn't sit still, Gets anxious very easily and starts mentally going over what could possibly happen with this or that circumstance, Expressing anxiety, Highly anxious in general, Irrational anxiety, Constantly worrying, Worrier, An excessive worrier, Constant worrier, Worried about their behavior, Worry, Acts worried, Worrisome, Scared, Gets scared easily, Scared about something, Fear, Fearful of many things, Fearful about minor things, Would most likely exhibit a higher than normal level of fear in particular situations or perhaps even about life in general, Afraid of a lot of things, Rattled, Panicky, Always seems distressed, Overly concerned, Timid, Would have very little peace in their normal everyday life due to their fearful thoughts, Trembling, Skittish, Twitchy, Fidgety, Jittery, Hyper edgy, Tense, Can't relax, Flighty TOTAL: 63 (29%)

Study 3

Anxiety (4), Fearful (3), Much anxiety, Stress, Afraid of elevators, Twisted into all sorts of thinking primarily due to excessive worry, Worries constantly about what might go wrong, Unusually strong fear based on world events featured on the news media, Bothered by things that he wasn't talking about, Upset that her dress didn't look nice on her and she can't drive, Hung up on certain ideas, Has many health problems but tends to blow them out of proportion, Believing that everyone hated her and the whole family had banded together to ostracize her and punish her for her behaviors, Twitchy, Body was twitching, Shifty, Rocking back and forth on furniture, Fidgeted, Pacing back and forth, Pacing, On edge, Alarmed, Sweating, Quivering lips, Made small movements, Panicked, Completely frazzled TOTAL: 32 (24%)

**Negatively reactive/angry**

Study 2

Anger (4), Easily angered, Extreme temper tantrums, Gets extremely upset (yelling and such) when small things go wrong, May suffer from irritability, Emotional outbursts, Emotional, Has wild fits of rage or panic TOTAL: 11 (5%)

Study 3

Angry (6), Yelling (4), Very upset (2), Irrationally angry, Quick anger spasms, Outbursts of anger directed at other persons, Angry at their desk, Mad at everyone, Has an irrational dislike of sister, Extremely argumentative, Snaps at me, Stormed off like a child, Excited when not pleased, Mean, Behaviors are bad, Making harsh but funny comments about others, Really bitchy, Yelling and then apologizing, Yelling that doesn't make sense, Shouting, Screaming, Fighting so loud I had to call the police, Ranting and raving about something I did, Loud voice, Agitated, Volatility, Easy frustration, Upset, Putting down what someone says TOTAL: 38 (29%)

**Crazy/mental problems**

Study 2

Crazy (9), Talks to self (2), Mental (2), Reacts to things that aren't there, Speaks to self or hears voices, Believes in make-believe things or hallucinates, Damaged, Mentally challenged, Mental disorder, Mentally ill, Sick, Goes to therapy, Addict TOTAL: 23 (11%)

Study 3

Talking to themselves, Crazy eyes, Acts like a maniac, Mania, Erratic TOTAL: 5 (4%)

**Sad/pessimistic/guilty**

Study 2

Depressed (3), Upset (2), Negative (2), Needy (2), Depressed and down and introspective a lot of the time, Sad, Glass half empty, Pessimistic thoughts and speech, Pessimist, Never truly happy, Unhappy, Fatigue and lethargy, Overly concerned with having done things wrong, Overly concerned with what others think, Guilty TOTAL: 20 (9%)

Study 3

Cried (4), Negative thinking, Frequently negative attitude, Very negative, Only talks about the negative parts of her life and everything is the worst that could happen, Obsesses about possible problems and wants to discuss them at length, Multiple depressing posts on social media, Not pleased a lot, Focuses on what she did wrong, Constantly talking about her problems, Went into a long explanation of all the health problems she had, The whole time she was visiting us I believe she only talked about her situation negatively with no positive comments at all, Talked about how she didn't make enough money, Upset about money, Feelings of inadequacy, Pessimistic comments, Outbursts of crying, Tears in eyes, Crying regarding his pain, Low energy TOTAL: 23 (17%)

**Selfish/self-absorbed**

Study 2

Selfish, Difficult to please, Has trouble compromising or accommodating other people's needs, Always concerned about things that shouldn't concern them, Particular about their preferences and will be upset if they're not met and fussy, Self-absorbed, Self-centered and wants/doesn't want attention paid to them and doesn't take others' needs into consideration when acting, Seems to think about self before others, Complains a lot, Critical, Snubs TOTAL: 11 (5%)

Study 3

Complaining, Constantly complaining, Drama queen rather than valid complaint, Her health depends on her audience, Master manipulator, Talking about things that are routine like it is a matter of life and death, Refusing to listen to anything anyone has to say, Acting selfish, Only thinking of himself TOTAL: 9 (7%)

**Unstable/moody**

Study 2

Unstable (4), Unpredictable (3), Moody (3), Unbalanced (2), Spastic, Very unreliable, Impulse control disorder, Might tend to over-react in particular situations, Sensitive and touchy and overreacts to small things and jumpy, Hysteria, Quickly becomes hysterical instead of a more gradual buildup, Makes very large mountains out of very small molehills, Upset over the smallest things, Mood swings about little things, Sensitive TOTAL: 23 (11%)

Study 3

Happy one minute and sad the next, Unstable emotions, Mood swings, Big swings of emotion, Changing minds, Off balance, Acting very frenetic TOTAL: 7 (5%)

**Odd thoughts and speech**

Study 3 (only):

Nonsense talk, Odd thoughts, Not thinking straight, Inability to concentrate, Doesn't remember what she said immediately after saying it, Talks in circles repeating the same things, Basically talking in circles, Rambled on, Kept changing his story while talking, Scatterbrained behavior TOTAL: 10 (8%)

**Eccentric/weird**

Study 2

Eccentric, Weird, Strange, Not normal, Unusual interests, Behaves erratically and makes weird gestures TOTAL: 6 (3%)

Study 3

Carried a stuffed cat with her and repeatedly touched her bag and rubbed her hair all while asking me for money, Weird behavior, Touches light switches and other things, Inappropriately laughing TOTAL: 4 (3%)

**Reclusive**

## Study 2

Introverted (2), Contracted, Might tend to be somewhat reclusive, Passive and wants to be left alone TOTAL: 5 (2%)

## Study 3

Did not look me in the eye, Unwilling to speak, Didn't want to change clothes or go outside, Told me to leave her alone TOTAL: 4 (3%)

**Obsessive/compulsive**

## Study 2 (only)

Obsessive compulsive disorder/behavior (6), Obsessive (4), Perfectionist (2), Obsesses about small things, Obsesses over things to the point of distraction, Would probably exhibit an inordinate obsession with something or someone, Organized, Obsessively compulsive about washing body/hands, Clean, Picky, Picky over small details, Detailed, Insists on an exact order for trivial things, Compulsive over certain things, Could possibly suffer OCD, Has compulsive habits and mindsets, Checking things a lot, Constantly checking things, Keeps checking their email or text messages hoping they get a response to someone they just messaged a minute ago, Very detail-oriented to a point they are completely obsessed with getting every detail right before moving on, Type A personality, Habitual, Sticks to a routine, Angry if small things are out of place TOTAL: 33 (15%)

**Paranoid**

## Study 2 (only)

Paranoid (5), Thinks people are out to get them (2), Paranoid and questions what others really think about them, Assumes everything is working against them, Paranoid of things happening or can happen, Thinks bad things will happen to them TOTAL: 11 (5%)

**High strung/high energy**

## Study 2 (only)

High strung (2), Wired, Uptight, Fast-paced, Talks really fast, High energy TOTAL: 7 (3%)

**Indecisive/risk averse**

## Study 2 (only)

Indecisive (2), Afraid to make decisions, Doesn't like to take risks, Rarely takes positive action/resists being nudged or urged to take steps TOTAL: 5 (1%)

Note: Numbers after a description are the count of identical or virtually identical responses. Percentages are the number of descriptions in a given category divided by the total number of descriptions given for the trait. Some categories occurred in only Study 2 or only Study 3. Not shown are categories with fewer than five responses that showed up in only one of the two studies.

and Agreeing to do something that someone else wants to do just to please them.

Our Study 2 and 3 participants came up with five categories that were not represented in the standard scales: *Happy/funny*, *Open/accepting*, *Good listener*, *Defensive/evasive*, and *Indecisive/risk averse*. Our category *Timid/reserved* was only represented in one IPIP-120 item (Make myself the center of attention – reversed). Conversely, the standard scales had content not offered by our participants. The NEO-PI-R, IPIP-120, and BFI all include being trusting, but our participants did not suggest this. The NEO-PI-R and the IPIP-120 had scales suggestive of being an honest, “straight-shooter” kind of person, but our participants did not supply such a suggestion. The NEO-PI-R and IPIP-120 have “Modesty” scales, and the BFAS has one such item, suggesting the agreeable person is humble and not prone to self-aggrandizement, but our participants essentially did not suggest this. Finally, the NEO-PI-R and IPIP-20 also have scales called “Tendermindedness” and “Sympathy” which refer, respectively, to high-minded social values (for example, Feel sympathy for those who are worse off than myself, and I believe all human beings are worthy of respect) as well as actual interpersonal behavior. Therefore, these scales overlap only partially with our *Friendly/kind/compassionate* category, which only referred to interpersonal behavior.

### 5.5. Openness to experience

Our categories *Curious/inquisitive* and *Intelligent/wise* were represented in all four standard scales. Further, items suggestive of our *Risk taker/willing to try new things* are part of the NEO-PI-R and the IPIP-120. However, this category also contains the aspect of risk taking, which is not represented in standard scales. *Flexible/free spirit* was present in the NEO-PI-R, BFI, and IPIP-120; *Creative/nonconforming* was in the BFI and BFAS, but without the nonconforming aspect. *Liberal/open-minded/impartial* is represented only in the NEO-PI-R; a similarly named scale on the IPIP-120 is actually about political liberalism only, which is neither in the NEO-PI-R nor in our corresponding category. For five other categories of ours, we found no counterparts in the standard scales: *Outgoing/social*, *Friendly/kind/compassionate*, *Energetic/active/zealous*, *Impulsive/spontaneous*, and *Good listener*. The last three of these were low in centrality, but *Outgoing/social* and *Friendly/kind/com-*

*passionate* each had 12% of responses across Studies 2 and 3, representing notable non-overlap with the standard scales.

Considerable non-overlap also emerged in terms of content that was on standard scales but not suggested by our participants. All four standard scales refer to imagination or fantasy, sometimes with entire subscales, and all four have items or subscales devoted to artistic or aesthetic interests/values (but not artistic activities of one's own). Only a single response from our participants referred to art (Potentially artistic, in our *Creative/nonconforming* category). Finally, the NEO-PI-R and the IPIP-120 both have subscales devoted to emotionality/intense feelings, content that was not offered by our Study 2 or 3 participants.

## 6. Discussion

### 6.1. Summary of findings

This research had three goals. The first was to explore the lay or “folk” conceptions about the meaning of the Big Five trait labels of extraversion, conscientiousness, neuroticism, agreeableness, and openness to experience, as they would apply, or have applied, them in their daily life. The second was to use the response frequency within the different emergent categories of behavior to construct a hierarchy of centrality, or prominence. And the third was to compare the lay conceptions to the content of four standard Big Five scales (NEO-PI-R, IPIP-120, BFI, and BFAS).

Study 1 asked the preliminary question of whether the Big Five trait labels were adequately familiar to participants from the population sampled in the two main studies (Studies 2 and 3). Results indicated they were. In Studies 2 and 3, participants generated free responses when asked what information they use when attributing a high score to someone on one of the Big Five traits. In both Studies 2 and 3, the responses were sorted into similarity categories and labeled, thus yielding approximately a dozen categories (facets, in the terminology of standard scales) for each trait across the two studies. An example of a category for neuroticism was *Nervous/anxious* and an example for conscientiousness was *Planning/detail oriented*.

Because the categories could vary in how many responses each contained, they could be ordered on that basis to reflect how prominent or central they were for participants, with a category



**Table 6**  
Study 2 and 3 Responses for Agreeableness.

**Friendly/kind/compassionate**

Study 2

Friendly (14), Kind (8), Considerate (5), Nice (4), Warm (3), Well-mannered (2), Sympathetic (2), Harmonious, Relatable, Well-liked by others, Kind to everyone he or she meets, Very nice and kind mannered, Amiable, Friend, Generally friendly, Polite, Isn't rude, Gentle, Favorable, Good, Thoughtful, Concerned about others and not just self, Caring, Empathetic and able to share another person's feelings, Empathetic, Charitable with their time, Helper, Helpful, Willing to help, Willing to help anyone with anything because they are kind natured, Selfless TOTAL: 62 (29%)

Study 3

Kind (3), Offered to help (3), Nice about everything (2), Courteous, Kind words, Kind expression, Really kind face, Didn't look angry or put out, Doctor maintained a friendly and nonclinical manner as if we had been friends for years, Friendly, Responded to a request from me with a very friendly manner, Gave me a hug, Hugged me, Called me by my name when she saw me, Acted very glad to see me, Smiled when she saw me, Asked how we were doing, Greeted me, Welcomed me, Greeted me with a hug, Exchanged pleasantries and some small talk, Chatted about the weather, Brought up some really good times we had shared, We get along, Opening the door for someone, My neighbor came with dessert out of the blue, Helping parents although busy, Very helpful, Helps others, Insisted upon helping me, Always willing to help me and has helped me many times, My son noticed my deck needed repair and he fixed it on his own without being asked, Choosing to share what they had at hand, Was embarrassed by his wife's behavior and attempted to calm her down and drove off with her while she was still out of control, Opening the door for someone, Came with dessert out of the blue, Sensibility, Seemed to be very understanding of both sides, Considerate, Thinking about me, Encouraging to me as a new hire, Spoke solicitously when he saw I was feeling bad, Held my hands, Reflecting my thoughts back to me TOTAL: 49 (36%)

**Approval seeking/pushover**

Study 2

Yes-man (3), Pushover (2), People-pleaser (2), There is no opinion and always agrees to help or do something even if it's not the wanted outcome, Agrees to anything that you say even if it doesn't make sense, Does things they do not always like to do, Afraid to disagree or share his or her own thoughts or feelings, Willingness to say yes to reasonable requests, Agrees with what others are suggesting, Goes with the flow of the group, Affirmative, Gives in to the demands of others, Lets others walk over them, Accommodating, Obedient, Conformist, Offers little deviation from what is considered the norm, Can't say no, Weak, Not having their own voice, Not standing up for self, Yes-man and prone to agree regardless of their own personal feelings, Likes to please, Approval seeking, Tends to speak before you're done talking, Lacks self-esteem, Insecure, Might seem happy but the truth is they are very troubled people, Can be happy doing something they don't like if they like the person they are with TOTAL: 33 (15%)

Study 3

Head nods/nodding (6), Amenable (2), Agreed (2), Accepting ideas, Said "Ok, let's do it!", Verbally agreed with me, Easily agreed to my request, Tendency to agree with my view, My friend and I wanted to go to a movie and she said I could pick the movie, I ask her and she immediately agrees—no problem, Was agreeing with everything I said, Agreed with everything I said—yes dear yes dear is all she said, Willingness to do what I asked, Willingness to go along with another's plan, Willing to change the original plans to accommodate someone else's plans, My spouse deferred to my judgment about a new home insurance policy, Followed through without pushback or fight, Not countering my statements, Agreeing to do something that someone else wants to do just to please them, Saying yes to something even though you don't want to do it, Does not always insist on her way, Tried to come to an agreement, Spoke as if she was agreeing with me and said she can handle it, Quickly answered yes after her boyfriend asked her a question, Compliant, Adding additional positive points, Server agrees to requests, Nodded favorably, Slow nodding of head, Gave up the toy she was playing with when younger child asked for it TOTAL: 37 (27%)

**Happy/funny**

Study 2

Happy (6), Positive (6), Pleasant (6), Smiling (2), Smiling when spoken to in appropriate situations, Cheerful, Content, Positive and optimistic, Very optimistic, Funny, Usually happy TOTAL: 27 (12%)

Study 3

Smiled/smiling (13), Happy (5), Always cheery, Content, Genuine smile, Humorous, Laughter, Overjoyed TOTAL: 24 (18%)

**Easygoing/calm**

Study 2

Easygoing (6), Calm (3), Easy (2), Laid back (2), Stress free, Peaceful, Complacent, Getting along, Makes peace, Relaxed TOTAL: 19 (9%)

Study 3

Calm tone/calm (3), Relaxed (2), No big arguments or shouting, Takes a lot to make this person mad, Did not get upset at the conversation, Ability to overlook others' behavior, Shrugged off nasty remark about her TOTAL: 10 (7%)

**Cooperative/team player**

Study 2

Cooperative (5), Team player (2), Willing to compromise (2), Teamwork, Doesn't say no but comes up with a solution instead, Diplomatic, Works well in groups TOTAL: 13 (6%)

Study 3

Willingness to compromise (3), We needed to agree on what to do on the weekend and we decided together TOTAL: 4 (3%)

**Good listener**

Study 2

Good listener, Engaged, Willing to listen to opinions, Good disposition and the type of person who is stable and always easily approached, Only listens and never adds anything to the conversation, Allows others to speak and they listen more TOTAL: 6 (3%)

Study 3

Eye contact, Paying attention, Doctor was questioning me in the most interested manner, Tilt of the head while leaning slightly towards me, Doctor spent an inordinate amount of time (90 min) questioning me TOTAL: 5 (4%)

**Open/accepting**

Study 2 (only)

Understanding (3), Open-minded (2), Open (2), Accepting (2), Open to suggestions and easy to talk to, Less or non-judgmental, Open to thinking outside the box, Adjustable, Flexible, Free, Transparent, Shares common ideas with group, Seeing things from another point of view, Able to understand the situation, Unopinionated, Has multiple viewpoints, Likes to consider everything, Thinks things through TOTAL: 23 (11%)

**Passive/unaggressive**

Study 2 (only)

Passive (6), Non-confrontational (4), Not argumentative (3), Non-confrontational and doesn't want to fight, Doesn't like conflict and will be happy with almost everything you say, Does not get into heated discussions, Interested in not making waves with decisions, Not someone with my way and ideas only, Non-aggressive, Doesn't fight a lot, Not complaining, Doesn't yell TOTAL: 22 (10%)

**Indecisive/risk averse**

Study 2 (only)

Indecisive (2), Afraid to make decisions, Doesn't like to take risks, Rarely takes positive action and resists being nudged or urged to take steps TOTAL: 5 (2%)

**Timid/reserved**

Study 2 (only)

Shy, Meek, Meek and timid, Reserved, Introverted and does not enjoy the company of others as much as being alone, Cold TOTAL: 6 (3%)

**Defensive/evasive**

Study 3 (only)

Defensive, Changing subject, Head-shaking, Not saying anything, Arms folded on the Table, Asking about homework and he was evasive TOTAL: 6 (4%)

Note: Numbers after a description are the count of identical or virtually identical responses. Percentages are the number of descriptions in a given category divided by the total number of descriptions given for the trait. Some categories occurred in only Study 2 or only Study 3. Not shown are categories with fewer than five responses that showed up in only one of the two studies.

having many responses being operationally defined as having greater centrality than a category with few responses. These frequencies (expressed as percentage of all the responses for a given trait) were called the centrality indices. Thus, beyond simply producing a list of categories for each trait, we were able to document the hierarchy of importance or prominence of the different categories. We consider these centrality indices to be a useful addition to the Big Five literature, as the standard scales do not rank or prioritize their facets (if they have facets).

Studies 2 and 3 were substantially correlated with each other in terms of their centrality indices, indicating that respondents shared a highly overlapping view of which categories of behavior were more and less central to each Big Five trait. This similarity existed even though Study 2 asked a general question (“describe someone who is extraverted”) and Study 3 asked respondents to remember specific instances when they had labeled someone as high on the trait, and even though Study 2’s sample was younger on average than Study 3’s (35 versus 48 years). Finding that the two studies converged rather well in spite of their methodological and demographic differences adds to the credibility and generalizability of the findings, suggesting not only that our lay concepts are replicable but also representative of a diverse population of laypeople. Indeed, both studies included samples that were much more diverse with regard to age, ethnicity, and socioeconomic status than typical personality studies, which rely on young, White, privileged college student samples.

The second major set of analyses consisted of a comparison of the Study 2 and 3 results to the four standard Big Five inventories alluded to earlier (NEO-PI-R, IPIP-120, BFI, and BFAS). These comparisons yielded substantial overlap between the lay and scientific conceptualizations, yet there were also interesting areas of non-overlap. To give some examples, the standard scales characterized the agreeable person as trusting, but our participants did not say this. Our participants said that extraverts and conscientious people were kind and compassionate but the standard scales did not. The standard scales referred to impulsivity and self-consciousness for neuroticism, but our participants did not; on the other hand, our participants talked about obsessive-compulsive behavior and other deviant behavior styles that were not on the standard neuroticism scales. Finally, the standard scales included imagination/fantasy and deep emotionality for openness to experience, neither of which was mentioned by our participants, while our participants included outgoingness and friendliness (care, and compassion) that the scales did not. These are examples of the fact that on the Big Five trait labels laypeople did not always agree with the standard scales on the conceptualization of the Big Five traits. There may be several reasons for this.

First, trait labels do not always capture the entire trait domain as defined by researchers, and the question of how to best label some of the Big Five traits, in particular openness to experience and neuroticism, has been widely debated (e.g., John & Srivastava, 1999). This might explain, for example, why our participants did not come up with imagination/fantasy as a characteristic of openness to experience, whereas they might have nominated it

if another label, such as intellect, had been used. Similarly, trait labels might also have unexpected secondary meanings that are not part of the scientific definition.

Another reason for the finding that some categories were evident to laypeople but were not part of standard scales could be a halo effect. For example, people might have a generally positive attitude towards conscientious individuals and therefore a category like *Friendly/kind/compassionate* might have emerged as relatively prominent in laypeople’s descriptions of conscientiousness, while it was not part of the standard scales. Similarly, extraversion yielded many descriptions related to being kind and compassionate, whereas the standard scales did not contain these characteristics. It is noteworthy that people nevertheless seemed to conceptualize each trait in a nuanced fashion rather than only as “positive” or “negative”; for instance, conscientiousness also yielded descriptions referring to hypervigilance or cautiousness.

The finding that the standard scales did not contain (or fully contain) our *Friendly/kind/compassionate* category in extraversion and conscientiousness is likely related to researchers’ theoretical and psychometric goal of measuring independent dimensions without redundant content. Nevertheless, people’s descriptions revealed areas of substantial commonality across Big Five dimensions. In particular, descriptions related to *Friendly/kind/compassionate* were relatively frequent for extraversion, agreeableness, openness, and conscientiousness (although a more fine-grained inspection of the *Friendly/kind/compassionate* category across these traits also reveals some subtle differences; for instance, for conscientiousness it is more about being considerate and thoughtful, whereas for agreeableness it is more about being polite and mannerly). Interestingly, finding evidence for overlapping content is in line with recent findings regarding the general factor of personality (the Big One; Musek, 2007), which is characterized by high values on the four aforementioned traits and low values on neuroticism, and can be interpreted as “as a blend of all aspects of personality dimensions that are positively valued” or “a measure of personal and social adjustment” (Musek, 2007, p. 1226; Musek, 2017, p. 78). The category of *Negatively reactive/angry* for neuroticism fits this picture if one interprets it as the opposite of *Friendly/kind/compassionate*. The Big One has been related to prosocial behavior, altruism, positive affect, and other constructs that our participants might have thought of when providing their descriptions.

In contrast to such a content-wise explanation, the overlap of Big Five scales can also be interpreted as the result of item differences in evaluativeness. People tend to associate characteristics with a similar positivity more closely and, for example, respond to them more similarly in questionnaires (see Bäckström & Björklund, 2014). For the same reason, when being asked to come up with verbal descriptions of a more or less evaluative trait label, the words they come up with might be the result of both (a) their ideas of associated psychological tendencies content-wise and (b) similar positivity. This in turn would make lay descriptions of trait labels with similar evaluativeness more similar and less distinctive. Building on the present findings, future research might try to more formally disentangle evaluative and content-wise overlap

**Table 7**  
Study 2 and 3 Responses for Openness to Experience.

**Outgoing/social**

Study 2

Outgoing (9), Extraverted (6), More extraverted than introverted, Extraverted and isn't shy, Outgoing and friendly, Outgoing and up to experiencing different things, Very much outgoing and takes initiative, Friendly and always willing to engage random people in conversation and very extraverted, Likes to make new friends in their social activities, Very social, Social, Likes to use social media to connect with new and old friends, Outspoken TOTAL: 26 (12%)

Study 3

Always calling me or texting me with ideas of things we should do, Go out, Interacts with children in the playground, Likes to get the girls together and do awesome things, Very comfortable talking to me, Makes friends easily, Spent a lot of time talking to me about the things he liked TOTAL: 7 (9%)

**Friendly/kind/compassionate**

Study 2

Friendly (6), Kind (4), Helpful (2), Warm, Personable, Agreeable, Welcoming, Sympathetic, Compassionate, Forgiving TOTAL: 19 (9%)

Study 3

Smiling (3), Positive attitude (2), Told me how happy she was to experience the art show, Maintained smile, No wrinkling of forehead, Nods, Very approachable, Agreeable, Accepting, Compromising, Verbally communicated that she enjoyed the new place TOTAL: 14 (19%)

**Energetic/active/zealous**

Study 2

Fun (3), Energetic (2), Fun loving, High energy, Active, Exciting, Likes to wake up with a different mission to accomplish each and every day, Passionate about life and living it to the fullest, Go-getter, Young at heart, Enthusiastic TOTAL: 14 (6%)

Study 3

Excited (4), Enthusiastic (2), Excited to do an activity, Excitement in voice rather than just words, Eager TOTAL: 9 (12%)

**Curious/inquisitive**

Study 2

Curious (6), Interested, Likes to learn some new stuff in job, Desire to learn, Inquisitive, Pays attention to everything around them and takes it all in, Might learn a new language TOTAL: 12 (6%)

Study 3

Asked questions (3), Inquisitive, Excited when I asked her if she wanted to learn something new, Willing to learn more about something she had little prior knowledge of, My granddaughter who learned how to Bollywood dance from her friend, Wanted to learn how to hunt, Discovered that she loves arranging exotic fresh flowers when she had the opportunity to try it out, Invited my daughter to take a sewing class with me, Willing to practice viola, He did not know how to do it so he got his iPad and went on to Google and found a way to do it, Put aside time to learn and take notes, Interested in learning, Trying to learn a new way to do a math problem TOTAL: 15 (20%)

**Liberal/open-minded/impartial**

Study 2 (only)

Open-minded (7), Liberal (3), Non-judgmental (3), Liberal and open and not set in their ways and open to change, Liberal in their beliefs and not stuck in the past, Very open-minded, Open, Broad and open-minded on where these experiences could go, Broadness, Broad-minded, Not close-minded, Not narrow-minded, Without preconceived taboos and views societal norms as friendly suggestions at best and obnoxious nagging at worst, Impartial, Non-judgmental and willing to try new things without prejudging, Not rushing to judgment when seeing or hearing new information, Not so set in their ways and willing to think new thoughts, Able and willing to see things from other people's perspective without dismissing or rejecting opposing ideas, Tolerant, Fair, Unbiased, Inclusive, Accepting, Accepting of new people and things, Has friends of different backgrounds, Actively pursues and explores new or radical ideas, Understanding, Reads books about different cultures TOTAL: 38 (17%)

**Impulsive/spontaneous**

Study 2 (only)

Spontaneous (3), Always spur of the moment trips, Impulsive, Prone to accepting offers and agrees to interesting new plans without needing time to consider the consequences, Down for anything, Spontaneous and willing to drop everything and go out and do something, Ready with no hesitation TOTAL: 9 (4%)

**Risk taker/willing to try new things**

Study 2

Adventurous (16), Risk taker (5), Bold (3), Daring (2), Likes to take risks, Risky, Willing to take risks, Likes to take some risk to try some new things, Risk-taker who is willing to give anything a try once, Seeks excitement, Thrill-seeking, Thrill-seeker who appreciates sensations and surprises and novelties regardless of whether they are pleasant or shocking, Shows high enthusiasm when trying out new things, Broadening one's horizon, Willing to try a new way of doing things, Open-minded in trying new things in a broad spectrum, Likes to be around different things, Even if they don't like something they try it anyway, Kinky and known for unorthodox sexual behavior, Eager to try new things, Would try a new bar, Might try new clothes, Might try new foods, Likes to try new foods, Tries new things outside the comfort zone, Always trying new things, Often tries new unfamiliar things like food and art and culture, Wants to try new things with others, Adventurous spirit, Sense of adventure, Enjoys adventurous sports like skiing and hiking, Adventure seeking, Adventurer, Adventurous and likes to be a little wild and daring, Adventurous and willing to step out of their comfort zone, Courageous, Unafraid, Fearless, Brave, Likes to travel outside of the country, Seeing the world, Likes to travel around the world, Likes to meet new people and travel, Has a fondness for travel, Has traveled more, Explorer TOTAL: 68 (31%)

Study 3

Tried some new things, Willing to try it without complaining, Willing to participate, Willing to engage experience, Always wants to go out and experience new things, Mostly wanted to be a part of new experiences, Seemed uninterested in the standard fare and hinted towards wanting to try something out of the ordinary, Seemed happy to try something new, Interested in new ideas, Very open to how we do things at my worksite, Open to changing his job and working elsewhere, Willing to try something new, Willing to try new things on the menu, Eat something different, Eager to taste new foods, Willing to try a new and spicy dish at a restaurant, Took a friend to a restaurant we had never tried, Very willing and excited to try new restaurants and shops in my town, Try a new restaurant in my our neighborhood, Always looking for a new place to eat when we go out, Seemed so excited to try something new, Hear some new bands he'd never heard before, Brave TOTAL: 23 (31%)

**Flexible/free spirit**

Study 2 (only)

Flexible (3), Carefree (2), Free spirited (2), Uninhibited (2), Easygoing (2), Doesn't necessarily stick to a routine and likes to change it up, Free, Not rigid, Goes with the flow, Easygoing and goes with the flow, Not stuck on certain habits, Not into routine, Adapts easily to change TOTAL: 19 (9%)

**Creative/nonconforming**

Study 2 (only)

Creative (2), Creative differences, Potentially artistic, Nonconformist, Comes up with many different approaches to different problems, Thinks outside the box, Has a unique outlook on life and where it's going TOTAL: 8 (4%)

**Intelligent/wise**

Study 2 (only)

Intellectual, Educated, Smart, Smart and knows there are always more options out there, Likes to read for pleasure TOTAL: 5 (2%)

**Good listener**

Study 3 (only)

Very involved, Very interested in what was said, Actual interest, Paying attention, Involved in conversation, Engaged when talking to me, Face was very receptive

TOTAL: 7 (9%)

Note: Numbers after a description are the count of identical or virtually identical responses. Percentages are the number of descriptions in a given category divided by the total number of descriptions given for the trait. Some categories occurred in only Study 2 or only Study 3. Not shown are categories with fewer than five responses that showed up in only one of the two studies.

between lay concepts of the different Big Five traits and relate it to respective factors based on Big Five scales. Directly comparing the overlap of lay concepts with standard and evaluatively neutralized scales (see [Bäckström, Björklund, & Larsson, 2009](#)) would be one particularly interesting approach in this regard.

### 6.2. Implications for personality assessment

Aside from the general intellectual value of documenting lay conceptions, could there be any practical implications of discrepancies between lay and scientific (i.e., psychometrically developed) conceptions? One possibility pertains to the situation in which a researcher, due perhaps to time constraints, obtains personality judgments using just the Big Five trait labels (neurotic, extraverted, etc.). If these responses are then compared (for example) to those of peer raters who used the entire 240-item NEO-PI-R, convergence would be jeopardized not just because of unreliability of a single-item rating but also because, our research suggests, the observers/acquaintances do not necessarily share the same definition of the trait as the NEO-PI-R does. Thus, when applying single item assessments of the Big Five, researchers are well advised to carefully test how well the single item descriptions convey the content that the researcher wants to capture and adjust the descriptions and the chosen trait labels according to whatever definition the researcher wants the respondent to use.

Another pragmatic implication may lie in possibilities for new Big Five scale development and a comparison of the validity of Big Five scales that overlap more or less with people's lay concepts of the Big Five. In particular, one can imagine a Big Five instrument that weights categories to reflect the centrality that laypeople accord to them. Incorporation of centrality information into the scales could be accomplished in two ways. One would be to choose which, and how many, items to include to proportionally weight different categories (more items for more central categories). Another would be to develop weights based on lay opinion and to apply them at the time of scoring—so that some items count more in the total score than others ([O'Neill & Steel, 2018](#); [Thurstone, 1928](#)). Short of developing entirely new scales, researchers using existing scales could experiment with item weighting or other revisions to align them more closely with lay beliefs. It will be an empirical question of how well such scales (and their more or less overlapping and evaluative content) perform with regard to discriminant and predictive validity (also see [Bäckström, Björklund, & Larsson, 2014](#)).

### 6.3. Limitations and future prospects

The present research has limitations that should be addressed in future work. One question is whether all participants in Studies 2 and 3 had a functional understanding of the Big Five trait terms that were presented to them; participants might have offered answers that are more guessing than not. We dealt with the possibility of random responding in two ways. First, Study 1 confirmed that participants from the same population as Studies 2 and 3 were

sufficiently familiar with the Big Five trait terms to justify asking participants in Studies 2 and 3 for their detailed descriptions of people to whom they apply those labels. Second, in the analysis of Studies 2 and 3 we omitted a few responses that were meaningless or which we deemed entirely inappropriate to the trait being asked about, as well as very small, idiosyncratic categories (see [Section 3.1.3](#)). That means both that participants had broadly sensible definitions in mind, and that the data were not imbued with a large amount of random error.

A limitation is that all of the participants were recruited in the USA on an online platform, although they represented a wide range of diversity in age and other demographic factors. It also remains to be tested if lay beliefs converge for different languages and cultures; first, given that translations of the labels might not have the exact same meaning across languages; and second, considering that the Big Five taxonomy is not necessarily well-replicated across cultures (e.g., [De Raad, Perugini, Hrebickova, Szarota, 1998](#)).

Another limitation is that our participants' beliefs were compared to only four of the many Big Five instruments available to researchers. And, as became clear in the course of our comparisons, as well as having been observed by previous researchers (e.g., [John & Srivastava, 1999](#); [Pytlík Zillig, Hemenover, & Dienstbier, 2002](#)), standard scales are themselves not identical in how they represent content of each of the Big Five traits. Future research might increase generalization by broadening the scope of included personality scales beyond the standard scales we have examined here. This includes, for example the recently developed BFI-2 ([Soto & John, 2017](#)) that, in contrast to the standard BFI allows for the psychometric differentiation of three facets for each Big Five dimension. In addition, the categories identified here could be compared to the lower-order structures of Big Five traits that other researchers have empirically derived through factor analysis of multiple established scales (e.g., for extraversion, [Watson, Stasik, Ellickson-Larew, & Stanton, 2015](#); and for agreeableness, [Crowe, Lynam, & Miller, in press](#)).

Comparison could also be made between lay beliefs and scales that capture more maladaptive Big Five variance such as the Personality Inventory for the DSM-V (PID 5; e.g., [De Fruyt et al., 2013](#); [Wright et al., 2012](#)), since several of the differences between lay beliefs and standard scales showed the lay beliefs to be more unflattering than the content of the corresponding standard scales. For example, our participants described neurotic people as more dysfunctional and unpleasant than the standard scales did, and the same overtones of maladaptiveness (or, at least, low social desirability) were captured in our participants' descriptions of people who are conscientious (hints of anxiety) and agreeable (hints of being weak-willed and too eager to please). Such descriptions are in line with previous work that interpreted personality disorders as maladaptive variants of Big Five traits (e.g., [Widiger & Trull, 1992](#); [Miller, Lynam, Widiger, & Leukefeld, 2001](#)). Our results support those authors' observation that the standard scales tend to underestimate the extent to which a person can have too much of an otherwise adaptive trait ([Carter, Miller, & Widiger, 2018](#); [Haigler & Widiger, 2001](#)). Laypeople may have a more realistic



understanding of the less than optimal extremes of personality traits, lending support to calls for standard scales to be designed so that they can detect potentially curvilinear relations with desirable inter- and intrapersonal outcomes (Carter et al., 2018).

Future research might also combine the investigation of lay beliefs with a more detailed differentiation of the psychological modalities (e.g., affects, behaviors, cognitions, and desires; Pytlik Zillig et al., 2002; Wilt & Revelle, 2015), and process variables (e.g., functionality indicators, Wood et al., 2015). This would allow for an even more fine-grained analysis of personality lay concepts.

Another limitation is that our studies represent only a first effort to understand lay conceptions of personality trait terms as captured in their own words. More sophisticated methods, using larger and more varied samples of participants, would definitely be needed to make broad claims about “what laypeople think.” This reservation applies not just to the list of categories identified for each of the Big Five traits, but also to the centrality indices whereby those categories were ordered according to the number of responses in each. A centrality index calculated in this way is a novel way to rank facets of personality. Future research could compare these, or, alternatively, different calculated centrality indices based on other samples of participants, to prototypicality ratings such as gathered in some studies (e.g., Buss & Craik, 1980, 1983).

Future work on the understanding of trait labels might also approach this issue with different levels of granularity. That is, in addition to capturing laypeople’s understanding of broad trait labels, one might also try to capture their understanding of trait facets. Such an approach would mirror ongoing discussions about the nature of traits and the optimal level of their analysis (e.g., Baumert et al., 2017; Möttus, 2016; Möttus & Allerhand, 2018). A further complementary way of analyzing laypeople’s understanding of trait labels would be linguistic analyses based on (non-scientific) dictionary entries of the respective labels. While such an approach would not capture the subjective importance of different facets and might not provide the same richness of potential responses, it would constitute an interesting comparison standard for the present findings.

#### 6.4. Conclusions

In this research we aimed to better understand what laypeople think the Big Five trait labels mean and to compare this with the content that is captured in standard scales for the assessment of the Big Five. Our findings not only provide a rich descriptive overview on laypeople’s understanding of the labels of some of the key constructs in personality science but also provide a relevant background for the application and development of assessment tools. Although we do not challenge the general predictive validity of existing Big Five instruments, we agree with earlier theorists (e.g., Tellegen, 1993) that the field is enriched by gaining an understanding of the lay perspective on these traits. We hope that future research takes up on and refines the approach presented here, to get an even more detailed picture on lay conceptions of personality trait labels and how they relate to existing assessment approaches. Altogether, our results support McCrae and Costa’s (1996, p. 60) statement that lay people have “a much more sophisticated understanding of human nature than they are sometimes credited with” and the merit of studying both folk and scientific conceptions of personality.

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