

On Personality Measures and Their Data: A Classification of Measurement Approaches and Their Recommended Uses

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Abstract

We employ a new approach for classifying methods of personality measurement such as *self-judgment*, *mental ability*, and *lifespace* measures and the data they produce. We divide these measures into two fundamental groups: *personal-source data*, which arise from the target person's own reports, and *external-source data*, which derive from the areas surrounding the person. These two broad classes are then further divided according to what they target and the response processes that produce them. We use the model to organize roughly a dozen kinds of data currently employed in the field. With this classification system in hand, we describe how much we might expect two types of measures of the same attribute to converge—and explain why methods often yield somewhat different results. Given that each measurement method has its own strengths and weaknesses, we examine the pros and cons of selecting a given type of measure to assess a specific area of personality.

Keywords

self-report, personality tests, response process, psychological assessment, multitrait-multimethod, construct validation

People regularly make consequential decisions about their education, employment, marriage, and family life. Those decisions often take personality into account. People seek romantic partners with the traits of warmth and trustworthiness (Valentine et al., 2020), and experience greater relationship satisfaction if they marry partners with personality traits similar to their own (Nemeczek & Olson, 1999; Wu et al., 2020). Employees experience greater intrinsic satisfaction if they match their interests to their jobs (Ishitani, 2010; McDaniel & Snell, 1999). Employers seek staff who are agreeable (Tews et al., 2011), and families seek babysitters who are dependable (Kourany et al., 1980).

But how can a person—or a researcher—be sure that the agreeableness, interest level, or other characteristic they perceive (or measure) is really what it seems to be? Here, we will talk about aligning measurement approaches to the specific part(s) of personality they are informative about. A long-standing belief in the field is that one type of data—self-report, for example—is roughly as good as another for assessing a given personality attribute. A growing body of research indicates, however, that no such equivalence exists.

Increasingly, studies make clear that certain kinds of data are more informative about a specific aspect of personality than others. David McClelland's studies of motivation using the *Thematic Apperception Test* provided an early alert as to the issue. He asked participants to tell stories to pictures and

then coded their narratives for specific motives such as the *need for achievement* (C. D. Morgan & Murray, 1935). However, he noted that the narrative-derived motives he collected were discrepant from the test-takers' direct self-reports of their motives (McClelland et al., 1989). In different research, Nisbett and Wilson (1977) concluded that people are often unable to explain what brought about their specific behavior; for example, they may misattribute what caused them to make a decision depending on what they notice. Still further discrepancies emerged between people's self-evaluations of their intelligence and their actual performance on knowledge and intelligence tests (Dunning, 2005; Neubauer & Hofer, 2021). Similarly, assessments of selected Big Five traits from big data appear discrepant from self-judgments for at least some traits (Bleidorn & Hopwood, 2019). These findings undercut the intuition that different measures of the same attribute, such as a person's self-reports and thematic productions related to the same motive *should* converge (Campbell & Fiske, 1959; Eid & Nussbeck, 2009; Geiser & Simmons, 2021)

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It seems rather that different measurement approaches may depict alternative parts of personality, which raises the question of how best to align a measurement approach with the personality feature of interest. Here, we draw together relevant literature that has, in the past, been dispersed across individual fields of study and, from their findings, infer some general principles as to what kind of data is best for what purpose. To do so, we first classify different measurement methods, discuss their strengths and weaknesses, and then match types of measures with the personality targets they are most suitable to assess. Using such knowledge, researchers may be able to improve their methods, and—because some of these measures, such as observing others, are available to people in everyday life—such understanding may help people become more accurate at understanding one another as well. Measures of personality are important to anyone who tries to understand the personalities of the people around them (e.g., Mayer et al., 2021) as well as to researchers in areas ranging from artificial intelligence to zoology (Bateman & Valentine, 2021; Carere & Locurto, 2018; Phan & Rauthmann, 2021).

We conceive of *personality* as a system that includes a person's major psychological systems, including their motives and emotions, knowledge and intelligence, plans for action, and executive self-management (e.g., Funder, 2016; Larsen & Buss, 2014; Mayer, 2007; McAdams, 2006). Measures of interest to personality psychologists, it follows, provide data about the system's features such as extraversion or narcissism, as well as aspects of the surrounding systems a person interacts with, such as their body, social setting, and situations.

An Integrative Theory of Data Classification

Data From Within Personality and Data From Its Surroundings

Plato said that good classifications carve “where the natural joints are” (*Plato, Phaedrus, Section 265e*, 360 B.C.E.). In carving up personality data, we argue, the foremost natural joint concerns whether the data are produced by the person or sourced from around the person (Mayer, 2004). For example, if a person endorsed the item “I am confident” on a survey, their choice originated from inner mental processes: self-schema, present mood, and so on, whereas when a local journalist describes the same person's confidence while rescuing a cat stuck up a tree, it represents data from “a surrounding area” of the person: the reporter as an external observer.

More formally, personality can be demarcated amid its surroundings using three dimensions common to the sciences (Mayer, 1995): first, an *inner-outer* dimension to distinguish what is inside the person and what is on the outside.

The model here places personality inside the person and specifies that personality is expressed across a sensory-motor boundary through the person's actions. William James (1892/1920, p. 181) implicitly invoked the inner-outer dimension when he described the conscious self as the “the very core and nucleus” of personality; Mischel, Shoda, and Mendoza-Denton contrasted “the enduring but dynamic personality itself,” from its variable expressions across outer situations (e.g., Mischel et al., 2002, p. 53). Craik pointed out that personality is born and dies with the person, whereas their (outer) social presence and reputations are evaluated by people who surround them and may persist well beyond the individual's death (Craik, 2008, pp. xvii, 125, 139). Although personality is inside the person, the individual's inner self-concept and perspectives on the world are influenced by their relationships with other people “on the outside” (e.g., Cvencek et al., 2021; Felici et al., 2023; J. H. Morgan, 2014).

The second, *molecular-molar* dimension, locates personality according to its level of function amid neighboring systems. Personality operates at a psychological level, in contrast to lower-level processes that take place in the brain and nervous systems, and higher-level processes such as family, intergroup relations, and community. This second dimension is also referred to as a biopsychosocial continuum (e.g., Brigandt & Love, 2023; Oldroyd, 1986; Pervin, 2009). Sheldon et al. (2011, p. 1), used this dimension when they noted that “human beings contain and are contained within a multilevel hierarchy of processes occurring at different scales and levels of analysis,” and it was used by McAdams and Pals (2006, p. 206) who invoked “four different levels” at which personality can be analyzed.

The third dimension, *time*, places personality at a given point of development such as a researcher does when specifying that they studied adolescents who experienced two disruptive years of COVID. Further rationale for this perspective on personality's position is available elsewhere (e.g., Mayer, 1995, 1998a, 1998b).

Personal- and External-Source Data Defined

Using the aforementioned model, we can divide data about personality into two broad classes. *Personal-source data* arises from inside the person and is expressed to others. *External-source data* arises from neurobiological events, observations of the person, and records of the person's biological, situational, and social surroundings (Mayer, 2004). Personal-source data (Figure 1, top left) originates from inside the individuals themselves. People experience memories, feelings, and motives and express their inner memories and states through language and language-related means. True, when these inner qualities are expressed, the data becomes “external” to the person, but the person's expressions are sourced from inside the person and convey inner processes: emotional states, self-schema, knowledge of a

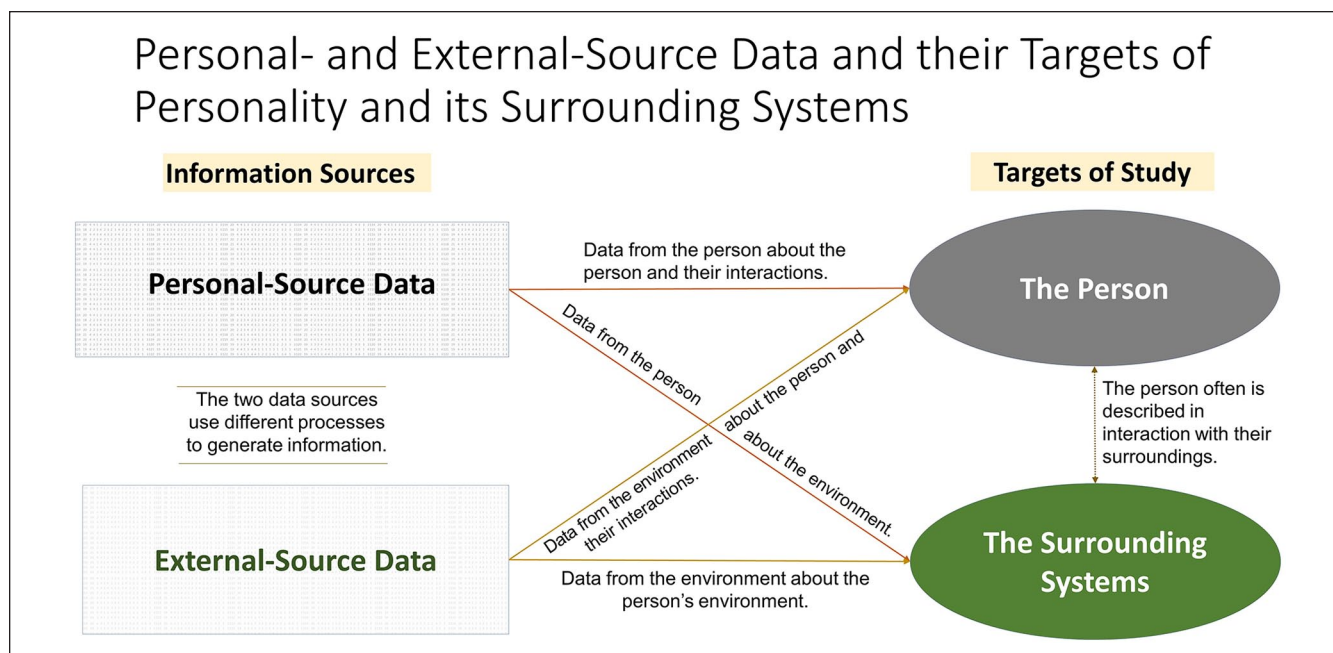


Figure 1. Personal- and External-Source Data and Their Targets of Description.

subject, and the like that only a few species may possess (Jeannerod, 2003) and for which only human beings have developed a rich language.

External-source data, by comparison, involves data generated by assessments and records outside of and surrounding the person. These include biomedical data that pertain to the person's health, information from their setting (location and immediate surroundings), observers' reports of them, and institutional data such as school, government, and online records of the person's accomplishments and preferences.

Personal- and External-Source Data and Their Targets of Measurement

That same division of data sources between personality and its surroundings can be applied to the target of measurement as well. The data source is the point from which the data flows, be it personal- or external-source; the target refers to the attribute that is in the crosshairs of the measure. The target, under "Targets of Study" (Figure 1, right) can be either the person or the person's surroundings, acknowledging that these are always in interaction. An example would be a person's report that "One thing that calms me down is my walk home from work through the park."

A Timeline of the Introduction of Specific Data Types

To apply the classification illustrated in Figure 1, we first compiled a list of personality-relevant data types introduced since the field's inception. To do this, we began with several

experts' lists of key measurement approaches (e.g., Bornstein, 2011; Cattell, 1965; Funder, 1997; Furr, 2009). We traced those back in time through the scientific literature (see Mayer & Bryan, 2024, Section 2) and added more recently introduced data types such as personality sensing data (Harari et al., 2020). A sketch of a dozen-plus classes of data is illustrated in the timeline in Figure 2.

The timeline illustrates the wide variety of measures developed over the first approximately 150 years of the field, from self-reports to physiological data, to implicit attitude data (Greenwald & Banaji, 1995). Early psychologists emphasized people's self-generated responses—personal source data (Galton, 1869; Kelley, 1916), suggesting various terms for it such as *verbal-report* and *self-report* (Calkins, 1915; Spencer, 1938), and narrower classes such as self-estimation, and, later in the century, act frequencies and lifespan data. Other terms were revised to better reflect the mental processes they represented. The term "projective test" drew an analogy between the mind and a film projector to describe responses to Rorschach inkblots (Frank, 1939); it was replaced by terms such as *thematic* tests, which indicated the person responded to the test stimuli with percepts and themes by which they understood the world. The timeline appears to capture many of the more important kinds of data in use.

The dozen or so data types depicted in Figure 2 can then be organized according to the four broad classes of data depicted earlier in Figure 1 depending on whether the data stemmed from a personal or external source, and whether the data pertained chiefly to the person or the person's surrounding environment. Data types within a class likely share some of the same strengths and weaknesses.

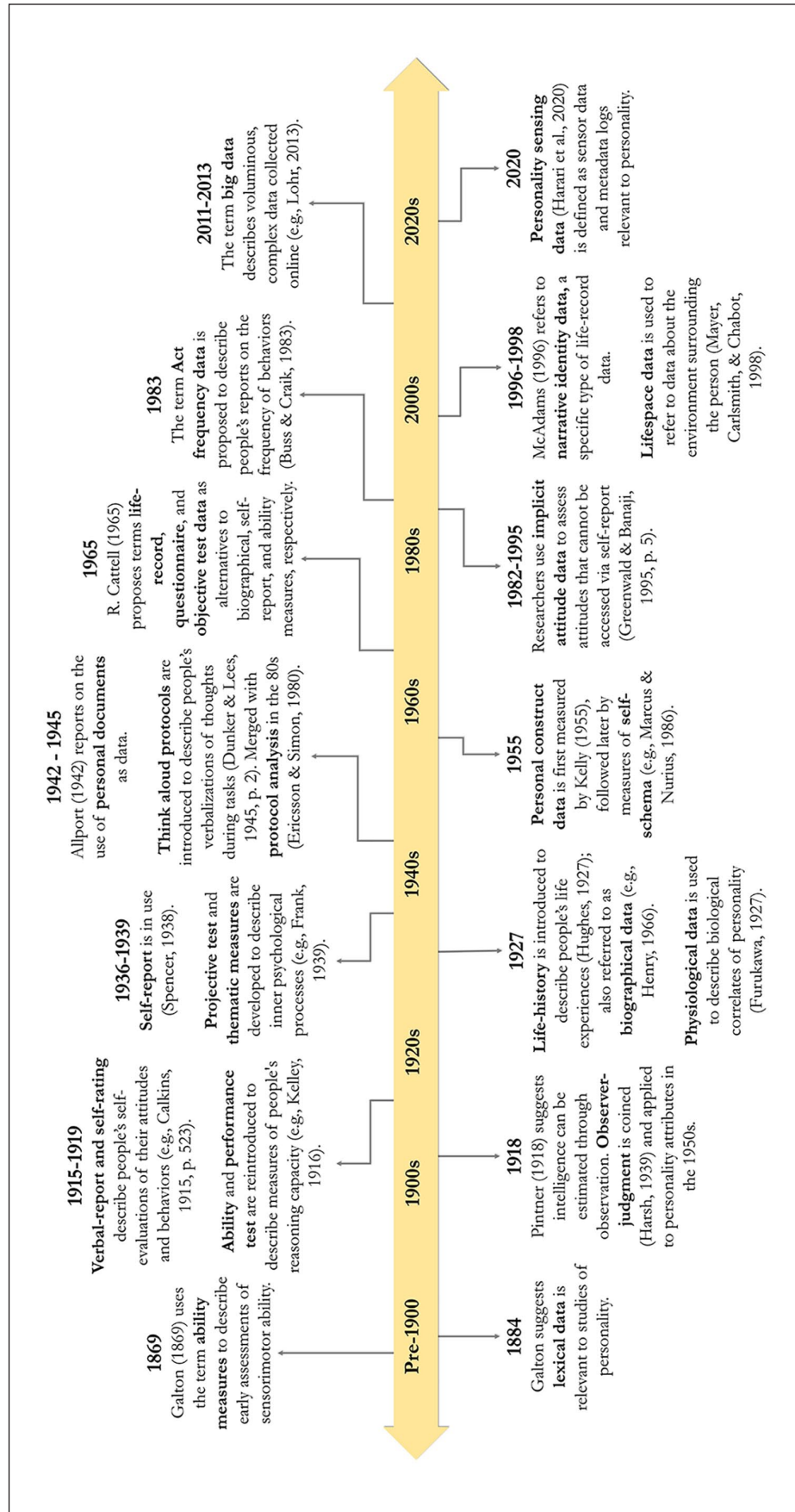


Figure 2. A Timeline of the Introduction of Key Data Types in Personality Psychology.

Personal Source Data as General Class

Personal Source Data About Oneself. Personal-source data is distinctive in that it records people's communications about their mental states, mental constructions (e.g., what an ink-blot looks like), self-judgments, and things they know. The timeline in Figure 2 indicates these data were among the first to be identified by psychologists under the labels of verbal report, projective, and life history data. The contemporary versions of these personal-source datatypes are listed in Table 1, along with brief descriptions of each. These include self-judgment, mental ability, and thematic-report data, as indicated in the first rows of the table. Process-report data, another class in the table, includes "think aloud" data (Duncker & Lees, 1945, p. 2), for which individuals verbalized their thoughts while performing a specific task, also referred to as "protocol analysis" several decades later (Ericsson & Simon, 1980). George Kelly introduced the term "personal construct" to refer to mental representations that encompassed the person's private cognitions, including what later became known as self-schema and scripts. The 1990s saw the addition of *implicit attitude data* that reflected schematic representations mostly "unavailable to self-report or introspection" (Greenwald & Banaji, 1995, p. 5; Jacoby & Witherspoon, 1982; Kihlstrom, 2021).

Personal Source Data About the Environment. The person can report not only on features of their inner personality but also on the systems and events of the environment around them, including those that occur over time (the aforementioned third dimension for locating personality). Broadly speaking, one might distinguish two broad classes of data in this realm as *lifespace data* and *narrative data*.

Lifespace data include non-narrative biographical features or *biodata*, such as those drawn from a job applicant's resume, for example, as well as *act frequency data*, which include the number of times one has carried out certain activities over a specified period of time (Buss & Craik, 1983; B. P. Chapman & Goldberg, 2017; Henry, 1966; Stagner & Drought, 1935; Vicino & Bass, 1978). Also included in such data are the person's reports of their medical condition, physical setting, situations, and group memberships that are, in principle, objectively verifiable (Table 1, lower rows; Mayer, 2004; Mayer et al., 1998).

Personal-source narrative data, by comparison, record stories, short descriptions of events, and more extensive autobiographical narratives (Allport, 1942; McAdams, 1996), as well as the person's interpretations of their life events, such as an experience of redemption (e.g., McAdams, 1996), interweaving both information about the self and the world.

External-Source Data as a General Class

By contrast, external-source data come from sources outside the person. Prototypically, it includes third-party observations

of the person's outer, observable actions and environment in everyday life. It is often collected without any aim to reveal an inner mental state, although it may capture aspects of inner states, as when a person makes a public display of affection. Table 2 organizes many instances of external-source data in a fourfold classification that includes physiological data, physical setting data, and data concerning the psychological situation and group memberships. External-source data also emerged early in the field. Figure 2 includes Pintner's (1918) description of observer reports. He boldly stated that it was "a relatively simple thing to estimate a person's intelligence. . . merely by looking at him" (Pintner, 1918, p. 286). Although his claim was brash and overstated, *observer-judgment data* has proven its utility and is in widespread use (Carlson et al., 2011; Funder, 1995, 2016; Harsh et al., 1939). By the late 1920s, laboratories collected *physiological data* (at the time, endocrine levels and blood samples) to correlate with psychological features. These biological markers were from inside the body but arguably "outside" personality in the sense of underlying its processes (Furukawa, 1927; Rich, 1928). The use of such data proliferates today.

Starting in the late 1990s, the term *big data* was employed to refer to data sets that were substantial in size and complexity, and that consequently required special analytics (cf., Lohr, 2013; Mashey, 1998; Ward & Barker, 2013). Psychologists began to draw on big data from social media posts, and, more recently, *personality sensing data*, that is, data collected by voice-triggered recordings, smartwatches, cell phones, and other tracking devices (Harari et al., 2020).

Do Different Measurement Methods of the Same Attribute Converge?

Researchers often regard two different measurement methods of the same target as more-or-less interchangeable, so long as each is reliable and exhibits some evidence for its validity.

That position was elucidated in a now-classic work by Campbell and Fiske (1959). They argued that any two different methods for assessing the same trait ought to converge assuming both approaches met minimum standards of good measurement. Different methods of data generation might introduce method-specific variance to be sure, but Campbell and Fiske anticipated the contribution of the method would be relatively negligible. Indeed, their article implied an expected correlation between different methods of the same attribute of about $r = .57$ (see Mayer & Bryan, 2024, Section 5). Their empirical findings, however, yielded an average cross-method correlation for the same target features closer to $r_M = .34$ ($r_{\text{median}} = .32$) which they attributed to "method factors or shared confounded irrelevancies" (Campbell & Fiske, 1959, p. 97).

The idea that defects of the measures alone were to blame, however, seemed untenable by the 1980s (e.g., D. W. Fiske, 1987) and more so today. Five recent meta-analyses of diverse cross-method measures of a given attribute reported

Table 1. Examples of Personal-Source Data and Their Descriptions.

Type of data (Preferred name, also similar terms) ^a	Brief description	A test instruction or test item of this type
Data targeting personality		
Self-judgment data , also self-report data	Reflects the individual's assessment of an attribute or quality of themselves including their psychological qualities (e.g., feelings, motives, Big Five traits, etc.) and physical qualities (e.g., bodily sensations, symptoms of illness and wellness).	"Are you outgoing?"
Mental ability data , also performance data, optimal performance data	Assesses a person's mental capacities by asking them to solve mental problems according to a criterion of correctness.	"What does 20 + 12 = ?"
Thematic-report data , also projective data, stimulus attribution data	Refers to perceptual-cognitive constructions and mental themes from the testee's stories, images, and/or other mental responses cued by examining ambiguous stimuli such as pictures and inkblots.	[Referring to an inkblot] "What might this be?"
Process-report data , also mental state data, think-aloud data	Records ongoing accounts that describe a stream of internal states, as when problem solving (e.g., Ericsson & Simon, 1980) or mind wandering.	[Instructions for process-reports during problem-solving] "Please speak aloud and tell me what you are thinking, as you solve this problem."
Personal construct data , also self-schema, scripts, personality prototypes	Indicates participants' mental models of concepts that include their possible selves, relationship scripts, and the relative looseness or tightness of their constructs.	"Please list up to ten qualities of your present self; qualities that describe the way you are."
Implicit attitude data	Measures the quickness of associations between key concepts (e.g., the self and a set of specific traits) so as to reveal characteristics of schematic associations in memory (e.g., Greenwald & Banaji, 1995).	[Speeded and timed evaluations, such as deciding whether something is "me v. not me"].
Data targeting the person and their actions and interactions in the external environment		
Lifespace data , also survey data, biodata, act-frequency data	Reports on behaviors and life history that are, in principle, objectively verifiable (Hughes, 1927; Mayer et al., 1998; Stagner & Drought, 1935).	"How many times did you ask a favor of someone this week?"
Autobiographical narrative data	The individual's subjective, interpretive reports of themselves and their lives (e.g., McAdams, 1996).	"Please describe a high point of your life."

^aThe specific rationales for certain choices of one term over another can be found in the technical supplement (Mayer & Bryan, 2024, Section 4).

rs that most commonly ranged from the low $r = .20$ s to the low $r = .40$ s (e.g., Azucar et al., 2018; Connolly et al., 2007; De Los Reyes et al., 2015; Goff & Ackerman, 1992; Graceffo et al., 2014; Hofmann et al., 2005).

The Response Process Is Key to Understanding a Measurement Approach

The chief explanation for the poor convergence across methods for personal-source data is close at hand: Different classes of measures elicit distinct mental *response processes* on the part of the respondent defined as "The [psychological] mechanisms that underlie what people do, think, or feel when interacting with, and responding to, the . . . [measurement] task" (Hubley & Zumbo, 2017, p. 2; cf., Joint Committee, 2014). Response processes vary across personal-source data from self-judgment, to the problem solving elicited by ability

measures, to thematic responses. Such concerns apply equally to external-source data, for which, for example, a human observer and a web tracking device will draw on quite different processes to monitor a target individual.

Returning to personal-source data, consider self-judgment versus thematic measures of achievement motivation. When a person self-estimates their degree of achievement motivation, they typically retrieve the information from a relatively stable, semantic memory store of their generalized characteristics—perhaps also involving some episodic recall (e.g., Klein, 2013; Klein et al., 2004; Tanguay et al., 2020). A person who constructs a story in response to a thematic measure such as the Picture-Story Exercise, by comparison, must engage in more active mental storytelling that typically draws on knowledge of other people (C. D. Morgan & Murray, 1935; Schultheiss & Schultheiss, 2014; I. B. Weiner, 1994). The mental

Table 2. Types of External-Source Data Relevant to the Individual and Their Surroundings.

Type of data (Preferred name, also similar terms) ^a	Brief description	Sample measurement approach
External-source data targeting the person's health		
Physiological data , also medical or biomedical data, sensor or scanning data, physical data	Medical and other health-monitoring measures and records of the person's health, including brain function (e.g., from neuropsychological testing). Also includes phone, smart watches, and other health monitors of pulse, heartbeat rhythm, activity levels, sleep, and other indices.	EEG, CT scans, MRIs and fMRIs, blood tests, etc., and psychoneurological testing. Also, sensor monitoring of physiological status (e.g., Fitbit®, Kardiobile®, etc.).
External-source data targeting the person's status, actions and interactions in the external environment		
Setting data , also environmental data, monitoring device data	Diverse records concerning the characteristic demography, economic activity, architectural and decorating choices a person makes, and other attributes of where a person lives, works, and travels.	Examples include zip codes, property records, neighborhood police records, geographical location information, transit fares, and tolls.
Situation data	Reports by human or electronic observers of the perceived situation, its demand characteristics, and the person's interactions in them.	Reports of observers on such attributes as "How outgoing is this person?" and "How punctual is the individual?", or the quality of a situation. Personality sensing data such as mechanically activated recordings of individual behavior including of voice, movement, and body.
Group data	Records held by educational, work, and other organizations that are indicative of an individual's activities.	School transcripts, tax returns, marriage certificates, driver's licenses, criminal records, and online activity (e.g., Facebook, Instagram, TikTok, etc.).

EEG = Electroencephalography; CT = computerized tomography; MRIs and fMRIs = magnetic and functional magnetic resonance imaging.

^aThe rationales for the choice of one term over another can be found in the technical supplement (Mayer & Bryan, 2024, Section 4).

processes involved in each response are very different (Bornstein, 2011; Embretson, 2016)—and although both measures target the same motive, they do not converge well because in fact, they measure two different manifestations of that target. McClelland and colleagues suggested that they required two different labels: *n* achievement for a need for achievement (thematic) and *v* achievement (self-judged) for a valuation of achievement (McClelland et al., 1989; Schultheiss & Schultheiss, 2014).

Consider a second case: that of self-estimated intelligence versus ability-based assessments of intelligence. Self-estimated intelligence correlates chiefly with high Extraversion, Openness, and Emotional Stability on the Big Five, with multiple $R_s > .60$ (e.g., Herreen & Zajac, 2017; Neubauer & Hofer, 2021). Ability-measured intelligence assesses the actual capacity to solve problems. As might be expected, although self-estimated and ability measures are sometimes both referred to as "intelligence" they correlate at low levels, around $r = .29$, on the whole (Zell & Krizan, 2014). If we wish to be generous, we might concede that either might be a good measure of *something*, but to be clear, only the ability measures assess intelligence or anything like it (e.g., Carroll, 1993; Neubauer & Hofer, 2021).

There are some instances where different methods do converge sufficiently to argue that they measure much the

same thing. For example, self- versus observer-judged Extraversion converged at $r = .51$, corrected for unreliability—the highest convergence between self- and other-ratings among the Big Five. Presumably, both the target and the observer are witnessing the same outward behavior of sociality. Extraversion, which is plainly observable and relatively neutral, elicited substantially more agreement than Agreeableness, similarly corrected, at $r = .39$ (Connelly & Ones, 2010, Table 5).

Moreover, the above examples chiefly concern personal-source data. The diverse processes employed to obtain external-source data, from fMRI data on brain networks as a potential index of well-being (Li et al., 2023), to identifying levels of extraversion among students by tracking their e-learning behavior (Lai et al., 2020) or Facebook posts (Back et al., 2010) suggest that at least some of these measures of the same attribute are likely to diverge. Note that fMRI and e-learning provide relatively indirect assessments, a state of affairs that might lead to some uncertainty as to what, exactly, is being measured.

One might further argue that different measurement methods of the same attribute, such as self- versus observer-judged Agreeableness on the Big Five, are not assessing the same attribute at all: self-judged agreeableness is affected by one's self-concept, filtered through self-enhancement and

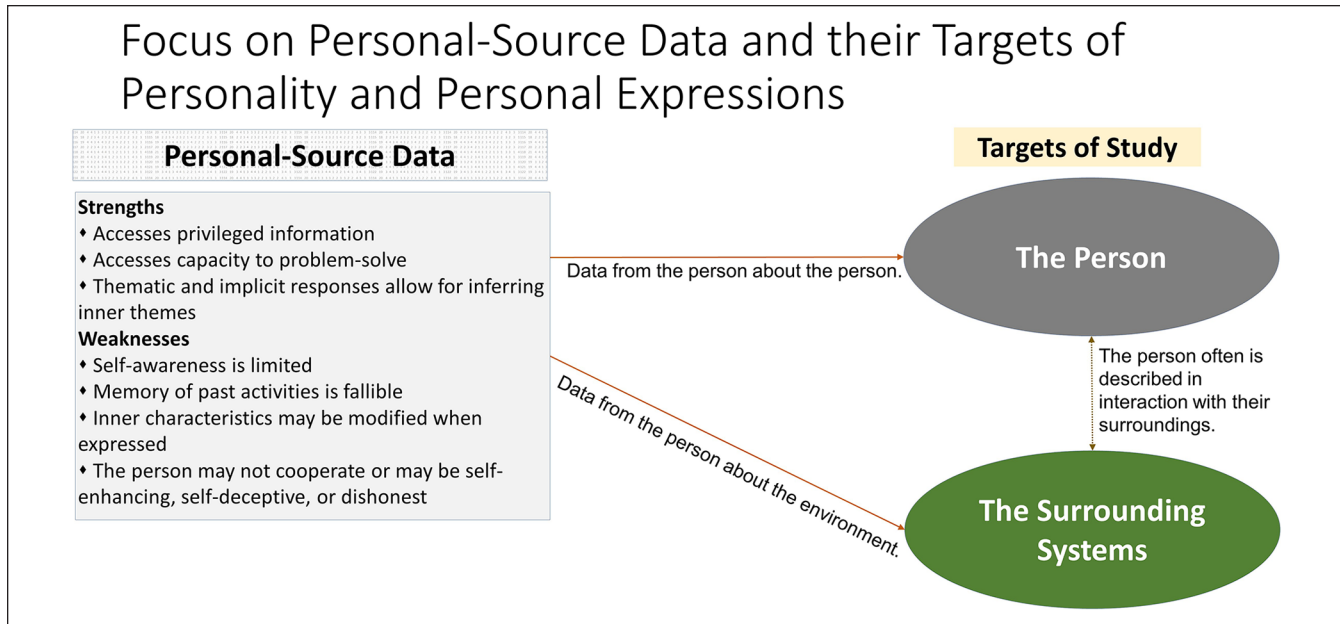


Figure 3. A Consideration of Personal-Source Data in Particular.

self-deception (e.g., Berry et al., 2007), whereas observers are likely to hold different impressions. This may be why self and observer evaluations diverge the most for Agreeableness among the Big Five traits, correlating at $r = .39$, as noted above (Connelly & Ones, 2010, Table 5). So, if an employer were seeking a staff member who was agreeable, as in our opening example, they might best rely on their observations during the interview and other informants' impressions, rather than the applicant's own claims in that realm.

Other Reasons for Non-Convergence

There are, of course, other reasons measures of the same attribute differ beyond divergent response processes. These may include some flaw in the measure, as Campbell and Fiske (1959) originally suggested, or, the attribute may be present to the same degree across people but expressed differently, as when hostility is expressed in a verbal fashion by one person, and physically by another (Biaggio, 1980)—the “polyexpressive” nature of traits (cf., Allport, 1961, p. 469 ff; Stern, 1930, p. 178; “poly-symptomaticity” in the original).

Strengths and Weaknesses of Measurement Approaches and Their Data

In the case where measures differ owing to their response processes, what, then, are the strengths and weaknesses of each type? Addressing this question can answer, in part,

which kinds of measures are best for assessing specific personality features.

Strengths of Personal-Source Data

Personal-source data types share the characteristic that they are uniquely generated by the individual. In the case of self-judgments, people themselves can best say whether they are feeling happy or sad (Chan, 2009). When choosing a job or a relationship partner, people are justified to rely in part on their self-appraised feelings to decide their degree of interest in the work and how much they like someone.

In the case of mental ability measures, it is relatively straightforward to assess a student's knowledge by having them take a classroom quiz, or to assess a person's mental ability more generally on an intelligence test. And it is possible to learn key aspects of a person's mental models by monitoring test-takers' accounts of what they see in response to a *Rorschach* inkblot, or the story they tell to a picture as part of the *Picture-Story Exercise* (Schultheiss & Schultheiss, 2014), or by assessing their actual and ideal selves (Markus & Nurius, 1986). The individual is also a keen source for personal history and describing their personal environment.

Finally, *self-judgment measures* more specifically are regarded as inexpensive and easy to develop and use (e.g., Dodorico McDonald, 2008; Vazire, 2006). This makes them useful for a quick assessment. Some of the strengths of personal-source data are indicated in Figure 3.

Weaknesses of Personal-Source Data

Self-Awareness Is Limited. Yet, one type of personal-source measure, self-judgments, are often misused by researchers who ask questions that respondents cannot reasonably be expected to answer correctly (Dunning, 2005; Neubauer & Hofer, 2021; Nisbett & Wilson, 1977; Podsakoff et al., 2003). Self-judgments may be compromised, for example, because a person's conscious awareness is simply not "wired up" to many parts of the psychological system needed to access the attribute in question (Dennett, 1978; Nagel et al., 1992). Moreover, a person may be able to observe inner phenomena and their expression but fail to notice them (Bowers, 1984, 1987). Even if a person is able to access the information in principle, they may simply be untrained, uninterested, or lack the aptitude to interpret the information. Moreover, people in different cultures may adjust their responses depending on their reference group (Lira et al., 2022) or lack the vocabulary in their language to respond to the question (Hoosen et al., 2018).

In the realm of mental abilities, people may misunderstand how they are performing on a logic problem because they fail to understand the standards of good performance (Dunning, 2005). Or, they may be biased toward attributing skills to themselves they do not possess due to their positive outlooks: Extraversion and Emotional Stability influence self-reports of intelligence far more than actual ability (Joseph et al., 2015; Mayer et al., 2020; Neubauer & Hofer, 2021). People may exaggerate their skills under high-stakes testing (e.g., Day & Carroll, 2008). Such self-judgment measures also may look better than they are, correlating highly with one another because of people's need to appear consistent across questionnaires (Podsakoff et al., 2003). Because self-judgments are so easy to use, they may crowd out other more appropriate methods (Vazire, 2006). So, if an employer is looking for someone skilled, they may want to use a skill-based test or lifespan-type measure indicating work history and performance.

Memory of Past Activities Is Fallible. When personal-source data involves past life history or behavioral reports, their validity will be constrained by the accuracy of the individual's memories. Some people have relatively veridical memories of their pasts, but for others, the past may be shrouded in unclear, confabulated recollections. Generally speaking, contemporaneous reports via experience-sampling and retrospective recall both may contain valid variance, but the overlap is in the $r = .20$ to $.40$ range; individual differences in memory remain an area of continued research (Ellison et al., 2020; Newbury et al., 2018; Oltmanns et al., 2020; Ralph et al., 2020; Schuler et al., 2021).

Are Inner Characteristics or Outer Expressions the Target of Measurement? The veridicality of self-judgments also depends on the *specific aspects* of personality that are

targeted. Consider the distinction between an individual's private and public personality (Singer, 1984). An introvert may possess the social skills to behave in an outwardly engaging manner at a party but prefer to be alone: Do they judge their inner preference or outer social skill? A depressed individual may choose to look cheerful in public so as not to alienate casual acquaintances. Many people are skilled at playing social roles when role behavior is called for (Hogan & Shelton, 1998; Snyder, 1974). Consequently, a person's self-judgment may differ depending on whether they attend to their outer behavior, as with act-frequency data, or their inner selves, as with self-judgment.

Self-Enhancement, Self-Deception, and Dishonesty. Personal-source data is further compromised if respondents do not fully share what they know or simply wish to emphasize their positive qualities, as in online dating (Hall et al., 2010; Sharabi & Caughlin, 2019) and impression-management more generally (e.g., Kelsey et al., 2015; Paulhus & Reid, 1991). Moreover, people's everyday self-judgments are prone to shift positively or negatively with their mood (Forgas & Bower, 1987; Mayer et al., 1992).

A Note on Generating Personal-Source Data About External Activities, Behaviors, and Status. Compared with understanding one's inner functions and qualities, personal-source reports regarding one's outer behaviors and acts seem relatively more straightforward to produce. That said, such reports still depend on whether the person can accurately remember their life history, enumerate their actions, and the degree to which they are willing to share such information (Furnham, 2017; Mael, 1991; Mael & Hirsch, 1993).

Strengths of External-Source Data

We turn next to external-source data. These data serve both as indicators of personality and sometimes provide key criteria that may serve as outcome variables in personality research (e.g., occupational status). External-source data are generated by a diverse set of measures from around personality and include individuals' medical records, observer reports, and information from the groups to which an individual belongs. Several examples of these data types are in Table 2. Biomedical data include EEGs, CAT scans, fMRIs, and blood tests as well as smart-sensor monitoring of health such as heart rate, daily exercise, and sleep quality recorded on fitness trackers and uploaded online (Table 2, top rows). Data about the person's settings include socioeconomic information inferred from the person's postal (zip) code, address, and phone exchange (Table 2, middle top). The person's travels across settings are tracked by their cell phone, security cameras, and highway toll pass recordings. One's online psychological

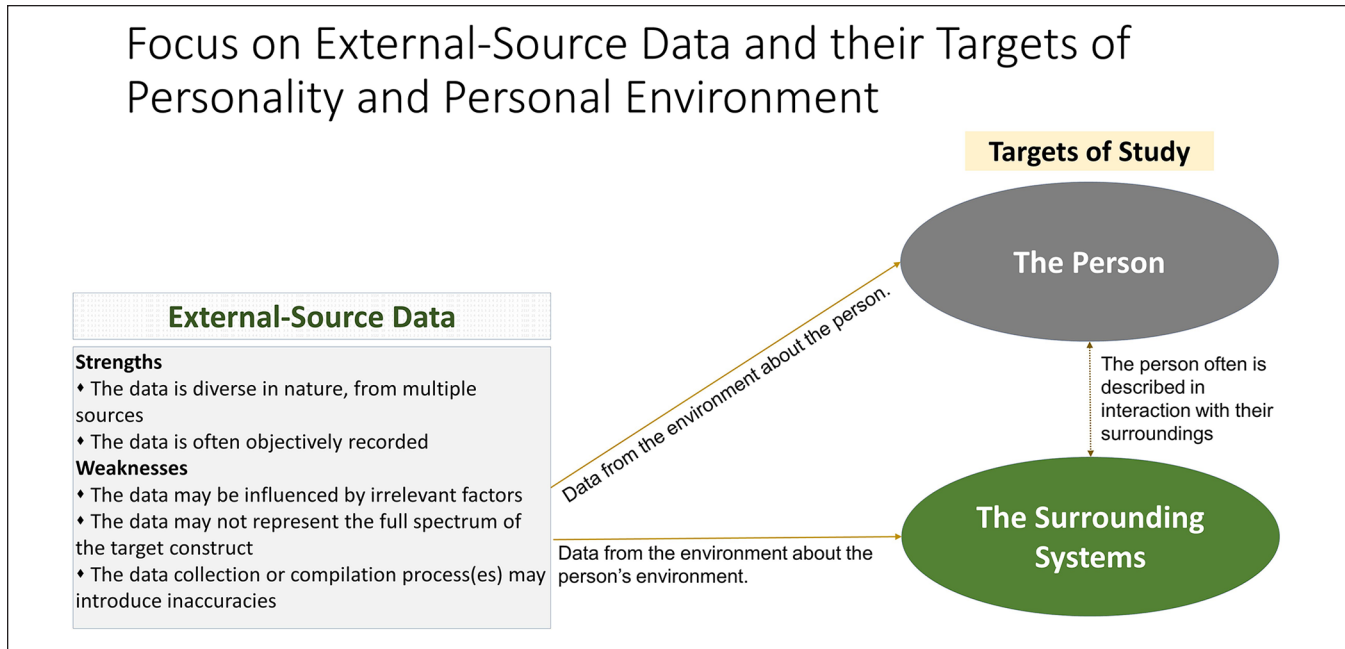


Figure 4. A Consideration of External-Source Data in Particular.

interactions with other people (and bots) are recorded in e-mails, chats, and tweets.

Observers of the person in different situations may rate the individual on various traits (“*Situation Data*,” Table 2). Such informant reports are especially important given that a group of theories argue that a person’s inner sense of self develops from their interactions with others and from how others perceive them (e.g., Cvencek et al., 2021; Felici et al., 2023). Observers likely evaluate certain aspects of the target individuals’ social interactions in a manner equal to or more accurate than can targets themselves (Carlson et al., 2011; Sun & Vazire, 2019), particularly when a trait’s expression is observable, not too evaluative, and observer judgments are aggregated (e.g., Kenny & West, 2010; Paunonen & Kam, 2014; Rau et al., 2021).

Finally, *group data* is held by educational, business, religious, and governmental organizations. Such data reside on drivers’ licenses, employment histories, legal documents, and records held by Instagram, Facebook, TikTok, and the like, some of which are relevant to personality and/or its expression (Table 2, bottom).

Weakness of External-Source Data

Weaknesses of external-source data depend in part on the specific source. An observer’s judgments may be influenced by the evaluator’s positivity and their conception of a trait (Rau et al., 2021). Or, observers of a person may be part of a social network (Craik, 2008) and their socially shared ideas may be mistaken or biased, as in *Hopkins v. Price Waterhouse*, wherein the *Price Waterhouse* partners viewed an associate

as lacking in social skills, too “macho,” and evaluated her poorly—whereas the court found that although the partners’ judgments might have been true in part, they also exhibited gender bias (S. T. Fiske et al., 1991, p. 1054).

Other forms of external-source data, including medical, setting, and institutional data are often collected in a manner incidental to psychological assessment, and the data’s repurposing for research may reveal compromises concerning its *relevance* to a given personality attribute, the *completeness* of its representation (Joint Committee, 1999, 2014), and its *accuracy*. These issues are depicted in Figure 4 and considered next.

Relevance of External-Source Data. Some external-source data are collected for commercial or governmental purposes other than for personality research; for this reason, they may reflect extraneous variance and require care in their interpretation. Bleidorn and Hopwood (2019) found that Facebook users who “liked” *Hello Kitty*, were lower in Conscientiousness and Emotional Stability, among other characteristics. But upon closer examination, the *Hello Kitty* fans also were younger in age (Bleidorn & Hopwood, 2019, p. 194). The authors recalled lessons learned from early research with the original MMPI: that findings “that are intuitive and tie in with theory and previous research. . . are more likely to be effective in new samples. . . [whereas] surprising, nonintuitive indicators are less likely to generalize. . .” (Bleidorn & Hopwood, 2019, p. 199). The same authors affirm, nonetheless, that some non-obvious relations may yield new theoretical insights.

Construct Completeness. Another issue is that external-source data may be overly narrow in the kind of indicators it employs. Examining people's video purchases on the *Disney Plus*® streaming service alone may indicate that a particular subscriber is interested in popular movie releases. Yet that slice of behavior could overlook the person's activity on a second streaming service that specializes in arthouse films. Similarly, medical record data that extract blood panel records but omit a person's health habits may provide an incomplete view of a person's overall physical well-being.

Data Accuracy at the Individual Level. Although accuracy is an issue for all types of data, inaccuracies can be especially glaring when individuals have little control over their own data or data platforms lack careful human supervision. A long psychometric tradition centers on determining the measurement error for psychological tests (e.g., Embretson & Reise, 2000; Hambleton & Jones, 1993). By comparison, the accuracy of external-source is less highly monitored and often fallible: Medical records often contain consequential errors, according to both anecdotal reports and systematic studies (e.g., Lang, 2021, p. A 12; S. J. Weiner et al., 2020; Weng, 2017). Yet Funder (2016, p. 24) has noted that, when it comes to data: "Something beats nothing, two times out of three" and these are matters of concern rather than meant to preclude such data.

With these considerations of personal- and external-source data in mind, we next turn to consider what kinds of measures might be best for assessing a given aspect of personality.

The Right Class of Data for a Given Purpose

Each measurement approach in personality psychology has its signature strengths and weaknesses for a specific purpose. These qualities depend on whether the measure is personal- or external-source as well as on the more specific subtype of measure it is. A measure's pros and cons can be used to match it to personality attributes it is most suited to assess. Finding a match between a measure and a personality feature requires (a) a sense of the response process that the measure draws upon, (b) a reasonably clear definition of the feature, and ideally (c) research evidence that the proposed match yields valid results. Some areas of personality research are sufficiently mature as to allow for clear conclusions about which measures are best, but other areas are not yet so developed. The following recommendations are based, therefore, on a mix of relatively secure research findings and more provisional theoretical inferences.

We summarize some of the advantageous pairings between measurement approaches and personality features in Table 3. The table's spanner headings refer to commonly studied areas of personality functioning such as *Executive Control* (Table 3,

top) and *Motivation and Emotion Systems* (e.g., Mayer, 2005, 2015, 2019). Within each general area are subgroups of personality attributes (left column). Under "Executive Control. . ." can be found conscious experience, for example, and under the "Self-Concept. . ." area are assessments of self-schema. The Big Five traits are integrated within the system according to the area they describe (e.g., Neuroticism is in the emotions area). In the right-most column of Table 3 are brief rationales for which measures are suitable to assess a given attribute based on both theory and empirical evidence to date.

The Evolving Nature of Certain Recommendations

Certain recommendations in Table 3 are relatively clear and easy to make, such as that self-judgments and talk-aloud methods are useful to assess conscious experience including emotions and problem-solving (e.g., Ericsson & Simon, 1980; Watson & Tellegen, 1985). Self-judgments are recommended, therefore, for some areas of "*Executive Control and Consciousness*" (Table 3, top rows) and for emotional features under "*Motivational and Emotional Traits*" (Table 3, bottom rows). Research evidence also is clear that intelligence and mental abilities are best assessed by mental ability tasks. Self-judged mental ability, by comparison, reflects the person's self-concept but should not be relied upon as a measure of problem-solving capacity (e.g., Dunning, 2005; Freund & Kasten, 2012; Neubauer & Hofer, 2021). Observer ratings seem to work best for certain behavioral expressions such as Agreeableness (Connelly & Ones, 2010; Connolly et al., 2007; Pincus & Gurtman, 2003; Vazire & Carlson, 2011); yet, self-judgments are frequently employed for the purpose. Measures of a specific motive such as the need for achievement can be carried out with self-judgment or with thematic techniques (the latter with the TAT or the Picture-Story Exercise); the two methods, however, do not converge. Considerable evidence indicates that people do not know their own motivations, which argues for the thematic approach (Aarts, 2007; Chartrand & Bargh, 2002; McClelland et al., 1989), but it remains unclear whether the field has settled definitively on a preferred approach. Other motivational attributes such as the degree a motive is self-determined are typically assessed through self-report (e.g., Ryan & Deci, 2000). Table 3 is a work in progress in this regard and subject to further, future revision.

Consideration of Longitudinal Data

Optimal measures of a personality feature also can require adjustment according to the age of the target person. The recommendations in Table 3 were developed with adults in mind. Very young children who are still forming their self-concepts may be better assessed by observations from parents and teachers, for example. Longitudinal studies may

Table 3. Table of Recommended Measurement Approaches for Selected Specific Features of Personality and Brief Rationales for the Choices.

Key features of personality	Suggested measurement approaches in brief	Brief comments and rationales
Executive Control and Consciousness-Related Characteristics		
Conscious experience and altered consciousness	Self-judgment including experience sampling; thematic assessments	Conscious experience involves internal experience for which the most direct, germane descriptions are likely to come from individuals themselves. Self-judgments and experience sampling both have been used successfully in these areas (e.g., L. J. Chapman et al., 1978; Csikszentmihalyi, 1990). Compromises in reality testing also may be assessed by neuropsychological and thematic measures (Boyle et al., 2012; Mihura et al., 2013)
Defensiveness and self-enhancement	Thematic report and self-judgment scored for the criterion of defensiveness or enhancement	Thematic report measures show promise for measuring defensiveness when they are scored according to constricted ideation (e.g., avoiding negative content), or ignoring negative content in stimuli (e.g., Cramer, 2015; Mihura et al., 2013). Modified self-judgment scored according to a criterion of distorted-appearing responses—either very positive or very constricted—have been successfully used (e.g., Paulhus, 1984). Direct self-judgments (e.g., interpreted at face value) are inappropriate given that, by definition, individuals are unaware of certain defenses, and often unaware of self-enhancement.
Conscientiousness	Self- and observer-judgment	Both people themselves and observers appear to accurately perceive conscientiousness, indicated by self- and observer-ratings at the $r = .30$ to $.70$ level, depending upon the observer's familiarity with the target (Connelly & Hülshager, 2012; Costa & McCrae, 1992; Lee & Ashton, 2017; Mount et al., 1994, p. 277).
Self-Concept, Self-Schema, and Identity-Related Constructs		
Personal identity and autobiography	Narrative identity, autobiographical methods; self-judgment of attributes	Asking people to tell stories about themselves is a most direct way of understanding their self-conception according, at least, to how they present themselves to others (McAdams, 1996). Such data can be evaluated according to multiple criteria, (e.g., McLean et al., 2020).
Conscious self-concept	Self-judgment	People judge themselves in many areas including their level of self-esteem, self-efficacy, how smart or motivated they are, and related constructs (e.g., Schmitt & Allik, 2005).
Self-schemas (mental models, and implicit/non-conscious self-concept)	Personal construct data (self-schema, possible selves, etc.), and thematic data	People reveal self-schema including implicit, non-conscious self-conceptions when prompted to create responses to questions such as "list several traits of your ideal self" (or "feared self") or engaging in card-sorting tasks with personal attributes on each. Schema can be evaluated for discrepancies among selves (e.g., Higgins, 1987), self-complexity (Linville, 1987; Showers et al., 2015) and other aspects. Using similar techniques, people may reveal their constructs of the world more generally (e.g., Tomkins, 1987).
Cognition and Knowledge-Related Traits		
Intelligence and Knowledge	Mental ability scales	Mental ability scales, i.e., intelligence and achievement tests that ask participants to solve problems and gauge solutions against correct answers, are considered the gold-standard in the area. Self-judgments are inaccurate for actual ability, but are of interest to those studying self-evaluated mental ability (Freund & Kasten, 2012; Mayer et al., 2020; Neubauer & Hofer, 2021).
Cognitive styles including Openness	Mental ability scales scored for response style, self-estimates; thematic scales for percept-accuracy	Cognitive styles such as leveling-sharpening, field dependence, and mood-congruent judgment often use ability-type items scored for stylistic responding as opposed to correctness, such as happy- or sad- biased answers (e.g., Forgas & Bower, 2001). Self-reported Big Five and Big Six Openness arguably reflects a cognitive style that correlates modestly with independent criteria such as creativity and intelligence. Thematic measures assess percept accuracy versus distortion and styles of responding.

(continued)

Table 3. (continued)

Key features of personality	Suggested measurement approaches in brief	Brief comments and rationales
Action-Related Procedural Traits		
Social skills	Mental ability scales including situational judgment scales; observer-judgments	Social skills involve good judgment in social encounters and social negotiations. Situational judgment scales may capture thoughtfulness and often planning (Allen et al., 2014). Those observing the person can provide assessments of the qualities of the target person's social behavior as well (e.g., Gresham et al., 2010).
Extraversion	Self- and other-judgment; personality sensing data	Extraversion is the most visible of personality traits and there is relatively high self-with-other agreement on this trait, ranging from $r = .40$ to $.70$ (Connelly & Hulsheger, 2012; Lee & Ashton, 2017; Mount et al., 1994, p. 277). Personality sensing data also appears promising as it can monitor number and length of conversations and similar social activities (Harari et al., 2020).
Agreeableness	Observer-judgments	Agreeableness generally elicits the lowest self-other-agreement of the Big Five traits (Connelly & Hulsheger, 2012; Lee & Ashton, 2017; Mount et al., 1994, p. 277). Observers may provide more accurate information than self-judgments, owing to the likelihood that (some) disagreeable people do not understand how they are perceived.
Motivational and Emotional Traits		
Positive and Negative affect, Neuroticism, and more specific emotions	Self-judgment; thematic data	Philosophers argue that, by convention, a person's claim to feel a certain way should be respected, short of evidence that they are dissimulating (Gertler, 2003); psychologists generally are in agreement (Nisbett & Wilson, 1977). We typically trust each person to tell us how they feel inside, unless there is compelling evidence to the contrary (Connelly & Hulsheger, 2012; Lee & Ashton, 2017; Mount et al., 1994, p. 277). That said, people with negative affect may succeed in keeping it hidden and it can make sense to employ other data-sources such as thematic measures and mood-congruent judgment as checks (Mayer et al., 1992; Mihura et al., 2013).
Incompletely reported emotion	Thematic and affect-sensitive (cognitive) tasks	Affective states that go partially unrecognized or unreported may be detected by thematic/constructive tests, affect-sensitive tasks, and physiological assessments (Mayer et al., 1992; Mihura et al., 2013; Saarimäki et al., 2015).
Dynamic aspects of motivation	Personal constructs and self-judgment (preferred for self-directedness)	Motivational dynamics measures include personal strivings, and their interactions, measured through personal construct techniques (Emmons & King, 1988) and the degree to which motives are self-directed, as measured through narratives and self-judgments (Deci & Ryan, 2008).
Motivation, need-defined (e.g., needs for achievement, excitement, and/or intimacy)	Thematic responding, lifespan achievements, personal strivings	A person's needs and goal-pursuits, such as Murray's needs for achievement, power, affiliation, or other themes, are often measured with thematic indices such as the Thematic Apperception Tests and the Picture Story Exercise, and self-judgments for the self-ascribed motives (McClelland et al., 1989; Schultheiss & Schultheiss, 2014). Other options include (in the case of <i>n</i> Achievement), actual lifespan activities and achievements, and relevant strivings.

require transitions between measurement approaches as a person ages and their mental capacities and life contexts change. Under such conditions, researchers might wish to employ a kind of nearest-neighbor strategy among measurement approaches to keep the alterations of measurement as minimal as possible. Recent recommendations regarding adult personality change incorporate the need for multiple approaches to assessment as well (Bleidorn et al., 2020).

Discussion

People often make consequential decisions about their lives with their own and others' personalities in mind. They choose majors and careers that match their interests, partners who are kind, and employees who are agreeable. But it helps to attend to the right data when taking account of personality. Personality qualities can be assessed in multiple ways. In the past, researchers have expected that alternative

approaches to measuring an attribute would yield much the same findings, at least in the ideal (Campbell & Fiske, 1959), and would diverge chiefly due to the imperfections of the individual measures (but see D. W. Fiske, 1987, for a reassessment). More recent evidence, drawn together here, indicates that, in fact, different measurement approaches to the same personality feature remain stubbornly independent of one another. We argued that the divergence of measures was due to their elicitation of different mental processes, and as a consequence, that they assess different personality features or aspects of those features. Self-judged intelligence, for example, assesses “intellectual self-esteem,” whereas only ability measures assess actual intelligence. To foster an enhanced understanding of such issues, we provided an overview of the diverse approaches, classified them, and discussed what they likely do and do not measure.

The Present Classification System

Our classification system distinguished between assessments that elicit personal- versus external-source data. Personal-source measures draw on the person’s communication of their inner mental processes, including their self-estimates, memories, and problem-solving, via linguistic and other expressive channels. External-source measures, by comparison, draw information from the person’s surrounding environment. The data further divide into whether they record information about the personality itself or about the person’s surroundings (see Figure 1). Roughly a dozen more specific data types fall within these groups (Tables 1 and 2).

We argued that findings from alternative measures, if properly understood, can be productively explained (Bornstein, 2007; Meyer et al., 2001). Self-judged agreeableness, for example, indicates one’s self-perceived agreeableness but not necessarily one’s actual level of agreeable behavior, as observed by others. Interpreting the two as conveying distinct information, as often is done in clinical work (Bornstein, 2007; Mayer, 2019), represents a highly useful approach relative to the expectation that “all measures should converge.”

Each of these classes of data, we argued, has its particular strengths and weaknesses: Personal-source data is indispensable because only individuals themselves have access to their inner experience and knowledge. Methods that elicit such data uniquely inform us as to a person’s inner conscious experiences, mental models, and mental abilities. Yet, if misapplied, such measures can produce erroneous reports because people often do not have access to key parts of their mentation, and are, in addition, prone to present themselves in a favorable light (Nisbett & Wilson, 1977; Paulhus, 1984). By comparison, external-source measures often excel at reflecting observable phenomena distinct from an individual’s inner experiences and knowledge of themselves. That said, such external measures may be prone to construct underrepresentation, construct irrelevance, and other limits.

Against that, we acknowledge that data do sometimes converge, such as in the case of self- and observer-rated extraversion where both the person and the observer are witnessing the same social behavior. In such instances, it makes sense to follow Funder’s (1995) suggestion to average the measures to enhance their overall validity.

Positionality, Limitations, and Generality of the Classification System

This theoretical work was developed within the Personality Lab of the University of New Hampshire. The review is both informed and limited by the authors’ experiences: both authors were educated and chiefly lived in the Northeast United States. The Personality Lab’s mission is to foster personality research in the belief that individual variation in mental life is important to respect in oneself and in others. As part of their work, both authors have employed many of the measurement approaches described herein. This review reflects their backgrounds.

Historical records indicate that personality judgments have been made across Europe, the Middle East, and Asia, for over two millennia (Mayer et al., 2011). The nature and meaning of such judgments, however, may vary by culture and, likely also by the prevalence of literacy within a culture (Henrich, 2020; Ong, 2002). The research on which we drew for understanding measures was almost all collected in a Western context and may not generalize beyond those boundaries. Some aspects of cognition and cognitive styles vary across cultures (Briceño et al., 2023; San Martin et al., 2019; Triandis & Gelfand, 1998). For example, self-judgments vary cross-culturally in regard to self-enhancement (Hampton & Varnum, 2018; Kurman, 2002; Salvador et al., 2022) and the reference groups people judge themselves against (Lira et al., 2022). Observer judgments appear to vary between individualistic versus collectivist cultures depending upon the target person’s in- or outgroup status (Malloy et al., 2004). Starting from an emic approach indicates greater variability in personality traits than has been recognized in the past in classic Western models (e.g., Durkee et al., 2022; Gardiner et al., 2020; Thalmayer et al., 2021; van der Linden et al., 2018; Zeinoun et al., 2017). For these reasons, both the personality attributes discussed and the evidence concerning which measurement approaches are optimal may be regarded as relevant chiefly to Westernized societies given what is known at this time.

As per journal policy, we estimated the demographics of the cited authors. They were approximately 31% female and 69% male; 12% Asian, 9% Black, 6% Hispanic, 2% Native American, 5% Pacific Islander, and 66% White according to Namsor.app, using US Census labels. A random subsample of 30 cited works (192 authors) indicated their geographical distribution to be 72% North American, 22% European (14% non-English-Speaking), 5% Asian, and 3% Australian.

Observations on Improving the Specification of Measures and Their Data

Our review demarcated a dozen or more classes of data for assessing features of personality, each of which has its special merits. Our hope is that by collecting them here, and explicating something of their merits and drawbacks, we might encourage researchers to select measurement approaches that are best suited for their research programs and avoid assessments that would lead to invalid measurement. We also hoped to encourage researchers to consider the breadth of measures available. For example, the 1980s saw the introduction and focus on a new wave of personal-construct measures that examined everything from feared and desired selves to self-discrepancies and self-complexity, all of which yielded unique and intriguing findings (e.g., Linville, 1987; Markus & Nurius, 1986; Showers et al., 2015). Yet today such indices seem underemployed; similarly for thematic measures, which also provide unique predictions (Schultheiss & Schultheiss, 2014; Slabbinck et al., 2013).

A further step needed, as we see it, is to regularly clarify what one is *actually* measuring by reporting the processes on which a measure relies, and their relevance to the targeted feature; that is, not simply intelligence but ability-measured intelligence; not simply achievement motivation but thematically-assessed achievement motivation (or *n* achievement). When the measure does not measure the actual target well, as in self-judged intelligence, that should be plainly noted.

Those are easy recommendations to make, but harder to implement. We do not wish to make research reports more laborious to read and write than they already can be. Still, clarifying the rationale behind the selection of a measure can help others to better evaluate the research. Better organizing and understanding our data and what they indicate is a key part of psychology's infrastructure and these recommendations concerning their use may contribute to better-informed practices by personality psychologists and those in other disciplines who employ personality measures. It is possible, as well, that educating the public about the strengths and weaknesses of these information sources may allow people to better evaluate the data about personality they encounter, and to better understand themselves and the people around them.

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Supplemental Material

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References

- Aarts, H. (2007). On the emergence of human goal pursuit: The nonconscious regulation and motivation of goals. *Social and Personality Psychology Compass*, 1(1), 183–201. <https://doi.org/10.1111/j.1751-9004.2007.00014.x>
- Allen, V. D., Weissman, A., Hellwig, S., MacCann, C., & Roberts, R. D. (2014). Development of the short form of the Situational Test of Emotional Understanding-Brief (STEU-B) using item response theory. *Personality and Individual Differences*, 65, 3–7. <https://doi.org/10.1016/j.paid.2014.01.051>
- Allport, G. W. (1942). *The use of personal documents in psychological science: Prepared for the Committee on Appraisal of Research*. Social Science Research Council. <https://doi.org/10.1037/11389-000>
- Allport, G. W. (1961). *Pattern and growth in personality*. Holt, Reinhart & Winston.
- Azucar, D., Marengo, D., & Settanni, M. (2018). Predicting the Big 5 personality traits from digital footprints on social media: A meta-analysis. *Personality and Individual Differences*, 124, 150–159. <https://doi.org/10.1016/j.paid.2017.12.018>
- Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmukle, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological Science*, 21(3), 372–374. <https://doi.org/10.1177/0956797609360756>
- Bateman, C. R., & Valentine, S. R. (2021). Consumers' personality characteristics, judgment of salesperson ethical treatment, and nature of purchase involvement. *Journal of Business Ethics*, 169(2), 309–331.
- Berry, C. M., Page, R. C., & Sackett, P. R. (2007). Effects of Self-deceptive enhancement on personality-job performance relationships. *International Journal of Selection and Assessment*, 15(1), 94–109. <https://doi.org/10.1111/j.1468-2389.2007.00374.x>
- Biaggio, M. K. (1980). Assessment of anger arousal. *Journal of Personality Assessment*, 44(3), 289–298. https://doi.org/10.1207/s15327752jpa4403_12
- Bleidorn, W., & Hopwood, C. J. (2019). Using machine learning to advance personality assessment and theory. *Personality and Social Psychology Review*, 23(2), 190–203. <https://doi.org/10.1177/1088868318772990>

- Bleidorn, W., Hopwood, C. J., Back, M. D., Denissen, J. J. A., Hennecke, M., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Roberts, B. W., Wagner, J., Wrzus, C., & Zimmermann, J. (2020). Longitudinal experience-wide association studies—A framework for studying personality change. *European Journal of Personality*, 34(3), 285–300. <https://doi.org/10.1002/per.2247>
- Bornstein, R. F. (2007). Toward a process-based framework for classifying personality tests: Comment on Meyer and Kurtz (2006). *Journal of Personality Assessment*, 89(2), 202–207. <https://doi.org/10.1080/00223890701518776>
- Bornstein, R. F. (2011). Toward a process-focused model of test score validity: Improving psychological assessment in science and practice. *Psychological Assessment*, 23(2), 532–544. <https://doi.org/10.1037/a0022402>
- Bowers, K. S. (1984). *The unconscious reconsidered* (D. Meichenbaum, Ed.). Wiley-Interscience.
- Bowers, K. S. (1987). “Revisioning the unconscious”: Response to commentaries. *Canadian Psychology/Psychologie Canadienne*, 28(2), 124–132. <https://doi.org/10.1037/h0079887>
- Boyle, G. J., Saklofske, D. H., & Matthews, G. (2012). Introduction: Clinical neuropsychological measurement and assessment. In Boyle, G. J., Saklofske, D. H., & Matthews, G. (Eds.), *Psychological assessment: Vol. III*. Sage.
- Briceño, E. M., Arce Rentería, M., Gross, A. L., Jones, R. N., Gonzalez, C., Wong, R., Weir, D. R., Langa, K. M., & Manly, J. J. (2023). A cultural neuropsychological approach to harmonization of cognitive data across culturally and linguistically diverse older adult populations. *Neuropsychology*, 37(3), 247–257. <https://doi.org/10.1037/neu0000816>
- Brigandt, I., & Love, A. (2023). Reductionism in biology. In E. N. Zalta & U. Nodelman (Eds.), *The Stanford Encyclopedia of philosophy* (Summer 2023). Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/archives/sum2023/entries/reduction-biology/>
- Buss, D. M., & Craik, K. H. (1983). The act frequency approach to personality. *Psychological Review*, 90(2), 105–126. <https://doi.org/10.1037/0033-295X.90.2.105>
- Calkins, M. W. (1915). The self in scientific psychology. *The American Journal of Psychology*, 26(4), 495–524. <https://doi.org/10.2307/1412811>
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81–105. <https://doi.org/10.1037/h0046016>
- Carere, C., & Locurto, C. (2018). Interaction between animal personality and animal cognition. *Current Zoology*, 57(4), 491–498.
- Carlson, E. N., Vazire, S., & Furr, R. M. (2011). Meta-insight: Do people really know how others see them? *Journal of Personality and Social Psychology*, 101(4), 831–846. <https://doi.org/10.1037/a0024297>
- Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. Cambridge University Press.
- Cattell, R. B. (1965). *The scientific analysis of personality*. Penguin Books.
- Chan, D. (2009). So why ask me? Are self-report data really that bad? In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences* (pp. 309–336). Routledge/Taylor & Francis Group.
- Chapman, B. P., & Goldberg, L. R. (2017). Act-frequency signatures of the Big Five. *Personality and Individual Differences*, 116, 201–205. <https://doi.org/10.1016/j.paid.2017.04.049>
- Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1978). Body-image aberration in schizophrenia. *Journal of Abnormal Psychology*, 87(4), 399–407. <https://doi.org/10.1037/0021-843X.87.4.399>
- Chartrand, T. L., & Bargh, J. A. (2002). Nonconscious motivations: Their activation, operation, and consequences. In A. Tesser, D. A. Stapel, & J. V. Wood (Eds.), *Self and motivation: Emerging psychological perspectives* (pp. 13–41). American Psychological Association. <https://doi.org/10.1037/10448-001>
- Connelly, B. S., & Hulsheger, U. R. (2012). A narrower scope or a clearer lens for personality? Examining sources of observers’ advantages over self-reports for predicting performance. *Journal of Personality*, 80(3), 603–631. <https://doi.org/10.1111/j.1467-6494.2011.00744.x>
- Connelly, B. S., & Ones, D. S. (2010). An other perspective on personality: Meta-analytic integration of observers’ accuracy and predictive validity. *Psychological Bulletin*, 136(6), 1092–1122. <https://doi.org/10.1037/a0021212>
- Connolly, J. J., Kavanagh, E. J., & Viswesvaran, C. (2007). The convergent validity between self and observer ratings of personality: A meta-analytic review. *International Journal of Selection and Assessment*, 15(1), 110–117. <https://doi.org/10.1111/j.1468-2389.2007.00371.x>
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Psychological Assessment Resources.
- Craik, K. H. (2008). *Reputation: A network interpretation*. Oxford University Press.
- Cramer, P. (2015). Defense mechanisms: 40 years of empirical research. *Journal of Personality Assessment*, 97(2), 114–122. <https://doi.org/10.1080/00223891.2014.947997>
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.
- Cvencek, D., Meltzoff, A. N., Maddox, C. D., Nosek, B. A., Rudman, L. A., Devos, T., Dunham, Y., Baron, A. S., Steffens, M. C., Lane, K., Horcajo, J., Ashburn-Nardo, L., Quinby, A., Srivastava, S. B., Schmidt, K., Aidman, E., Tang, E., Farnham, S., Mellott, D. S., . . . Greenwald, A. G. (2021). Meta-analytic use of balanced identity theory to validate the implicit association test. *Personality and Social Psychology Bulletin*, 47(2), 185–200. <https://doi.org/10.1177/0146167220916631>
- Day, A. L., & Carroll, S. A. (2008). Faking emotional intelligence (EI): Comparing response distortion on ability and trait-based EI measures. *Journal of Organizational Behavior*, 29(6), 761–784. <https://doi.org/10.1002/job.485>
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/psychologie Canadienne*, 49(3), 182–185.
- De Los Reyes, A., Augenstein, T. M., Wang, M., Thomas, S. A., Drabick, D. A. G., Burgers, D. E., & Rabinowitz, J. (2015). The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological Bulletin*, 141(4), 858–900. <https://doi.org/10.1037/a0038498>
- Dennett, D. C. (1978). Toward a cognitive theory of consciousness. In D. C. Dennett. (Ed.), *Brainstorms: Philosophical essays on mind and psychology* (pp. 149–173). MIT Press.

- Dodorico McDonald, J. (2008). Measuring personality constructs: The advantages and disadvantages of self-reports, informant reports and behavioural assessments. *Enquire*, 1(1), 75–94.
- Duncker, K., & Lees, L. S. (1945). On problem-solving. *Psychological Monographs*, 58(5), i–113. <https://doi.org/10.1037/h0093599>
- Dunning, D. (2005). *Self-insight: Roadblocks and detours on the path to knowing thyself*. Psychology Press.
- Durkee, P. K., Lukaszewski, A. W., von Rueden, C. R., Gurven, M. D., Buss, D. M., & Tucker-Drob, E. M. (2022). Niche diversity predicts personality structure across 115 nations. *Psychological Science*, 33(2), 285–298. <https://doi.org/10.1177/09567976211031571>
- Eid, M., & Nussbeck, F. W. (2009). The multitrait-multimethod matrix at 50! *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, 5(3), 71–71. <https://doi.org/10.1027/1614-2241.5.3.71>
- Ellison, W. D., Trahan, A. C., Pinzon, J. C., Gillespie, M. E., Simmons, L. M., & King, K. Y. (2020). For whom, and for what, is experience sampling more accurate than retrospective report? *Personality and Individual Differences*, 163, 110071. <https://doi.org/10.1016/j.paid.2020.110071>
- Embretson, S. E. (2016). Understanding examinees' responses to items: Implications for measurement. *Educational Measurement: Issues and Practice*, 35(3), 6–22. <https://doi.org/10.1111/emip.12117>
- Embretson, S. E., & Reise, S. P. (2000). *Item response theory for psychologists*. Lawrence Erlbaum Associates.
- Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology*, 54(6), 1040–1048. <https://doi.org/10.1037/0022-3514.54.6.1040>
- Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review*, 87(3), 215–251. <https://doi.org/10.1037/0033-295X.87.3.215>
- Felici, C., Madeddu, F., Doering, S., Clarkin, J. F., & Preti, E. (2023). Knowing me, knowing you: A systematic review of object relations assessment. *Psychoanalytic Psychology*, 40, 309–319. <https://doi.org/10.1037/pap0000460>
- Fiske, D. W. (1987). On understanding our methods and their effects. *Diagnostica*, 33(3), 188–194.
- Fiske, S. T., Bersoff, D. N., Borgida, E., Deaux, K., & Heilman, M. E. (1991). Social science research on trial: Use of sex stereotyping research in *Price Waterhouse v Hopkins*. *American Psychologist*, 46(10), 1049–1060. <https://doi.org/10.1037/0003-066X.46.10.1049>
- Forgas, J. P., & Bower, G. H. (1987). Mood effects on person-perception judgments. *Journal of Personality and Social Psychology*, 53(1), 53–60. <https://doi.org/10.1037/0022-3514.53.1.53>
- Forgas, J. P., & Bower, G. H. (2001). Mood effects on person-perception judgments. In W. G. Parrott & W. G. Parrott (Eds.), *Emotions in social psychology: Essential readings* (1–Book, Section, pp. 204–215). Psychology Press. <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2000-12576-011&site=ehost-live>
- Frank, L. K. (1939). Projective methods for the study of personality. *The Journal of Psychology: Interdisciplinary and Applied*, 8, 389–413. <https://doi.org/10.1080/doi.org/00223980.1939.9917671>
- Freund, P. A., & Kasten, N. (2012). How smart do you think you are? A meta-analysis on the validity of self-estimates of cognitive ability. *Psychological Bulletin*, 138(2), 296–321. <https://doi.org/10.1037/a0026556>
- Funder, D. C. (1995). On the accuracy of personality judgment: A realistic approach. *Psychological Review*, 102(4), 652–670. <https://doi.org/10.1037/0033-295X.102.4.652>
- Funder, D. C. (1997). *The personality puzzle*. W. W. Norton.
- Funder, D. C. (2016). *The personality puzzle* (7th ed.). W. W. Norton.
- Furnham, A. (2017). The contribution of others' methods in recruitment and selection: Biodata, references, résumés and CVs. In H. W. Goldstein, E. D. Pulakos, J. Passmore, & C. Semedo (Eds.), *The Wiley Blackwell handbook of the psychology of recruitment, selection and employee retention* (pp. 202–225). Wiley-Blackwell. <https://doi.org/10.1002/9781118972472.ch10>
- Furr, R. M. (2009). Personality psychology as a truly behavioural science. *European Journal of Personality*, 23(5), 369–401. <https://doi.org/10.1002/per.724>
- Furukawa, T. (1927). A study of temperament by means of human blood groups. *Japanese Journal of Psychology*, 2(4), 612–634. <https://doi.org/10.4992/jjpsy.2.612>
- Galton, F. (1869). *Hereditary genius: An inquiry into its laws and consequences*. Macmillan. <https://doi.org/10.1037/13474-000>
- Gardiner, G., Lee, D., Baranski, E., & Funder, D. (2020). Happiness around the world: A combined etic-emic approach across 63 countries. *PLOS ONE*, 15(12), Article e0242718. <https://doi.org/10.1371/journal.pone.0242718>
- Geiser, C., & Simmons, T. G. (2021). Do method effects generalize across traits (and what if they don't)? *Journal of Personality*, 89, 382–401. <https://doi.org/10.1111/jopy.12625>
- Gertler, B. (2003). Philosophical issues about self-knowledge. In B. Gertler (Ed.), *Privileged access: Philosophical accounts of self-knowledge* (1–Book, Section, p. xxii). Ashgate Publishers.
- Goff, M., & Ackerman, P. L. (1992). Personality-intelligence relations: Assessment of typical intellectual engagement. *Journal of Educational Psychology*, 84(4), 537–552. <https://doi.org/10.1037/0022-0663.84.4.537>
- Graceffo, R. A., Mihura, J. L., & Meyer, G. J. (2014). A meta-analysis of an implicit measure of personality functioning: The Mutuality of Autonomy Scale. *Journal of Personality Assessment*, 96(6), 581–595. <https://doi.org/10.1080/00223891.2014.919299>
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102(1), 4–27. <https://doi.org/10.1037/0033-295X.102.1.4>
- Gresham, F. M., Elliott, S. N., Cook, C. R., Vance, M. J., & Kettler, R. (2010). Cross-informant agreement for ratings for social skill and problem behavior ratings: An investigation of the Social Skills Improvement System—Rating Scales. *Psychological Assessment*, 22(1), 157–166. <https://doi.org/10.1037/a0018124>
- Hall, J. A., Park, N., Song, H., & Cody, M. J. (2010). Strategic misrepresentation in online dating: The effects of gender, self-monitoring, and personality traits. *Journal of Social and Personal Relationships*, 27(1), 117–135. <https://doi.org/10.1177/0265407509349633>
- Hambleton, R. K., & Jones, R. W. (1993). Comparison of classical test theory and item response theory and their applications to test development. *Educational Measurement: Issues and Practice*, 12(3), 38–47. <https://doi.org/10.1111/j.1745-3992.1993.tb00543.x>
- Hampton, R. S., & Varnum, M. E. W. (2018). Do cultures vary in self-enhancement? ERP, behavioral, and self-report evidence.

- Social Neuroscience*, 13(5), 566–578. <https://doi.org/10.1080/17470919.2017.1361471>
- Harari, G. M., Vaid, S. S., Müller, S. R., Stachl, C., Marrero, Z., Schoedel, R., Bühner, M., Gosling, S. D., & Rauthmann, J. (2020). Personality sensing for theory development and assessment in the digital age. *European Journal of Personality*, 34(5), 649–669.
- Harsh, C. M., Beebe-Center, J. G., & Beebe-Center, R. (1939). Further evidence regarding preferential judgment of polygonal forms. *The Journal of Psychology: Interdisciplinary and Applied*, 7, 343–350. <https://doi.org/10.1080/00223980.1939.9917641>
- Henrich, J. (2020). *The WEIRD people in the world: How the west became psychologically peculiar and particularly prosperous*. Farrar, Straus and Giroux.
- Henry, E. R. (1966). Conference on the use of biographical data in psychology. *American Psychologist*, 21(3), 247–249. <https://doi.org/10.1037/h0021141>
- Herreen, D., & Zajac, I. T. (2017). The reliability and validity of a self-report measure of cognitive abilities in older adults: More personality than cognitive function. *Journal of Intelligence*, 6(1), 1. <https://doi.org/10.3390/jintelligence6010001>
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319–340. <https://doi.org/10.1037/0033-295X.94.3.319>
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31(10), 1369–1385. <https://doi.org/10.1177/0146167205275613>
- Hogan, R., & Shelton, D. (1998). A socioanalytic perspective on job performance. *Human Performance*, 11(2–3), 129–144. https://doi.org/10.1207/s15327043hup1102&3_2
- Hoosen, N., Davids, E. L., Vries, P. J., & Shung-King, M. (2018). “The Strengths and Difficulties Questionnaire (SDQ) in Africa: A scoping review of its application and validation”: Correction. *Child and Adolescent Psychiatry and Mental Health*, 12, 11. <https://doi.org/10.1186/s13034-018-0217-4>
- Hubley, A. M., & Zumbo, B. D. (2017). Response processes in the context of validity: Setting the stage. In B. D. Zumbo & A. M. Hubley (Eds.), *Understanding and investigating response processes in validation research* (Vol. 69, pp. 1–12). Springer. https://doi.org/10.1007/978-3-319-56129-5_1
- Hughes, P. (1927). Theory and practice in psychology. *Journal of Philosophy*, 24, 113–120. <https://doi.org/10.2307/2015081>
- Ishitani, T. T. (2010). Exploring the effects of congruence and Holland’s personality codes on job satisfaction: An application of hierarchical linear modeling techniques. *Journal of Vocational Behavior*, 76(1), 16–24. <https://doi.org/10.1016/j.jvb.2009.06.014>
- Jacoby, L. L., & Witherspoon, D. (1982). Remembering without awareness. *Canadian Journal of Psychology/Revue Canadienne de Psychologie*, 36(2), 300–324. <https://doi.org/10.1037/h0080638>
- James, W. (1920). *Psychology: A briefer course* (Original work published 1892). H. Holt.
- Jeannerod, M. (2003). The mechanism of self-recognition in humans. *Behavioural Brain Research*, 142(1–2), 1–15. [https://doi.org/10.1016/s0166-4328\(02\)00384-4](https://doi.org/10.1016/s0166-4328(02)00384-4)
- Joint_Committee. (1999). *Standards for educational and psychological testing*. American Psychological Association.
- Joint_Committee. (2014). *Standards for educational and psychological testing*. American Psychological Association.
- Joseph, D. L., Jin, J., Newman, D. A., & O’Boyle, E. H. (2015). Why does self-reported emotional intelligence predict job performance? A meta-analytic investigation of mixed EI. *Journal of Applied Psychology*, 100(2), 298–342. <https://doi.org/10.1037/a0037681>
- Kelley, T. L. (1916). A constructive ability test. *Journal of Educational Psychology*, 7(1), 1–16. <https://doi.org/10.1037/h0070426>
- Kelsey, K. R., Rogers, R., & Robinson, E. V. (2015). Self-report measures of psychopathy: What is their role in forensic assessments? *Journal of Psychopathology and Behavioral Assessment*, 37(3), 380–391. <https://doi.org/10.1007/s10862-014-9475-5>
- Kenny, D. A., & West, T. V. (2010). Similarity and agreement in self- and other perception: A meta-analysis. *Personality and Social Psychology Review*, 14(2), 196–213. <https://doi.org/10.1177/1088868309353414>
- Kihlstrom, J. F. (2021). Consciousness, the unconscious, and the self. *Psychology of Consciousness: Theory, Research, and Practice*, 9, 78–92. <https://doi.org/10.1037/cns0000285>
- Klein, S. B. (2013). Klein and Loftus’s model of trait self-knowledge: The importance of familiarizing oneself with the foundational research prior to reading about its neuropsychological applications. *Frontiers in Human Neuroscience*, 7, Article 699. <https://doi.org/10.3389/fnhum.2013.00699>
- Klein, S. B., Cosmides, L., Murray, E. R., & Tooby, J. (2004). On the acquisition of knowledge about personality traits: Does learning about the self engage different mechanisms than learning about others. *Social Cognition*, 22(4), 367–390. <https://doi.org/10.1521/soco.22.4.367.38295>
- Kourany, R. F., Gwinn, M., & Martin, J. E. (1980). Adolescent babysitting: A 30-year-old phenomenon. *Adolescence*, 15(60), 939–945.
- Kurman, J. (2002). Measured cross-cultural differences in self-enhancement and the sensitivity of the self-enhancement measure to the modesty response. *Cross-Cultural Research: The Journal of Comparative Social Science*, 36(1), 73–75. <https://doi.org/10.1177/1069397102036001004>
- Lai, S., Sun, B., Wu, F., & Xiao, R. (2020). Automatic personality identification using students’ online learning behavior. *IEEE Transactions on Learning Technologies*, 13(1), 26–37. <https://doi.org/10.1109/TLT.2019.2924223>
- Lang, G. (2021, November 13). AI’s medical applications come with risks. *Wall Street Journal*, A 12.
- Larsen, R. J., & Buss, D. M. (2014). *Personality psychology: Domains of knowledge about human nature*. McGraw Hill.
- Lee, K., & Ashton, M. C. (2017). Acquaintanceship and self/observer agreement in personality judgment. *Journal of Research in Personality*, 70, 1–5. <https://doi.org/10.1016/j.jrp.2017.05.001>
- Li, L., Li, L. M. W., Ma, J., Lu, A., & Dai, Z. (2023). The relationship between personality traits and well-being via brain functional connectivity. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 24(6), 2127–2152. <https://doi.org/10.1007/s10902-023-00674-y>
- Linville, P. W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. *Journal of*

- Personality and Social Psychology*, 52(4), 663–676. <https://doi.org/10.1037/0022-3514.52.4.663>
- Lira, B., O'Brien, J. M., Peña, P. A., Galla, B. M., D'Mello, S., Yeager, D. S., Defnet, A., Kautz, T., Munkacsy, K., & Duckworth, A. L. (2022). Large studies reveal how reference bias limits policy applications of self-report measures. *Scientific Reports*, 12(1), Article 1. <https://doi.org/10.1038/s41598-022-23373-9>
- Lohr, S. (2013, February 1). The origins of “Big Data”: An etymological detective story. *Bits Blog*. <https://bits.blogs.nytimes.com/2013/02/01/the-origins-of-big-data-an-etymological-detective-story/>
- Mael, F. A. (1991). A conceptual rationale for the domain and attributes of biodata items. *Personnel Psychology*, 44(4), 763–792. <https://doi.org/10.1111/j.1744-6570.1991.tb00698.x>
- Mael, F. A., & Hirsch, A. C. (1993). Rainforest empiricism and quasi-rationality: Two approaches to objective biodata. *Personnel Psychology*, 46(4), 719–738. <https://doi.org/10.1111/j.1744-6570.1993.tb01566.x>
- Malloy, T. E., Albright, L., Diaz-Loving, R., Dong, Q., & Lee, Y. T. (2004). Agreement in personality judgments within and between nonoverlapping social groups in collectivist cultures. *Personality and Social Psychology Bulletin*, 30(1), 106–117. <https://doi.org/10.1177/0146167203258863>
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, 41(9), 954–969. <https://doi.org/10.1037/0003-066X.41.9.954>
- Mashey, J. R. (1998). *Big Data. . . and the next wave of InfraStress*. Silicon Graphics. https://www.usenix.org/legacy/publications/library/proceedings/usenix99/invited_talks/mashey.pdf
- Mayer, J. D. (1995). The system-topics framework and the structural arrangement of systems within and around personality. *Journal of Personality*, 63(3), 459–493. <https://doi.org/10.1111/j.1467-6494.1995.tb00503.x>
- Mayer, J. D. (1998a). A systems framework for the field of personality. *Psychological Inquiry*, 9(2), 118–144. https://doi.org/10.1207/s15327965pli0902_10
- Mayer, J. D. (1998b). The systems framework: Reception, improvement, and implementation. *Psychological Inquiry*, 9(2), 169–179. https://doi.org/10.1207/s15327965pli0902_19
- Mayer, J. D. (2004). A classification system for the data of personality psychology and adjoining fields. *Review of General Psychology*, 8(3), 208–219. <https://doi.org/10.1037/1089-2680.8.3.208>
- Mayer, J. D. (2005). A tale of two visions: Can a new view of personality help integrate psychology? *American Psychologist*, 60(4), 294–307. <https://doi.org/10.1037/0003-066X.60.4.294>
- Mayer, J. D. (2007). Asserting the definition of personality. *P: The Online Newsletter for Personality Science*, 1(1). <https://www.personality-arp.org/html/newsletter01/jdm.pdf>
- Mayer, J. D. (2015). The personality systems framework: Current theory and development. *Journal of Research in Personality*, 56, 4–14. <https://doi.org/10.1016/j.jrp.2015.01.001>
- Mayer, J. D. (2019). An integrated approach to personality assessment based on the personality systems framework. *Journal of Personality Assessment*, 102, 443–456. <https://doi.org/10.1080/00223891.2018.1555539>
- Mayer, J. D., & Bryan, V. M. (2024). *Technical supplement for “On personality measures” and their data.* Open Science Foundation. <https://osf.io/a27k3>
- Mayer, J. D., Carlsmith, K. M., & Chabot, H. F. (1998). Describing the person’s external environment: Conceptualizing and measuring the life space. *Journal of Research in Personality*, 32(3), 253–296. <https://doi.org/10.1006/jrpe.1998.2220>
- Mayer, J. D., Caruso, D. R., & Panter, A. T. (2021). How do people think about understanding personality—And what do such thoughts reflect? *Personality and Individual Differences*, 178, 110671.
- Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, 63(1), 119–132. <https://doi.org/10.1037/0022-3514.63.1.119>
- Mayer, J. D., Lin, S. C., & Korogodsky, M. (2011). Exploring the universality of personality judgments: Evidence from the Great Transformation (1000 BCE–200 BCE). *Review of General Psychology*, 15, 65–76. <https://doi.org/10.1037/a0020711>
- Mayer, J. D., Panter, A. T., & Caruso, D. R. (2020). When people estimate their personal intelligence who is overconfident? Who is accurate? *Journal of Personality*, 88, 1129–1144. <https://doi.org/10.1111/jopy.12561>
- McAdams, D. P. (1996). Personality, Modernity, and the storied self: A contemporary framework for studying persons. *Psychological Inquiry*, 7(4), 295–321. https://doi.org/10.1207/s15327965pli0704_1
- McAdams, D. P. (2006). *The person: A new introduction to personality psychology*. John Wiley.
- McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, 61(3), 204–217. <https://doi.org/10.1037/0003-066X.61.3.204>
- McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review*, 96(4), 690–702. <https://doi.org/10.1037/0033-295X.96.4.690>
- McDaniel, M. A., & Snell, A. F. (1999). Holland’s theory and occupational information. *Journal of Vocational Behavior*, 55(1), 74–85. <https://doi.org/10.1006/jvbe.1999.1698>
- McLean, K. C., Syed, M., Pasupathi, M., Adler, J. M., Dunlop, W. L., Drustup, D., Fivush, R., Graci, M. E., Lilgendahl, J. P., Lodi-Smith, J., McAdams, D. P., & McCoy, T. P. (2020). The empirical structure of narrative identity: The initial Big Three. *Journal of Personality and Social Psychology*, 119(4), 920–944. <https://doi.org/10.1037/pspp0000247>
- Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., Eisman, E. J., Kubiszyn, T. W., & Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist*, 56(2), 128–165. <https://doi.org/10.1037/0003-066X.56.2.128>
- Mihura, J. L., Meyer, G. J., Dumitrascu, N., & Bombel, G. (2013). The validity of individual Rorschach variables: Systematic reviews and meta-analyses of the comprehensive system. *Psychological Bulletin*, 139(3), 548–605. <https://doi.org/10.1037/a0029406>
- Mischel, W., Shoda, Y., & Mendoza-Denton, R. (2002). Situation-behavior profiles as a locus of consistency in personality. *Current Directions in Psychological Science*, 11(2), 50–54. <https://doi.org/10.1111/1467-8721.00166>
- Morgan, C. D., & Murray, H. A. (1935). A method for investigating fantasies: The thematic apperception test. *Archives of*

- Neurology & Psychiatry*, 34, 289–306. <https://doi.org/10.1001/archneurpsyc.1935.02250200049005>
- Morgan, J. H. (2014). The interpersonal psychotherapy of Harry Stack Sullivan: Remember. *Journal of Psychology & Psychotherapy*, 4(6). <https://www.longdom.org/open-access/the-interpersonal-psychotherapy-of-harry-stack-sullivan-remembering-the-legacy-10603.html>
- Mount, M. K., Barrick, M. R., & Strauss, J. P. (1994). Validity of observer ratings of the Big Five personality factors. *Journal of Applied Psychology*, 79(2), 272–280. <https://doi.org/10.1037/0021-9010.79.2.272>
- Nagel, T., Dennett, D. C., Nelson, T. O., Leonesio, R. J., Landwehr, R. S., Narens, L., Vesonder, G. T., Voss, J. F., & Knox, V. J. (1992). Privileged access and consciousness. In T. O. Nelson (Ed.), *Metacognition: Core readings* (1–Book, Section, pp. 27–99). Allyn & Bacon.
- Nemechek, S., & Olson, K. R. (1999). Five-factor personality similarity and marital adjustment. *Social Behavior and Personality: An International Journal*, 27(3), 309–318. <https://doi.org/10.2224/sbp.1999.27.3.309>
- Neubauer, A. C., & Hofer, G. (2021). Self-estimates of abilities are a better reflection of individuals' personality traits than of their abilities and are also strong predictors of professional interests. *Personality and Individual Differences*, 169, 1–15. <https://doi.org/10.1016/j.paid.2020.109850>
- Newbury, J. B., Arseneault, L., Moffitt, T. E., Caspi, A., Danese, A., Baldwin, J. R., & Fisher, H. L. (2018). Measuring childhood maltreatment to predict early-adult psychopathology: Comparison of prospective informant-reports and retrospective self-reports. *Journal of Psychiatric Research*, 96, 57–64. <https://doi.org/10.1016/j.jpsychires.2017.09.020>
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84(3), 231–259. <https://doi.org/10.1037/0033-295X.84.3.231>
- Oldroyd, D. R. (1986). *The arch of knowledge*. Methuen.
- Oltmanns, J. R., Jackson, J. J., & Oltmanns, T. F. (2020). Personality change: Longitudinal self-other agreement and convergence with retrospective-reports. *Journal of Personality and Social Psychology*, 118(5), 1065–1079. <https://doi.org/10.1037/pspp0000238>
- Ong, W. (2002). Orality and literacy: Writing restructures consciousness. In D. Finkelstein & A. McCleery (Eds.), *The book history reader* (pp. 105–117). Routledge.
- Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology*, 46(3), 598–609. <https://doi.org/10.1037/0022-3514.46.3.598>
- Paulhus, D. L., & Reid, D. B. (1991). Enhancement and denial in socially desirable responding. *Journal of Personality and Social Psychology*, 60(2), 307–317. <https://doi.org/10.1037/0022-3514.60.2.307>
- Paunonen, S. V., & Kam, C. (2014). The accuracy of roommate ratings of behaviors versus beliefs. *Journal of Research in Personality*, 52, 55–67. <https://doi.org/10.1016/j.jrp.2014.07.006>
- Pervin, L. (2009). The relationship between biology and psychology. *Roczniki Psychologiczne*, XII(1), 7–21.
- Phan, L. V., & Rauthmann, J. F. (2021). Personality computing: New frontiers in personality assessment. *Social and Personality Psychology Compass*, 15(7), Article e12624. <https://doi.org/10.1111/spc3.12624>
- Pincus, A. L., & Gurtman, M. B. (2003). Interpersonal assessment. In J. S. Wiggins (Ed.), *Paradigms of personality assessment* (pp. 246–261). Guilford.
- Pintner, R. (1918). Intelligence as estimated from photographs. *Psychological Review*, 25(4), 286–296. <https://doi.org/10.1037/h0072720>
- Plato, *Phaedrus*, section 265e. (360 C.E.). <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0174%3Atext%3DPhaedrus%3Asection%3D265e>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Ralph, L. J., Foster, D. G., & Rocca, C. H. (2020). Comparing prospective and retrospective reports of pregnancy intention in a longitudinal cohort of US women. *Perspectives on Sexual and Reproductive Health*, 52(1), 39–48. <https://doi.org/10.1363/psrh.12134>
- Rau, R., Carlson, E. N., Back, M. D., Barranti, M., Gebauer, J. E., Human, L. J., Leising, D., & Nestler, S. (2021). What is the structure of perceiver effects? On the importance of global positivity and trait-specificity across personality domains and judgment contexts. *Journal of Personality and Social Psychology*, 120(3), 745–764. <https://doi.org/10.1037/pspp0000278>
- Rich, G. J. (1928). A biochemical approach to the study of personality. *The Journal of Abnormal and Social Psychology*, 23(2), 158–175. <https://doi.org/10.1037/h0072558>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Saarimäki, H., Gotsopoulos, A., Jääskeläinen, I. P., Lampinen, J., Vuilleumier, P., Hari, R., Sams, M., & Nummenmaa, L. (2015). Discrete Neural Signatures of Basic Emotions. *Cerebral Cortex*, 26, 2563–2573. <http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=25924952&site=ehost-live>
- Salvador, C. E., Kamikubo, A., Kraus, B., Hsiao, N.-C., Hu, J.-F., Karasawa, M., & Kitayama, S. (2022). Self-referential processing accounts for cultural variation in self-enhancement versus criticism: An electrocortical investigation. *Journal of Experimental Psychology: General*, 151(8), 1904–1918. <https://doi.org/10.1037/xge0001154>
- San Martin, A., Schug, J., & Maddux, W. W. (2019). Relational mobility and cultural differences in analytic and holistic thinking. *Journal of Personality and Social Psychology*, 116(4), 495–518. <https://doi.org/10.1037/pspa0000142>
- Schmitt, D. P., & Allik, J. (2005). Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *Journal of Personality and Social Psychology*, 89(4), 623–642. <https://doi.org/10.1037/0022-3514.89.4.623>
- Schuler, K., Ruggero, C. J., Mahaffey, B., Gonzalez, A. L., Callahan, J., Boals, A., Waszczuk, M. A., Luft, B. J., & Kotov, R. (2021). When hindsight is not 20/20: Ecological momentary assessment of PTSD symptoms versus retrospective report. *Assessment*, 28(1), 238–247. <https://doi.org/10.1177/1073191119869826>

- Schultheiss, O. C., & Schultheiss, M. (2014). Implicit motive profile analysis: An if-then contingency approach to the picture-story exercise. *Social and Personality Psychology Compass*, 8(1), 1–16. <https://doi.org/10.1111/spc3.12082>
- Sharabi, L. L., & Caughlin, J. P. (2019). Deception in online dating: Significance and implications for the first offline date. *New Media & Society*, 21(1), 229–247. <https://doi.org/10.1177/1461444818792425>
- Sheldon, K. M., Cheng, C., & Hilpert, J. (2011). Understanding well-being and optimal functioning: Applying the Multilevel Personality in Context (MPIC) Model. *Psychological Inquiry*, 22, 1–16.
- Showers, C. J., Ditzfeld, C. P., & Zeigler-Hill, V. (2015). Self-concept structure and the quality of self-knowledge. *Journal of Personality*, 83(5), 535–551. <https://doi.org/10.1111/jopy.12130>
- Singer, J. L. (1984). The private personality. *Personality and Social Psychology Bulletin*, 10(1), 7–30. <https://doi.org/10.1177/0146167284101002>
- Slabbinck, H., De Houwer, J., & Van Kenhove, P. (2013). Convergent, discriminant, and incremental validity of the Pictorial Attitude Implicit Association Test and the Picture Story Exercise as measures of the implicit power motive. *European Journal of Personality*, 27(1), 30–38. <https://doi.org/10.1002/per.1846>
- Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, 30(4), 526–537. <https://doi.org/10.1037/h0037039>
- Spencer, D. (1938). The frankness of subjects on personality measures. *Journal of Educational Psychology*, 29(1), 26–35. <https://doi.org/10.1037/h0061518>
- Stagner, R., & Drought, N. (1935). Measuring children's attitudes toward their parents. *Journal of Educational Psychology*, 26(3), 169–176. <https://doi.org/10.1037/h0057443>
- Stern, W. (1930). Meaning and interpretation. In J. T. Lamiell (Ed.), *Uncovering critical personalism Readings from William Stern's contributions to scientific psychology* (pp. 163–186). Palgrave Macmillan/Springer Nature.
- Sun, J., & Vazire, S. (2019). Do people know what they're like in the moment? *Psychological Science*, 30(3), 405–414. <https://doi.org/10.1177/0956797618818476>
- Tanguay, A. F. N., Palombo, D. J., Atance, C. M., Renoult, L., & Davidson, P. S. R. (2020). Scrutinizing the grey areas of declarative memory: Do the self-reference and temporal orientation of a trait knowledge task modulate the Late Positive Component (LPC)? *Neuropsychologia*, 142, 107444. <https://doi.org/10.1016/j.neuropsychologia.2020.107444>
- Tews, M. J., Stafford, K., & Tracey, J. B. (2011). What matters most? The perceived importance of ability and personality for hiring decisions. *Cornell Hospitality Quarterly*, 52(2), 94–101. <https://doi.org/10.1177/1938965510363377>
- Thalmayer, A. G., Job, S., Shino, E. N., Robinson, S. L., & Saucier, G. (2021). †Üsigu: A mixed-method lexical study of character description in Khoekhoegowab. *Journal of Personality and Social Psychology*, 121(6), 1258–1283. <https://doi.org/10.1037/pspp0000372>
- Tomkins, S. S. (1987). Script theory. In J. Aronoff, A. I. Rabin, & R. A. Zucker (Eds.), *The emergence of personality* (pp. 147–216). Springer.
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, 74(1), 118–128. <https://doi.org/10.1037/0022-3514.74.1.118>
- Valentine, K. A., Li, N. P., Meltzer, A. L., & Tsai, M.-H. (2020). Mate preferences for warmth-trustworthiness predict romantic attraction in the early stages of mate selection and satisfaction in ongoing relationships. *Personality and Social Psychology Bulletin*, 46(2), 298–311. <https://doi.org/10.1177/0146167219855048>
- van der Linden, D., Dunkel, C. S., Figueredo, A. J., Gurven, M., & von Rueden, C., & Woodley of Menie, M. A. (2018). How universal is the general factor of personality? An analysis of the big five in forager farmers of the Bolivian Amazon. *Journal of Cross-Cultural Psychology*, 49(7), 1081–1097. <https://doi.org/10.1177/0022022118774925>
- Vazire, S. (2006). Informant reports: A cheap, fast, and easy method for personality assessment. *Journal of Research in Personality*, 40(5), 472–481. <https://doi.org/10.1016/j.jrp.2005.03.003>
- Vazire, S., & Carlson, E. N. (2011). Others sometimes know us better than we know ourselves. *Current Directions in Psychological Science*, 20(2), 104–108. <https://doi.org/10.1177/0963721411402478>
- Vicino, F. L., & Bass, B. M. (1978). Lifespace variables and managerial success. *Journal of Applied Psychology*, 63(1), 81–88. <https://doi.org/10.1037/0021-9010.63.1.81>
- Ward, J. S., & Barker, A. (2013). Undefined by data: A Survey OF Big Data definitions. *arXiv:1309.5821 [Cs]*. <http://arxiv.org/abs/1309.5821>
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98(2), 219–235. <https://doi.org/10.1037/0033-2909.98.2.219>
- Weiner, I. B. (1994). The Rorschach Inkblot Method (RIM) is not a test: Implications for theory and practice. *Journal of Personality Assessment*, 62(3), 498–504. https://doi.org/10.1207/s15327752jpa6203_9
- Weiner, S. J., Wang, S., Kelly, B., Sharma, G., & Schwartz, A. (2020). How accurate is the medical record? A comparison of the physician's note with a concealed audio recording in unannounced standardized patient encounters. *Journal of the American Medical Informatics Association*, 27(5), 770–775. <https://doi.org/10.1093/jamia/ocaa027>
- Weng, C. Y. (2017). Data accuracy in electronic medical record documentation. *JAMA Ophthalmology*, 135(3), 232–233. <https://doi.org/10.1001/jamaophthalmol.2016.5562>
- Wu, R., Liu, Z., Guo, Q., Cai, M., & Zhou, J. (2020). Couple similarity on personality, moral identity and spirituality predict life satisfaction of spouses and their offspring. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 21(3), 1037–1058. <https://doi.org/10.1007/s10902-019-00108-8>
- Zeinoun, P., Daouk-Öyry, L., Choueiri, L., & van de Vijver, F. J. R. (2017). A mixed-methods study of personality conceptions in the Levant: Jordan, Lebanon, Syria, and the West Bank. *Journal of Personality and Social Psychology*, 113(3), 453–465. <https://doi.org/10.1037/pspp0000148>
- Zell, E., & Krizan, Z. (2014). Do people have insight into their abilities? A metasynthesis. *Perspectives on Psychological Science*, 9(2), 111–125. <https://doi.org/10.1177/1745691613518075>