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Bridging the gap between explicit and implicit measurement of personality: The questionnaire-based implicit association test

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ABSTRACT

This study presents the questionnaire-based implicit association test (qIAT), a method that resembles the assessment procedures of self-report scales and allows an implicit assessment of constructs measured by such instruments. The qIAT measures the speed of association between ordinary questionnaires' items (i.e., short statements rather than single words) and true versus false self-related sentences. Participants completed self-report measures of all Big-Five domains and the qIAT that measured extraversion. The qIAT implicit extraversion score showed good levels of internal consistency and it correlated with explicit extraversion but not with other explicit scales, thus supporting the convergent and discriminant validity of this measure. It also predicted a criterion behavior, and this prediction was incremental to self-report assessment of the same set of items. The qIAT opens the door for the indirect assessment of numerous psychological phenomena measured by existing self-report scales.

1. Introduction

Personality and psychopathology assessment is based to a large degree on explicit measures (e.g., self-report questionnaires, structured interviews), which assess introspectively available aspects of the self that are deliberately revealed. Unfortunately, however, people do not always provide accurate information about themselves. Inaccurate information is sometimes provided intentionally, as explicit assessment methods are susceptible to a variety of self-report strategies (Nunnally & Bernstein, 1994). This is a major concern in settings where people may be particularly motivated to appear in positive or negative light when trying, for example, to obtain benefits or please other individuals such as experimenters or treatment providers. Inaccurate information about the self may also be provided unintentionally. Much evidence suggests that consciously available self-knowledge is inherently biased and incomplete because a great deal of mental processing occurs outside of awareness (Wilson, 2009).

Researchers have long been interested in indirect assessment methods that do not rely on explicit self-report procedures (e.g., projective tests). This issue has received much attention since the development of paradigms such as the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998), which are designed to tap information that may be less accessible to controlled processes. The IAT is a double categorization reaction-time task that can measure, for example, the extent to which individuals associate certain attributes with themselves (e.g., "me" versus "others" and "anxious" versus "calm"). Despite existing controversies about the nature of implicit assessment (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009) and concerns that have been raised regarding its reliability (LeBel & Paunonen, 2011), a rapidly growing body of literature demonstrates the added value of this type of measurement (Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Roefs et al., 2011).

Accumulating findings suggest that implicit measures often provide information that is incremental to other forms of assessment in a wide variety of contexts, ranging from therapy outcome studies in which clients may feel pressured to show improvement as treatment progresses (Teachman, Marker, & Smith-Janik, 2008), to evaluations of pedophiles who disguise their sexual attraction towards children (Gray, Brown, MacCulloch, Smith, & Snowden, 2005). For example, in a recent study that demonstrated the utility of the IAT, Nock et al. (2010) used this task to measure the strength of automatic associations between the self and death-related words (e.g., *dead*, *suicide*) among individuals seeking emergency psychiatric treatment. This implicit measure predicted future suicidal attempts over and above other predictors and known risk factors, including self-reported suicidal ideation, clinician and patient

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predictions, history of suicide attempts and a diagnosis of a depressive disorder.

Notwithstanding their limitations, self-report instruments provide access to numerous unique constructs associated with many different emotional, cognitive, behavioral, and social aspects of the self. Compared to that, the scope of implicit assessment of self-knowledge has been much narrower (Wilson, 2009), and the type of verbal stimuli implicit tasks used (i.e., single words) enable the measurement of a relatively limited range of psychological phenomena. As evidenced by the nature of the items of most personality questionnaires (typically short statements), the operationalization of many constructs requires semantic specificity, complexity and flexibility that cannot be provided by single words.

Attempting to expand the limits of implicit assessment, we developed the questionnaire-based IAT (qIAT), a reaction-time task that was designed to enable an indirect measurement of standard self-report questionnaires. Particularly, the qIAT allows an implicit assessment that is based on responses to the original items of such questionnaires, and compared to other versions of the IAT, the categorization task it uses resembles more closely the instructions of most self-reports. A method that enables an implicit assessment of existing questionnaires, which measure numerous different constructs, holds a potential pragmatic value (e.g., improved prediction of behavior; see Back, Schmukle, & Egloff, 2009). Such a method may also lead to a fuller understanding of the constructs measured by these scales, as the information provided by implicit measures is often incremental to other types of assessment (Greenwald et al., 2009). Moreover, although implicit and explicit measures are frequently compared in the literature, in many cases each measurement is based on responses to a different set of items. Indeed, Payne and colleagues (Payne, Burkley, & Stokes, 2008) found that implicit-explicit correspondence increased as the stimuli in the two measures became more similar, and a meta analytic review showed that methodological fit between IAT and explicit measures was a significant moderator of explicit-implicit correlations (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). A greater methodological similarity between explicit and implicit modes of assessment is likely to facilitate research on the accuracy of different aspects of self-knowledge (Wilson, 2009).

The methodology of the qIAT is based on the autobiographical IAT (aIAT; Sartori, Agosta, Zogmaister, Ferrara, & Castiello, 2008), which is a recently developed lie-detection tool designed to be used in forensic settings (e.g., crime investigations). The qIAT enables the implicit assessment of standard questionnaires' original items based on the speed of association between such items and true versus false self-related sentences. Specifically, this task measures the classification speed of items (e.g., "*I don't talk a lot*", "*I start conversations*") to relevant categories (e.g., *introvert person* versus *extravert person*), when they need to be categorized interchangeably with self-related statements (e.g., *I'm in a psychology laboratory*, *I'm playing soccer outside*) that need to be classified to logical (i.e., *true* versus *false*) categories.

The qIAT was specifically designed to resemble standard self-report assessment procedures, and the methodology it uses differs from earlier IAT-based measures of personality in two major ways. First, compared to the "me versus others" categorization used in many IAT studies, double classification of items with true versus false self-related statements is conceptually closer to the instructions of most self-reports, in which respondents are asked to rate the extent to which certain statements are true for them. In addition, while the target stimuli in earlier versions of the IAT that were used for personality assessment were single words, similarly to most self-report instruments measurement in the qIAT is based on responses to sentences of variable length.

The aim of this study was to test the methodology of the qIAT and examine the validity of the measurement it provides. To do that, we followed many earlier implicit assessment studies (e.g., Back et al., 2009) and used an instrument that measures the domains of the Big-Five model of personality. Importantly, however, assessment here was based on a standard questionnaire (Goldberg, 2005), which contains short statements rather than single words. Implicit assessment focused on extraversion, and we expected that the implicit measure of extraversion of the qIAT would correlate with the explicit measure of this scale and not with the other Big-Five scales.

2. Methods

2.1. Participants

Participants were 88 consented undergraduates (63 females; mean age = 23.87, *SD* = 2.35), who received course credit. One participant was excluded due to technical reasons. Analyses were based on the remaining 87 participants.

2.2. Personality measurement

2.2.1. Explicit measures

Standard self-report assessment included the 50-item International Personality Item Pool questionnaire (Goldberg, 2005), which measures the personality domains of the Big-Five factor structure (Agreeableness, Conscientiousness, Extraversion, Emotional Stability, Intellect; McCrae & Costa, 1987). Each dimension was measured by a 10-item subscale. Items were rated on a 1–5 Likert scale. Internal consistencies (Cronbach's Alphas) in the current study were 0.91 for Extraversion, 0.91 for Emotional Stability, 0.82 for Agreeableness, 0.82 for Conscientiousness, and 0.79 for Intellect.

2.2.2. Implicit measure

Implicit measurement was based on the qIAT, a brief classification task in which the general methodology of the aIAT (Sartori et al., 2008) was followed. The qIAT included seven blocks. On each trial a sentence was presented at the center of the computer monitor, and participants needed to classify it as quickly and as accurately as possible using one of two designated response keys. In Block 1 (40 trials), participants were introduced to the classification of the personality categories, labeled *extravert person* (the five non-reversed extraversion items) versus *introvert person* (the five reversed extraversion items; all stimuli are presented in Table 1). In Block 2 (20 trials), they were introduced to the classification of the self-related logical categories, labeled *true* (e.g., "*I'm participating in an experiment in psychology*") versus *false* (e.g., "*I'm shopping at the local grocery store*"). In Block 3 (20 trials) and Block 4 (40 trials), participants performed these tasks interchangeably (first double categorization; e.g., *extravert person* and *true* versus *introvert person* and *false*). In Block 5 (40 trials), they practiced the reversed classification of the personality category, and in Blocks 6 and 7 (second double categorization), they again classified the sentences based on both categories, this time using the reversed trait classification (e.g., *introvert person* and *true* versus *extravert person* and *false*). In all trials, the labels of the categories remained on the computer screen as a reminder, and an error signal appeared after an incorrect response (i.e., erroneous classification) was made. Personality items and true versus false sentences were presented in alteration in the double-categorization blocs. The order of the double-categorization blocks was counterbalanced across participants.

Reaction-times and error responses for all trials were recorded. For each participant we calculated a *D* score, following Greenwald, Nosek, and Banaji (2003) improved scoring algorithm. Larger positive *D*'s represent a stronger association between the non-reversed