



Personality self-concept affects processing of trait adjectives in the self-reference memory paradigm



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ARTICLE INFO

Article history:

Received 12 July 2016

Revised 26 November 2016

Accepted 6 December 2016

Available online 8 December 2016

Keywords:

Personality

Personality measurement

Self-reference effect

Self-concept

Memory

Free recall

Elaborative processing

Organizational processing

Cumulative recall curves

ABSTRACT

We combined personality, social cognitive, and cognitive paradigms for researching the self. Specifically, we examined whether personality trait assessments are associated with variation in the cognitive processes that produce the self-reference effect in memory. We found that self-reported, but not indirectly assessed, trait orderliness (Study 1; $N = 98$) and openness (Study 2; $N = 92$) were associated with slower free recall when *corresponding* trait adjectives were self-referenced, but not when adjectives were encoded in control tasks. The slower recall showed mixed predictive validity. Results suggest that personality congruent adjectives elicit more elaborative processing in the form of propositions that arise during self-reference, which counter-intuitively slows recall in a manner consistent with random search memory models and cue overload theory.

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1. Introduction

Personality psychologists have identified a small number of independent personality trait dimensions that describe the important differences between people and that predict behaviour (e.g., the big five). Social cognitive researchers have gone beyond standard, self-report, trait assessments to determine whether unique aspects of personality can be captured indirectly by engaging the self-concept in cognitive tasks (e.g., the implicit association task). Furthermore, cognitive psychologists have found superior memory for trait adjectives that have been judged for self-descriptiveness, compared to any other judgment—a phenomenon known as the self-reference effect (see [Symons & Johnson, 1997](#) for a meta-analytic review). The goal of the present research was to combine these research areas in a novel, theoretical way to prompt and test neglected questions. In particular, our aim was to determine whether personality self-reports and indirect personality assessments are associated with the memory processes that have been implicated in producing the self-reference effect.

2. Three perspectives on the self

Personality researchers have long assumed that the language people use to describe themselves and others provides insight into stable personality trait dimensions (e.g., [Allport & Odbert, 1936](#); [Goldberg, 1993](#); [Norman, 1967](#)). Following this lexical approach to discovering traits, participants rate the extent to which a large pool of trait adjectives describe who they are, and researchers factor analyze these ratings in an effort to discover latent personality dimensions. Over at least 50 years of research, personality psychologists have repeatedly found support for a five-factor model, suggesting there are five broad, relatively independent dimensions along which people vary (i.e., the Big Five: extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience; [McCrea & Costa, 1987](#)), each of which is comprised of narrower facets. For example, conscientiousness can be characterized by orderliness, self-efficacy, dutifulness, achievement-striving, self-discipline, and cautiousness ([Goldberg et al., 2006](#)). Despite a continued debate as to the exact number of broad personality dimensions (e.g., [De Raad & Peabody's, 2005](#), three-factor model and [Lee & Ashton's, 2004](#), six-factor model), the construct validity of the Big Five has been supported in numerous studies employing a variety of methodologies including self- and other-reports

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(Goldberg, 1990; McCrea & Costa, 1987), cross cultural comparisons (McCrea & Costa, 1997), and investigations of predictive validity (Paunonen, 2003; Paunonen & Ashton, 2001; see Goldberg, 1993 for an excellent historical review).

With concerns about how personality self-reports might be affected by socially desirable responding (Crowne & Marlowe, 1960; Paulhus, 1984), and how the human ability to introspect about one's personality may not bring to mind all relevant information, social cognitive researchers have developed indirect methods of personality assessment (Schubert & Asendorpf, 2010). In particular, cognitive tasks that require participants to access the mental representations comprising personality (i.e., personality self-concept) have been dubbed *indirect* measures (e.g., De Houwer, 2006), thought to provide access to an *implicit* personality self-concept. In contrast, self-reports have been dubbed *direct* measures, thought to provide access to an *explicit* personality self-concept. The most widely studied indirect personality measure is an adapted version of an implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998). For example, in the case of a conscientiousness-IAT (e.g., Grumm & Collani, 2007), participants complete a series of categorization trials arranged in blocks, wherein the crucial manipulation is a change of the response key assignment across blocks. More specifically, "Me" and "Conscientious" stimuli share a response key in one block, and "Me" and "Not Conscientious" stimuli share the same response key in another block. The categorization response time difference between these blocks provides what is known as the IAT effect (Greenwald, Nosek, & Banaji, 2003), with a large effect signifying high implicit conscientiousness. In this way, the IAT purports to measure the relative strength of associations in memory between the concepts ("Me" vs. "Not Me") and the attributes ("Conscientious" vs. "Not Conscientious").

Although there is less research on the self in cognitive psychology, the self-reference effect in memory is a robust phenomenon that clearly demonstrates a memory advantage when people process information in relation to the self. In its first demonstration (Rogers, Kuiper, & Kirker, 1977), participants were presented with a wide range of personality trait adjectives. Each time an adjective was presented, participants encoded the stimulus in one of four different judgment tasks (called *orienting* tasks) designed to induce a shallow to deep level-of-processing (Craik & Tulving, 1975). In particular, participants were shown an orienting question that required processing the adjective's graphemes (e.g., does the adjective appear in large letters? *structural* encoding), phonemes (e.g., does the adjective rhyme with XXXX? *phonemic* encoding; where the XXXX is a different word each trial), semantics (e.g., does the adjective mean the same as XXXX? *semantic* encoding), or self-descriptiveness (e.g., describes you? *self-reference*). Rogers et al. found that participants could recall more trait adjectives in a surprise memory test when the adjectives were self-referenced than when judged in the other ways. It stands to reason that making a self-descriptiveness judgment in this paradigm requires access to personality self-concept (as would completing a standard self-report questionnaire; e.g., Goldberg, 1990). Surprisingly, studies on the self-reference effect typically do not assess the contents of subjects' self-concepts (e.g., personality differences). The main objective of the present research was therefore to determine whether engagement of personality self-concept when making a self-reference judgement is associated with the memory processes that have been implicated in producing the self-reference effect. That is, we asked whether individual differences in direct or indirect personality measures are associated with quantitative measures of the memory processes that produce the mnemonic effect.

3. What causes the self-reference effect?

Rogers et al. (1977) reasoned that the self-reference effect stems from relating the adjectives to the self-concept, and in doing so, generating an elaborate memory trace upon encoding (i.e., *elaborative processing*). Memory researchers have argued that elaborative processing provides *item-specific information* (i.e., idiosyncratic retrieval cues) that supports retrieval of the particular encoded words during a test of free recall (Burns, 1993; Einstein & Hunt, 1980; Hunt & Einstein, 1981; Hunt & McDaniel, 1993; see also Craik & Tulving, 1975). The elaborative processing account suggests that the self-reference task elicits more item-specific information than do other tasks, which leads to recall of more adjectives. In contrast, Klein and Kihlstrom (1986) presented evidence that the recall advantage might be due solely to the fact that self-reference provides an effective way to organize the list of words into *categories* (*organizational processing*; e.g., words that describe me vs. those that do not), something the comparison encoding tasks had not encouraged. Memory researchers have proposed that organizational processing provides a small set of relevant categories that effectively narrows the search of memory for previously processed information and can act as a retrieval plan (i.e., an organized approach to the search of memory; e.g., Raajmakers & Shiffrin, 1981; Slamecka, 1968). Similarly, Einstein and Hunt (1980; Hunt & Einstein, 1981; Hunt & McDaniel, 1993) suggest that organizational processing exploits the common characteristics of the encoded words to provide *relational information* that is available in semantic memory (e.g., a category that is common to the encoded words). In a clever set of studies, Klein and Loftus (1988) found that both elaborative and organizational processing cooperate to produce the self-reference effect, a conclusion that was supported in a meta-analytic review (Symons & Johnson, 1997).

4. Measures of elaborative and organizational processing

In an effort to obtain measures of elaborative and organizational processing that are independent from the to-be-explained phenomenon (i.e., the total amount recalled; see Baddeley, 1978; Eysenck, 1978), Klein, Loftus, Kihlstrom, and Aseron (1989) implemented a repeated-testing paradigm, wherein participants were asked to recall encoded words in two subsequent free recall tests (see also Burns, 1993). Items that were recalled on the second test but not the first (*item gain*) were suggestive of elaborative processing, in so far as the item-specific information made available during encoding takes sufficient time to render successful retrieval of list items, which might not have occurred until the second recall test. In contrast, items that were recalled on the first test and were forgotten on the second test (*item loss*) were suggestive of *poor* organizational processing, in that ineffective relational information acquired during encoding (or an ineffective retrieval plan) reduced the probability of retrieving previously recalled items. Klein, Loftus, and Schell (1994) found that the self-reference task rendered fewer item losses than did other encoding tasks, and marginally more item gains, supporting the conclusion that elaborative and organizational processing are key factors in producing the self-reference effect.

Although the repeated-testing paradigm was indeed an improved methodology, Burns and Hebert (2005; see also Burns & Schoff, 1998; Wixted & Rohrer, 1994) have clearly shown that item gain depends on the amount of time allowed for recall in each memory test, making it a problematic measure of elaborative processing (see Burns & Schoff, 1998; Experiments 1 and 2). The authors proposed examining cumulative recall curves to

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