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Initial and Noninitial Name-Letter Preferences As Obtained Through Repeated Letter Rating
Tasks Continue to Reflect (Different Aspects of) Self-Esteem

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Initial and Noninitial Name-Letter Preferences As Obtained Through Repeated Letter Rating Tasks Continue to Reflect (Different Aspects of) Self-Esteem

Abstract

We tested the usefulness of name-letter preference scores as indirect indicators of self-esteem by exploring whether multiple unsupervised self-administrations of letter rating tasks within a short period of time yield useful data. We also examined whether preferences for initials and noninitial name-letters tap different aspects of self-esteem. Participants from a community sample ($N = 164$; 58 men and 106 women, 17-67 years, $M_{age} = 34.57$, $SD = 13.28$) completed daily letter rating tasks and state self-esteem questionnaires for seven consecutive days. They also completed a trait self-esteem questionnaire on the first measurement day as well as six months later. Preference scores for first-name initials were stronger but more unstable than preference scores for other name-letters. Preferences for first-name initials were primarily associated with directly measured *state* self-esteem whereas preferences for noninitials were primarily associated with directly measured *trait* self-esteem even if the latter was measured six months later. We thus showed that preferences for initials and noninitials are not simply interchangeable. Previous letter rating studies, which almost exclusively used initial preferences, should be interpreted in terms of state rather than trait self-esteem. In future studies, researchers should focus on the name-letter preference that reflects the aspect of self-esteem they wish to address.

Keywords: state self-esteem, trait self-esteem, name-letter effect, letter rating task, name-letter preference

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Initial and Noninitial Name-Letter Preferences As Obtained Through Repeated Letter Rating Tasks Continue to Reflect (Different Aspects of) Self-Esteem

Does the degree to which people like the letters of their name reflect their self-esteem level? Many researchers believe that it does. Letter rating tasks have become frequently used indirect measures of self-esteem (Buhrmester, Blanton, & Swann, 2011). This research addressed some outstanding questions about name-letter preferences. One question is how the rather low reliability of name-letter preference scores can be enhanced. Another is whether multiple unsupervised administrations of letter rating tasks continue to yield reliable and valid scores. Yet another question is whether letter ratings of initials versus all name-letters capture identical aspects of self-esteem. Our research was above all meant to inform the further use and interpretation of name-letter preferences as indirect measures of self-esteem. As such, it was mainly methodological. Still, it had conceptual and theoretical relevance. It tested, in a novel manner, the hypothesis that preferences for name-letters reflect feelings of attachment to the self. It also distinguished for the first time between trait, state, and average state self-esteem.

Letter Rating Tasks as Measures of Self-Esteem

People prefer the letters of their name as compared to letters not occurring in their name. Nuttin, who demonstrated this preference, coined it the Name-Letter Effect (NLE) and explained it in terms of self-attachment (Hoorens & Nuttin, 1993; Nuttin, 1984, 1985). The NLE occurs for first- and family-name-letters and for initials and noninitials. It was found in different alphabets and across ages, genders, nationalities, and cultures (Hoorens, Nuttin, Erdélyi-Herman, & Pavakanun, 1990; Hoorens & Todorova, 1988; Nuttin, 1987). In Western samples, the NLE is stronger for first-name-letters than for last-name-letters (Nuttin, 1987) and stronger for initials than for noninitials (Hoorens et al., 1990; Nuttin, 1987).

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Since Greenwald and Banaji (1995) suggested that the NLE could form the basis of an indirect measure of self-esteem researchers have examined the usefulness, towards this aim, of letter rating tasks. The most frequently used task consists of having participants rate the letters of the alphabet on Likert-type scales and report their names (Kitayama & Karasawa, 1997). Collecting judgments of *all* letters likely decreases reactivity on ratings for name-letters. It also generates baselines, based on ratings for nonname-letters, that can be used to adjust raw name-letter ratings for differences between the attractiveness of letters. The scores thus obtained show the same patterns as seminal demonstrations of the NLE, that is, a stronger preference for initials than for noninitials and for first-name-letters than for last-name-letters (Koole, Dijksterhuis, & van Knippenberg, 2001). Averaged over a participant's name-letters, they predict behaviors known or suspected to depend on self-esteem (e.g., Epley & Whitchurch, 2008; Lemay & Clark, 2009; Schmeichel et al., 2009), and do relatively well in terms of internal consistency and test-retest stability (Bosson, 2006; Bosson, Swann, & Pennebaker, 2000; Krause, Back, Egloff, & Schmukle, 2011). Still, the reliability of such measures pales in comparison with direct measures (cf. Rudolph, Schröder-Abé, Schütz, Gregg, & Sedikides, 2008).

Repeated Self-Administrations of Letter Rating Tasks: Promises and Threats

A low internal consistency is a well-known limitation of indirectly measured self-esteem scores. Their reliability can be enhanced by averaging scores over repeated administrations. Unfortunately, repeated administration of indirect measures may be cumbersome because these measures often necessitate extensive equipment, rigorously controlled settings, or extensive coding. From this point of view, letter rating tasks hold special promise. Their simplicity, their flexibility (e.g., they can be administered electronically or in a paper-and-pencil format) and their brief duration make repeated administrations uniquely feasible.

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The ease of letter rating tasks also render them suitable for unsupervised self-administration. This is particularly useful in studies including large samples, relying on take-home questionnaires, and/or necessitating multiple waves of data collection. For instance, several researchers have used letter rating tasks to study the joint effects of directly and indirectly measured self-esteem on depression (e.g., Creemers, Scholte, Engels, Prinstein, & Wiers, 2012 ; De Raedt, Schacht, Franck, & De Houwer, 2006; Franck, De Raedt, & De Houwer, 2007; Phillips, Hine, & Bhullar, 2012; Steinberg, Karpinski, & Alloy, 2007). For repeated self-administrations to be useful, however, letter rating tasks should not be so boring or lacking face-validity that participants increasingly show noncompliance by skipping the task, giving all letters identical ratings, or copying responses from previous administrations. Such increasing noncompliance would limit the value of name-letter preferences in studies examining the cross-temporal or cross-situational variability of self-esteem levels.

Preferences for Initials Versus Preferences for Name-Letters

The vast majority of researchers using letter rating tasks to measure self-esteem have focused on preferences for initials. Some have justified this choice by pointing out that the NLE is stronger for initials than for noninitial name-letters (e.g., Stieger & LeBel, 2012). As shown by Hoorens (2014), however, a stronger NLE for initials than for noninitials is not necessarily associated with individual differences being more diagnostic of self-esteem. Other researchers have argued that studying preferences for initials limits the information obtained from participants and thus keeps privacy concerns to a minimum (e.g., Verplanken, Friborg, Wang, Trafimov, & Woolf, 2007, Study 6). Their reasoning implies that initial preferences can be used as a proxy for general name-letter preferences .

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Still, there are both methodological and theoretical reasons to examine preferences for all name-letters ('general name-letter preferences') rather than for initials alone. The methodological reason is that the internal consistency of name-letter preference scores may be enhanced if they could be calculated by more than two items. The theoretical reason is that preferences for initials and noninitials may tap into distinct constructs. One indication that they do is the finding that when people are asked to freely associate to letters, initials but not noninitials provoke own-name-related associations (Hoorens, 1990, Study 6; Krizan, 2008). Preferences for initials may therefore reflect how people evaluate objects that they consciously associate with the self, whereas preference for noninitials may reflect how they evaluate objects that they do not consciously associate with the self. Solely using initial preferences may thus capture only a specific aspect of self-esteem and may distort findings on the relationship between indirectly measured self-esteem and outcome variables.

State Self-Esteem, Average State Self-Esteem, or Trait Self-Esteem?

Most researchers seem to assume that initial preferences reflect trait self-esteem levels. They have, accordingly, examined the correlation between initial preferences and directly measured trait self-esteem (mostly using the Rosenberg Self-Esteem Scale, RSES; Rosenberg, 1965). A meta-analysis revealed an estimated population correlation of .115, inspiring the conclusion that name-letter preferences "consistently, albeit modestly, relate to explicit self-esteem measures" (Krizan & Suls, 2008, p. 528). Of note, in this respect they do not differ from other indirect indicators of self-esteem (cf. Bosson, 2006; Karpinski & Steinberg, 2006).

As argued by Hofmann, Gawronski, Gschwendner, Le, and Schmitt (2005), direct and indirect measures may for various reasons be dissociated. In the domain of self-esteem, two explanations prevail. Some researchers explain the dissociation in terms of direct measures being

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more vulnerable to social desirability (e.g., Olson, Fazio, & Hermann, 2007). Others interpret it in terms of measures tapping into different aspects of self-esteem level (e.g., Bosson et al., 2000; Karpinski & Steinberg, 2007; Koole et al., 2001; Koole & Pelham, 2003). The latter view implies that direct measures tap into feelings of self-worth that people have no conscious access to whereas direct measures tap into feelings of self-worth that people can verbally report. Both explanations can incorporate a significant correlation between directly and indirectly measured self-esteem without requiring that it would be much higher than is usually observed.

Still, aspects of self-esteem may also differ on other dimensions, such as their trait- versus state-like nature. Direct measures have been tailored to address self-esteem as a stable individual difference or as a temporally variable and situation-dependent feeling state. In contrast, researchers using indirect measures generally do not specify whether their measures address trait versus state self-esteem (cf. Buhrmester et al., 2011). Some noteworthy exceptions are DeHart and Pelham (2007) and Buhrmester et al. (2011), who argued that preferences for initials reflect a state-like rather than a trait-like variable. Supporting this view, initial preferences do not only show a low temporal stability but are also responsive to experimental manipulations as well as real-life experiences. They vary as a function of mortality salience (Gurari, Strube, & Hetts, 2009), health problems (Fila-Jankowska & Stachowiak, 2013), interpersonal threats (Jones, Pelham, Mirenberg, & Hetts, 2002) and negative events (DeHart & Pelham, 2007). Moreover, they can be enhanced through evaluative conditioning (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004; Grumm, Nestler, & von Collani, 2009; Jraidt & Frasson, 2010). It seems, therefore, that the low correlations between name-letter preferences and scores on direct measures of trait self-esteem may be partly due to the former measuring state self-esteem in addition to them measuring non-conscious aspects of self-esteem or escaping from

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self-presentation tendencies. Arguably, stimuli that make people think about themselves may be more susceptible to temporal variations in how people feel about themselves than stimuli that do not provoke self-related associations. It is likely, therefore, that preferences for noninitials are more strongly associated with trait self-esteem than preferences for initials are.

On the surface of it, trait self-esteem might be estimated by averaging state self-esteem scores over several measurements. Still, research in various domains of psychology has shown that summary judgments of objects or categories do not coincide with average judgments of the objects' elements or the category's instances (e.g., Diener, Sandvik, & Pavot, 1991; Giladi & Klar, 2002; Kahneman & Krueger, 2006; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). People's self-reported happiness is associated with the frequency but not with the intensity of their individual experiences of positive affect (Diener et al, 1991; Kahneman & Krueger, 2006). Similarly, evaluations of social groups diverge from judgments of its members (Giladi & Klar, 2002). Another intriguing example is the observation that people's judgment of how much they enjoy the company of others does not mirror how they, on average, judge the pleasantness of encounters with these others (Kahneman et al., 2004). We submit that trait self-esteem level may also be distinct from average state self-esteem. The former may reflect how people (claim they) generally view themselves, whereas the second may indicate how they typically judge their current selves. Previous studies on preferences for initials did not examine how trait self-esteem, temporary fluctuations in self-esteem (i.e. state self-esteem), and average state self-esteem related to each other. Our research aimed at answering this question.

The Present Research

The present study was designed to test the usefulness of repeated administrations of a letter rating task, even if these occur in relatively rapid succession and without direct

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supervision. Many researchers in the domain of emotions and well-being use designs that require daily administrations (e.g., Ouwenneel, Le Blanc, & Schaufeli, 2014; Pe & Kuppens, 2012). Still, the measures they typically use differ from letter rating tasks in that the psychological relevance of repeated administrations is self-evident. We examined whether participants also continue to do repeated letter rating tasks that occur in relatively quick succession in earnest. The study was also designed to examine the psychometric qualities of name-letter preference scores as indicators of self-esteem. We examined the stability and the internal consistency of initial, noninitial, and general name-letter preference scores. Finally, it was designed to explore whether name-letter preferences reflect self-esteem as a stable individual difference reflecting either trait self-esteem or average state self-esteem (or both) versus temporary fluctuations in self-esteem.

We had participants complete daily letter rating tasks and state self-esteem measures for seven days. They also completed a trait self-esteem measure just before the measurement period and again six months later. We examined whether participants increasingly showed noncompliance on the letter rating tasks by skipping the task, doing it incompletely, copying ratings from one measurement to another, or giving identical ratings to all letters. We also tested the prediction that a significant NLE would occur and that it would follow a pattern similar to the one previously observed with other letter preference tasks (stronger NLE for initials than for noninitials, and stronger NLE for letters of the first name than for letters of the last name). We furthermore explored the consistency and test-retest reliability of name-letter preference scores (predicting that these would be better for noninitial name-letters than for initials) as well as their relationship with trait self-esteem, average state self-esteem, and fluctuations in self-esteem.

Method

Participants

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One hundred sixty-four unpaid volunteers (58 men and 106 women, 17-67 years, $M_{age} = 34.57$, $SD = 13.28$, mostly Caucasian) were recruited from the personal networks of two research assistants. They did not receive any reward. All but two reported their education level, with a majority having completed high school (85.3%) and having completed college (54.9 %).

Materials

Direct Measures. We directly measured self-esteem through Dutch adaptations of the 10-item Rosenberg Self-Esteem Scale (Franck, De Raedt, Barbez, & Rosseel, 2008; Rosenberg, 1965). To measure state self-esteem, we had participants indicate on 10-point scales how they felt ‘today’ (cf. DeHart & Pelham, 2007; α in this study .86 & .96). To measure trait self-esteem, we had them indicate on 4-point scales how they generally felt about themselves (α .90 to .97).

Letter Rating Task. Participants indicated how ‘beautiful’ each letter of the Roman alphabet was. We used this instruction because it generally produces weaker NLEs than asking participants to indicate how much they like the letters (cf. Stieger, Voracek, & Formann, 2012) and we wanted to provide a conservative test. The letters appeared in an alphabetical order. Underneath each letter stood a 9-point rating scale with the endpoints 1 (*not at all beautiful*) and 9 (*very beautiful*). We computed name-letter preferences using the algorithm proposed by Kitayama and Karasawa (1997). Per letter and measurement time we created a baseline by calculating the mean rating of the letter over participants whose name did not contain it (i.e., for whom the letter was a nonname-letter). For each participant we computed the difference between each name-letter rating and the corresponding letter baseline (adjusted name-letter scores). We calculated name-letter preference scores by averaging the differences over name-letters. If participants generally preferred name-letters above nonname-letters, the group mean of these scores would be higher than zero.

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We preferred the Kitayama and Karasawa (1997) algorithm above alternatives because it controls for letter characteristics without enhancing other potential confounds (Hoorens, 2014). Still, our calculation departed in two manners from the standard algorithm. First, we created preference scores for (1) all name-letters, (2) noninitials, and (3) initials, and we did so for the letters of the full name and of the first and family name separately. Second, as recommended by Hoorens (2014) we calculated the letter baselines on the basis of nonname-letter ratings rather than, as many previous researchers have done, calculating the baseline for initials on the basis of the ratings by participants for whom letters merely were not initials.

Of note, Belgian last names consist of one or several words, including words like ‘de’, ‘van’, or ‘van de’. In addition, some people’s first names consist of two words. We considered the first letters of all words initials. Thus, scores for last-name-initials may be based on one to three letters and scores for first-name-initials on one or two letters. Belgians do not normally use middle names or initials, which we therefore ignored.

Procedure

Data collection took place within the context of a larger study on the relationship between self-esteem and depression. Participants were recruited by one of two female research assistants for a study on ‘the relationship between how people felt about themselves and how they felt in general’. To ensure a varied and independent sample, participants were invited either directly by the research assistants or via their friends, parents, or relatives. After having filled out an informed consent form, each participant received a booklet including all questionnaires.

On the first day (further called Day 0), participants completed the trait self-esteem questionnaire, a letter rating task, and a state self-esteem questionnaire. Starting the day after, they completed one letter rating and one state self-esteem questionnaire per day for seven

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consecutive days (further called Days 1-7). While stressing the importance of filling out questionnaires on the evenings of the appropriate days, the instructions reassured participants that they were free to stop or interrupt their participation at any time. At the end of the seven-day period participants handed in their bundle to the research assistant who at that occasion unobtrusively recorded their name. Six months later, the assistant contacted them and asked them to fill out additional measures, including the trait self-esteem measure (further called Day + 6 months).

Results

Missing Values and Uniform Letter Ratings

The names of three participants (two men and one woman) were not recorded and therefore name-letter preference scores could be calculated for 161 participants. All participants provided letter ratings, however, and therefore ratings from all 164 participants were included in the baseline calculations. Three participants skipped the rating task on Day 1 (1.8 %), five on Day 2 (3.0 %), eight on Day 3 (4.9 %), nine on Day 4 (5.5 %), twelve on Day 5 (7.3 %), eleven on Day 6 (6.7 %), and eight on Day 7 (4.9 %). Out of 1148 measurement occasions, then, there were 56 missing values. Two participants rated all letters identically from Day 2 on (one not providing ratings on Day 5), three from Day 3 on, two from Day 4 on (one not providing ratings on Day 7), one from Day 5 on, and one more on Day 7. One participant gave identical ratings on Day 2 only; another on Day 2 and Day 4 only. The proportion of participants giving identical ratings thus varied from 0 to 5 % (39 out of 1148 occasions). Because their number was limited and did not markedly increase over measurements we did not exclude these participants.

Internal Consistency and Stability of Name-Letter Preference Scores

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Preferences for initials and noninitials were correlated when scores were aggregated over measurements, $r = .58$, $df = 159$, $p < .001$, and at each measurement time, r s ranging from .41 (Day 1) to .60 (Day 5), dfs from 150 to 159, all $ps < .001$.

Following previous research we examined the internal consistency of initial preference scores by calculating the correlation between preference scores for the initials of the first and the last name. Previous studies did not report how letters with identical first and last name initials were dealt with. When participants with identical initials were included, the correlations varied from .39 to .62 (.56 when scores were aggregated across measurements). When participants with identical initials were excluded, they varied from .38 to .61 (.53 for aggregated scores). The internal consistency of name-letter preference scores can also be estimated through the correlations between preferences for noninitials of the first and the last name. These varied from .64 to .79 (.76 for aggregated scores). Finally, the internal consistency can be estimated through the correlations between the preference scores for all letters of the first and the last name. These varied from .67 to .82 (.82 for aggregated scores). It seems, then, that the internal consistency of general and noninitial name-letter preferences was higher than the internal consistency of initial preferences. It should be noted, however, that the correlations for general and initial letter preferences are inflated because first and family names often share letters.

Insert Table 1 about here

To examine the stability of name-letter preferences, we calculated correlations between preferences scores at the seven measurement times. The correlations appear in Table 1. All correlations were higher for all name-letters and noninitials than for initials. Z-transformed tests

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(two-tailed) revealed that the difference between noninitials and initials was significant in eight cases and marginally significant in three. The difference between general name-letters and initials was significant in 10 cases and marginally significant in four.

Overall Name-Letter Effect

We tested whether the preference scores exceeded zero overall. As shown in Table 2, a NLE occurred for general name-letters, initials, and noninitials. To examine whether it depended on letter type (initials versus noninitials), name part (first versus last), and measurement (Time 1 to 7), we subjected the preference scores of participants who completed the letter rating task at all measurement days to a repeated-measures ANOVA with the aforementioned variables as within-subjects variables and with participants' gender as a between subjects variable. As predicted, we found main effects of letter type, $F(1, 130) = 38.62, p < .001, \eta^2_{\text{part}} = .229$, and name part, $F(1, 130) = 27.02, p < .001, \eta^2_{\text{part}} = .172$, and a letter type by name part interaction, $F(1, 130) = 25.32, p < .001, \eta^2_{\text{part}} = .163$. Among first-name-letters, participants showed a stronger preference for initials ($M = .93; SD = 1.45$) than for noninitials ($M = .15; SD = 1.06$), $t(159) = 8.13; p < .001$. Among last-name-letters, they also showed a stronger preference for initials ($M = .43; SD = 1.29$) than for noninitials ($M = .15; SD = 0.98$), $t(160) = 2.89; p = .004$, but the initial-noninitial difference was smaller than for first-name-letters, $t(159) = 4.48; p < .001$. Another way to look at the interaction is by stating that participants showed a stronger preference for the initials of their first name than for the initials of their last name, $t(159) = 4.98; p < .001$, but no stronger preference for the noninitials of their first name than for the noninitials of their last name, $t(160) = 0.55; p = .956$.

No main effect of measurement period occurred, $F(6, 125) = 0.71, p = .640$, but an interaction of measurement period by letter type, $F(6, 125) = 3.21, p = .006, \eta^2_{\text{part}} = .134$, and an

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interaction of measurement period by letter type by name part did occur, $F(6, 125) = 2.17, p = .050, \eta^2_{\text{part}} = .094$. Figure 1 shows the means. Simple effects analyses revealed that preferences for first-name-initials decreased over measurements, $F(6, 798) = 3.27, p = .003, \eta^2_{\text{part}} = .024$, following a linear trend, $F(1, 133) = 4.23, p = .042, \eta^2_{\text{part}} = .031$. We found no effect of measurement period on ratings for last-name-initials, $F(6, 804) = 0.36, p = .902$, nor for noninitials of the first name, $F(6, 816) = 1.52, p = .169$, or the last name, $F(6, 816) = 2.03, p = .059$.

Insert Figure 1 about here

Name-Letter Preferences and Directly Measured Trait and Average State Self-Esteem

Directly measured trait self-esteem (Day 0) and average directly measured state self-esteem (Day 1 to 7) were strongly, but not perfectly correlated, $r = .62, df = 162, p < .001$. This supports our view that they tap into closely related constructs but are not interchangeable. We calculated zero-order and partial correlations between trait self-esteem scores, average name-letter preference scores, and average state self-esteem scores (averages over measurement times). The partial correlations show the relationship between name-letter preferences and each type of directly measured self-esteem while controlling for the alternative type. As Table 3 shows, name-letter preferences correlated with both trait and average state self-esteem scores. The partial correlations show that preferences for initials correlated with directly measured *average state* self-esteem and that preferences for noninitials correlated with *trait* self-esteem scores.

Insert Table 3 about here

Separating Individual Differences from Fluctuations in Self-Esteem: Multilevel modeling

We used multilevel modeling analyses to test how name-letter preferences were related to individual differences and day-to-day fluctuations in directly measured self-esteem (using the PROC MIXED procedure with restricted maximum likelihood estimation in SAS v9). First, we decomposed the within- and between-person variance of the state self-esteem and name-letter preference scores by estimating an unconditional multilevel model (e.g., Singer, 1997). The equation predicting state self-esteem or name-letter preference on any day was:

$$y_{ij} = \beta_{0j} + r_{ij}, \text{ With } r_{ij} \sim N(0, \sigma^2),$$

where state self-esteem or the name-letter preference (y_{ij}) on day i of participant j was the sum of an intercept describing the participant (β_{0j}) and a residual (r_{ij}). The residual depended on the day-level (σ^2) within-participant variance. The intercept (β_{0j}) was predicted as follows:

$$\beta_{0j} = \gamma_{00} + u_{0j}, \text{ With } u_{0j} \sim N(0, \tau_{00}),$$

where γ_{00} represents the mean, u_{0j} represents the between-participants variability of the dependent variables, and this variability depends on between-person variance (τ_{00}). The proportion of the within-person variance (σ^2) relative to the total variance ($\tau_{00} + \sigma^2$) was used as an index of intraclass correlation.

The results are shown in Table 4. A substantial portion of the variance in name-letter preferences (60-78%) and directly measured state self-esteem (73%) was accounted for by a between-person factor. This factor accounted for a greater percentage of the total variance in preferences for noninitial name-letters than in preferences for initials, suggesting that name-letter preferences for noninitials more closely reflected a stable characteristic than preferences for initial name-letters did. Given that intraclass correlations may serve as an index of reliability

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(e.g., Shrout, & Fleiss, 1979), it also confirms our finding that name-letter preferences scores calculated on the basis of all name-letters or of noninitials were more reliable than those calculated on the basis of initials only.

We also tested “conditional” multilevel models in which we predicted directly measured self-esteem on the basis of name-letter preferences, separating day-level and person-level variance. The day-level equation was as follows:

$$SE_{ij} = \beta_{0j} + \beta_{1j}NLP_{ij} + r_{ij},$$

where SE_{ij} represents directly measured self-esteem, and NLP_{ij} denotes name-letter preferences on day i of participant j . The independent variable, NLP_{ij} , was person-mean-centered before the model estimation in order to extract day-to-day within-person fluctuation of name-letter preferences. The intercept β_{0j} represented variability in directly measured self-esteem between participants. It was predicted through the following person-level equation:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}MeanNLP_j + u_{0j},$$

where $MeanNLP_j$ denotes the person mean of name-letter preferences. We assumed that the slope of name-letter preferences (β_{1j}) might vary across participants, with the person-level equation being

$$\beta_{1j} = \gamma_{10} + u_{1j},$$

where γ_{10} was the mean and u_{1j} was the variability of the name-letter preferences. In this model, the slope of the within-person mean of name-letter preferences (γ_{01}) and the mean of the slope of state name-letter preferences (γ_{10}) represent trait- and state-level associations between name-letter preferences and directly measured self-esteem.

As shown in Table 5, preferences for all name-letters and preferences for noninitials were associated with daily fluctuations in state self-esteem as well as with individual differences (i.e.,

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average state self-esteem). In contrast, preferences for initials were associated with average state self-esteem but not with daily fluctuations.

Discussion

Our results answer various questions about letter-rating tasks as indirect measures of self-esteem. For clarity's sake, we organize the discussion around these conclusions and finish by pointing out some limitations of our work, each of which imply directions for further research.

Multiple Administrations of Letter Rating Tasks Work

Repeated administrations of letter ratings tasks can yield useful data. In our research, participants completed seven daily letter rating tasks. Although they did so without direct supervision, compliance remained high. The letter rating task (56 missing values on 1148 measurements) did not yield many more missing values than the state self-esteem measure (48).

It seems, then, that repeated self-administrations of letter rating tasks can be conducted without undue compliance problems. This observation is useful for researchers who wish to enhance the internal consistency of name-letter preference scores by including multiple administrations of letter rating tasks. It is also useful for researchers who examine fluctuations in name-letter preferences over brief intervals and in situations that do not allow direct supervision.

Internal Consistency May Be Enhanced Through Repeated Administrations

The internal consistency of initial preferences was comparable to the one reported in previous studies (cf. Stieger et al., 2012). Yet, it was enhanced somewhat by deriving scores from repeated administrations rather than from a single letter rating task (cf. Krause et al., 2011; Rudolph et al., 2008, Study 2). Specifically, the correlation between first-name initials and last name initials was .38 at the first administration of the name letter task, but was .53 based on repeated administrations. The internal consistency of general name-letter preferences, while

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being higher than the internal consistency of initial preferences (albeit perhaps spuriously so because of shared letters), was also enhanced by using repeated administrations. The correlation between general first-name-letters and general last-name-letters was .67 at the first administration of the name letter task, but was .82 based on repeated administrations. The conclusion seems warranted that researchers striving for high internal consistency of the obtained scores may do well using repeated administrations of the rating task and calculating average name-letter preferences (rather than initial preferences).

Preferences for Initials and Noninitials are Not Created Equal

As predicted, we found a stronger preference for initials than for noninitials and for letters of the first name than for letters of the last name. We thus replicated the often-claimed stronger preference for initials than for noninitials, but showed that it particularly held for the first name (cf. LeBel & Gawronski, 2009, who found a stronger preference for first-name- than for last-name-initials). In addition, we showed that the often observed stronger preference for first-name-letters than for last-name-letters is due to a stronger preference for first-name initials.

Preference scores for first-name-initials started at an exceptionally high level (as compared to scores for other name-letters) but decreased over administrations. One explanation may be that participants, upon first encountering a letter rating task, associate their first name with its initial(s) and therefore rate the initial(s) favorably regardless of their true feelings. As the task becomes routine, first-name-associations and some felt ‘obligation’ to rate one’s initial favorably may decrease so that first-name-initial ratings more and more become indicative of participants ‘real’ feelings towards these letters.

Trait Self-Esteem Does Not Boil Down To Average State Self-Esteem

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It is intuitively tempting to estimate an individual's trait self-esteem by averaging several measurements of that individual's state self-esteem levels. Still, our findings showed that it may be useful to distinguish between trait and average state self-esteem. These were correlated, but by far not perfectly so. As revealed by the partial correlations, preferences for initials were associated with average state self-esteem whereas that preferences for noninitials were associated with trait self-esteem. It seems, then, that the phenomenon that overall judgments of attitudinal object cannot simply be derived from judgments of specific instances of these objects (e.g., Diener et al., 1991; Kahneman & Krueger, 2006) might also hold for self-esteem.

Preferences for Initials and Noninitials Are Differentially Associated With Directly Measured Self-Esteem

Researchers who used preferences for initials to indirectly measure self-esteem sometimes argued that the stronger NLE for initials than for noninitials supported their choice. Our findings showed that the stronger NLE for initials did not render these more useful to measure self-esteem. If anything, preference scores for initials and noninitials are associated with different aspects of self-esteem.

More specifically, preference scores for noninitials seem to be associated with both trait and state self-esteem, whereas preferences for initials seem only to be associated with average state self-esteem over a seven-day period. In the case of initials, our findings suggest that the typically low correlations that have been observed between name-letter preferences and directly measure self-esteem may at least partly be due to researchers' having measured *trait* self-esteem and preferences for initials only. It should be noted that the correlations we observed were comparable to those observed in previous studies (e.g., Bosson et al., 2000; DeHart et al., 2006, Study 1; De Hart & Pelham, 2007; DeHart, Tennen, Armeli, Todd, & Mohr, 2009; Kernis,

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Lakey, & Heppner, 2008; Krause et al., 2011; Vater, Schröder-Abbé, Schütz, Lammers, & Roepke, 2010).

To be sure, even the correlations between general and noninitial name-letter preferences and directly measured trait, state, and average state self-esteem were modest at best. What is important, however, is that our results suggest that noninitial preferences reflect trait-like aspects of self-esteem, whereas first-name-initial preferences reflect more easily changeable aspects of self-esteem (cf. DeHart & Pelham, 2007). This conclusion implies that researchers who wish to capture average state self-esteem should focus on initials whereas researchers who wish to use letter rating tasks to measure self-esteem as a state or as an individual difference should focus on noninitials. In any case, it seems that the custom that has grown over the last two decades to solely focus on initials may inadvertently have made researchers capture average state self-esteem rather than the trait self-esteem variable they seemed to target.

Limitations and Further Research

One limitation may seem to be that the recruitment of participants from the networks of research assistants might have enhanced compliance, rendering our findings hard to generalize to samples participating for pay or course credit. Importantly, however, our participants received no reward whatsoever and the instructions stressed that they were free to discontinue or interrupt their participation at any moment. Moreover, we were mainly interested in potential differences between compliance in repeated applications of face-valid questionnaires (which previous research has already established in a variety of samples) and letter rating tasks. Even if general compliance in our study was unusually high, our findings still provide a useful insight in the relative compliance with the letter rating task.

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We cannot guarantee that participants filled out the questionnaires on the intended days. Neither can we be certain that they refrained from inspecting and copying ratings of previous days. Still, we do have strong indications that they did the tasks as intended. First, noncompliance (that was limited) increased over measurement days. This is the pattern that one would expect if people start courageously participating on a given day but give up later on, but not if people who decide to participate fill out questionnaires retrospectively or prospectively. Second, name-letter preferences varied in a systematic manner over measurement times (particularly for first-name-initials). Of course, these patterns do not rule out the possibility of unintended response strategies. They do suggest, however, that if these strategies occurred only a minority of participants used them. In future studies, Web-based or smartphone applications might be used to guarantee that participants complete the tasks on the intended days.

Preferences for first-name- but not for last-name-initials correlated with state self-esteem. The cross-cultural generality of this pattern (e.g., in cultures in which people routinely use family names to address each other, such as Japan) needs to be demonstrated. Suggestive evidence for cross-cultural differences in name-letter preferences comes from Kitayama and Karasawa (1997). Among Japanese men, a stronger preference occurred for last-name initials than for first-name initials. Japanese women showed a stronger preference for their first-name initials – a phenomenon that may occur because of the Japanese tradition of married women losing their family name and taking over their husband's name.

Sweeping statements about the interpretation of previous studies that used preference scores for initials as indicators of self-esteem would be premature because our study is the first to assess how preferences for initials and noninitials relate to state, average state, and trait self-esteem. The vast majority of previous studies have solely focused on how initial preferences

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relate to directly measured trait self-esteem. We hope that future studies include both initial and noninitial or general preferences and directly measure both state and trait self-esteem.

The novel distinction between trait self-esteem, state self-esteem and average state self-esteem obviously also awaits systematic exploration. We believe that it is worth further examination and that it may help understand the meaning of previous findings on state self-esteem. For instance, most studies on state self-esteem have used a single measurement rather than multiple measurements. Our conceptualization implies that the self-esteem scores thus obtained may be indicative of either genuine temporal fluctuations in self-esteem, individual or intergroup differences in average state self-esteem, or both.

Finally, we showed that it is possible to disentangle trait and state aspects of self-esteem measured through indirect measures. We did not clarify how indirect self-esteem measures other than name-letter preferences relate to (average) state versus trait self-esteem. A systematic application of this state-trait exercise to other indirect self-esteem measures may help to clarify the weak correlations that have been reported between indirect and direct measures.

Conclusion

Name-letter preference scores provide quick, simple, and easily applicable indirect measures of self-esteem. They have another attractive quality, namely, that they allow multiple administrations, even within short time intervals, without boredom causing considerable participant drop-out or other forms of noncompliance. Importantly, however, initial and noninitial preferences may respectively reflect state and trait self-esteem. By implication, focusing on initial preference may limit the aspects of self-esteem that letter rating tasks may reveal. We therefore recommend calculations of both initial and noninitial preferences.

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Table 1 *Correlations Between Name-Letter Preference Scores at Seven Measurement Times*

	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Initials						
Day 1	.70	.64	.63	.66	.53	.58
Day 2		.73	.73	.75	.68	.73
Day 3			.74	.69	.69	.69
Day 4				.76	.72	.75
Day 5					.75	.76
Day 6						.79
Noninitials						
Day 1	.76	.77*	.74#	.71	.68*	.71#
Day 2		.85*	.79	.80	.72	.73
Day 3			.77	.81*	.78#	.80*
Day 4				.83	.80	.80
Day 5					.85*	.85*
Day 6						.88*
General name-letters						
Day 1	.76	.77*	.76*	.74	.68*	.71#
Day 2		.84*	.79	.83#	.73	.74
Day 3			.78	.82*	.78#	.79*
Day 4				.85*	.81#	.81
Day 5					.86*	.85*
Day 6						.89*

* denotes that the correlation for noninitial name-letters or general name-letters was stronger than corresponding correlation for initials at $p \leq .05$. # denotes that it was stronger at $p \leq .075$.

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Table 2 *Mean Name-Letter Preference Scores Per Administration*

Score	Mean	SD	Df
Day 1			
All name-letters	0.27***	0.90	160
Initials	0.81***	1.47	160
Noninitials	0.11	0.92	160
Day 2			
All name-letters	0.30***	0.96	158
Initials	0.72***	1.40	158
Noninitials	0.17*	1.00	158
Day 3			
All name-letters	0.29***	1.01	155
Initials	0.60***	1.38	155
Noninitials	0.20*	1.04	155
Day 4			
All name-letters	0.30***	1.02	154
Initials	0.62***	1.43	154
Noninitials	0.19*	1.02	154
Day 5			
All name-letters	0.20*	1.09	151
Initials	0.68***	1.42	151
Noninitials	0.06	1.11	151
Day 6			
All name-letters	0.21*	1.03	152
Initials	0.63***	1.34	152
Noninitials	0.09	1.08	152
Day 7			
All name-letters	0.27**	1.06	155
Initials	0.64***	1.40	155
Noninitials	0.20*	1.09	155

Note. Positive scores denote a preference for one's own name-letters. Differing *dfs* reflect different numbers of missing values.

* $p < .05$, ** $p < .005$, *** $p < .001$.

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Table 3

Zero-Order And Partial Correlations Between Average Name-Letter Preferences And Direct Measures Of Trait And Average State Self-Esteem

	Name	Initials			Noninitials			
		All	First	Last	All	First	Last	
Zero-order correlations								
	Trait Day 0	.30*	.17*	.21*	.08	.31*	.26*	.30*
	Trait +6 months	.24*	.08	.13	.01	.26*	.22*	.26*
	Average state	.25*	.23*	.28*	.11	.23*	.19*	.22*
Partial correlations								
	Trait Day 0	.19*	.03	.04	.01	.22*	.19*	.21*
	Trait +6 months	.14	-.03	.00	-.05	.18*	.14	.18*
	Average state	.08	.16*	.20*	.08	.05	.03	.05

Note. Correlation between name-letter preferences and trait self-esteem, partialling out state self-esteem; correlations between name-letter preferences and state self-esteem, partialling out trait self-esteem measured at Day 0.

* Significant at $p < .05$ or better, $dfs = 149$ to 159 .

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Table 4

Within- and Between-Person Variance in State Self-Esteem Estimated by Unconditional Models

	State SE	Name-letter preferences		
		All	In	Nin
Between-person variance (σ^2)	172.37	0.79	1.36	0.83
Within-person variance (τ_{00})	63.02	0.22	0.61	0.24
Intraclass correlation	0.73	0.78	0.69	0.78

Note. $n = 1092$ reports across 161 across participants. State SE = directly measured state self-esteem, All = all name-letters; In = all initials, Nin= All noninitials.

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Table 5

Fixed Effect of Multilevel Models Predicting Direct Measures of State Self-Esteem on the Basis of Name-Letter Preferences

Predictors	Estimates	SE	<i>t</i>	<i>P</i>
All name-letters				
Day (γ_{10})	1.40	0.59	2.39	.02
Person (γ_{01})	3.78	1.14	3.31	.00
Initials				
Day (γ_{10})	0.41	0.39	1.06	.29
Person (γ_{01})	2.49	0.86	2.88	.00
Noninitials				
Day (γ_{10})	1.29	0.58	2.24	.03
Person (γ_{01})	3.41	1.12	3.05	.00

Note. Day levels were person-mean centered, and person levels were grand-mean centered.

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Figure 1 Preference scores for initials and noninitials of one's first and last name per measurement.