Effects of escalated exposure to information on accuracy of personality judgment

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ABSTRACT

In an investigation of the effects of increasing exposure to information on accuracy of personality trait judgments, judges rated a single target on three successive occasions, each of which involved the introduction of a novel piece of personal information. Varying the order in which types of information were presented allowed us to jointly examine the effects of information quality and quantity on accuracy in personality judgment. We found that (a) in general, more information led to higher accuracy, (b) some types of information led to greater gains in distinctive or normative accuracy, and (c) introduction of lower quality information did not negatively affect accuracy.

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1. Introduction

Our judgments of others in our social world are frequently subject to revision. Even people in longstanding relationships will occasionally be surprised by some new piece of information regarding a close other. Behavior in a new context or the revelation of an unusual autobiographical fact previously unknown to the person making the judgment can alter our perceptions and understanding of those around us. In the early stages of relationships, information can be learned in small or large amounts, and the motivated perceiver or judge[1] is left to consider the impact and predictive value of all types of information. People seem fairly certain that they come to know others better over time and exposure, and some research supports an increase in accuracy with increases in information, but relatively little is known about the specific mechanics of this process or how different types of information affect accuracy.

Even with very minimal amounts of information--for example, with initial impressions of personality based on less than five minutes of interaction or observation--judges can achieve statistically significant levels of accuracy (Ambady & Rosenthal, 1992), especially for more visible personality traits such as Extraversion (Borkenau, Brecke, Möttig, & Paelecke, 2009; Borkenau, Mauer, Riemann, Spinath, & Angleitner, 2004; Funder & Dobroth, 1987; John & Robins, 1993; Paunonen, 1989). However, there is evidence that these *trait visibility* effects tend to diminish or disappear among well-acquainted pairs (McDonald & Letzring, 2016; Paunonen, 1989). In fact, well-acquainted individuals can accurately judge most major dimensions of personality and tend to do so with higher levels of accuracy than are found in first impressions, which has been labeled the *acquaintanceship effect* (Bernieri, Zuckerman, Koestner, & Rosenthal, 1994; Colvin & Funder, 1991; Funder & Colvin, 1988; Funder, Kolar, & Blackman, 1995; Kenny, Albright, Malloy, & Kashy, 1994). Increases in accuracy have also been found across shorter time spans of 25 min (Blackman & Funder, 1998), 50 min (Letzring, Wells, & Funder, 2006), 7 weeks (Paulhus & Bruce, 1992), 10 weeks (Brown & Bernieri, 2017), and 13 weeks (Kurtz & Sherker, 2003), but in some cases the increases were limited to only some traits. Accuracy is less likely to show increases over shorter spans of time, such as only 5 min (Ambady & Rosenthal, 1992; Krzyzaniak, Colman, Letzring, McDonald, & Biesanz, 2019), although some studies have shown higher levels of accuracy for short video clips (45 and 90 s) versus still photographs (Beer & Watson, 2010; Borkenau & Liebler, 1992). In sum, while there is evidence suggesting that impressions and our

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[1] The person making the judgments is referred to as the "perceiver" or the "judge" in research on personality judgment accuracy. In the current paper, "judge" is used to emphasize the active involvement of the person in using information to make ratings of targets.

understanding of others improve with greater information and over time, the specific manner in which different kinds of information affect accuracy remains relatively unclear.

Funder's Realistic Accuracy Model (RAM; Funder, 1995; Letzring & Funder, 2018, in press) identifies the process for forming accurate impressions and highlights four necessary steps for forming a distinctively accurate impression – a target must make *relevant* cues *available* for the judge to *detect* and *utilize* appropriately when forming their impression. Moreover, RAM posits four primary moderators of accuracy in personality perception. The moderators include differences in the ability of a judge to elicit, detect, and use cues to personality (*good judge*; Allport, 1937; Colman, in press; Letzring, 2008; Rogers & Biesanz, 2019); differences in the target's judgability, consistency, legibility, or authenticity (*good target*; Colvin, 1993; Human & Biesanz, 2013; Human, Biesanz, Finseth, Pierce, & Le, 2014; Mignault & Human, in press); differences in accuracy with which different traits are judged (*good trait*; Beer & Watson, 2008; Funder & Dobroth, 1987; John & Robins, 1993; Krzyzaniak & Letzring, in press; Watson, Hubbard, & Wiese, 2000); and differences in the amount or relevance of the available information about the target (*good information*; Andersen, 1984; Beer, in press; Beer & Brooks, 2011; Blackman & Funder, 1998; Letzring & Human, 2014; Letzring et al., 2006).

Good information can be considered in two primary ways: raw quantity and specific utility or personality-relevance (i.e., quality). A simple explanation for the acquaintanceship effect is that, over time, judges have access to a greater amount of relevant information about targets, and they utilize this information appropriately to render more accurate personality judgments. In terms of the stages of RAM, more relevant information is made available over time, and this information is detected and utilized by the judge. This process indicates that most of the explanatory power lies in determining when and how relevant information becomes available to judges.

There exist precious few longitudinal studies of personality judgment, and none of these has explicitly tested the specific mechanism of acquaintance, either experimentally or non-experimentally. The first longitudinal study of the acquaintanceship effect had mixed results, in that self-other agreement based on single items for each trait increased over the course of seven weeks for only some traits, most notably for agreeableness and nurturance, and showed a non-significant decrease for neuroticism (Paulhus & Bruce, 1992). Some studies have found additional evidence of the acquaintanceship effect by examining female college roommates between 2-weeks and 15-weeks of acquaintance, finding increases in self-other agreement for all of the Big Five traits (with statistically significant increase for Openness and Agreeableness; Kurtz & Sherker, 2003). More recent work also supports the notion that accuracy increases over a 4-month time span (Human, Carlson, Geukes, Nestler, & Back, 2018), but at least one other study found little change in self-other agreement across 3 months for students living near each other in a freshman dormitory (Park, Kraus, & Ryan, 1997).

A few researchers have manipulated either the kind or amount of information in an effort to explicate the process of increasing accuracy in personality judgment. Carney, Colvin, and Hall (2007) demonstrated that increasing amounts of similar types of information (in this case, small samples of videotaped behavior) led to increases in accuracy, whereas others have demonstrated that increasing the availability of information of different types can lead to greater accuracy in some circumstances (Borkenau & Liebler, 1992; Beer & Watson, 2008; Beer & Brooks, 2011; Letzring et al., 2006). However, one common thread to all of these explorations of the acquaintanceship effect is that each employed a between-subjects design. For example, single judges in Borkenau and

Liebler (1992) classic study were not exposed to single targets in each of the four modes of presentation (still photo, audio only, muted video, full video). Thus, there is still very little data that speaks to how effectively judges utilize additional information in the early stages of impression formation.

A potential complicating factor of increasing information over time is variability in the relevance or diagnosticity of the information because not all information will be equally helpful for making accurate personality judgments. Nisbett, Zukier, and Lemley (1981) introduced the *dilution effect* to explain how adding non-diagnostic information to diagnostic information could lower reliance on the more diagnostic information in making behavioral predictions. This could potentially generalize to personality judgments in that judges may be less accurate when they have more information if some of the information is low in relevance and therefore not useful for making accurate personality judgments.

The purpose of the current study is to examine the utilization of potentially personality-relevant information in a within-subjects paradigm—wherein each judge makes multiple assessments of a single target after exposure to additional information. Furthermore, in order to examine potential differences in information quality (i.e., the personality-relevance of a given class of information), a between-subjects manipulation was used such that judges were exposed to different types of information in different orders. This design is rather unique—in fact singular—in the field of personality perception and enabled us to address three primary empirical questions. First, does the increased availability of different types of information lead to increased accuracy in personality judgment? Or, in other words, is evidence for the acquaintanceship effect found with this type of manipulation of information quantity? Second, is one type of information more likely to generate accurate impressions of personality and thereby be identified as having a higher level of personality relevance? And third, does the order in which the different types of information are presented matter for accuracy? More specifically, if higher quality information (as determined by answering question 2) is followed by lower quality information, does accuracy decrease following exposure to the lower quality information?

In order to address these research questions optimally, we employ the social accuracy model (SAM; Biesanz, 2010), which allows for the examination of three important components of impressions: normativity, positivity, and distinctive accuracy. Distinctive accuracy captures the extent to which a judge's impressions are in line with the target's own, unique pattern of traits (Biesanz, 2010; Furr, 2008). Normativity captures the extent to which a judge's impressions are in line with the average individual's personality (Biesanz, 2010). Given that the average individual's personality is also very positive (Borkenau & Zaltauskas, 2009; Edwards, 1957; Rogers & Biesanz, 2015; Wood & Furr, 2016) we include a separate measure to capture the positivity of impressions. This allows for insight into how normativity and positivity independently contribute to impressions made by judges.[2] Thus, each question above can be considered in terms of its impact on (a) distinctive accuracy, (b) normativity, (c) positivity.

2. Method

2.1. Participants

Targets were 114 undergraduate students who participated in partial fulfillment of a course requirement. Of the 114 targets,

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[2] It is important to note that the correlations between the normative profiles for both men and women are very strongly correlated with the positivity profile, $rs = 0.95$ and 0.87 respectively.

6 were not included in analyses--three failed to provide self-reports, and three were excluded due to quality issues with stimulus materials--thus analyses include 108 targets. Targets were predominantly female (74%) and young (M_{age} = 22.41 years, SD_{age} = 5.65), and most participants were either White (58%) or Black (39%). Each target nominated two potential informants—people who knew them well and would be willing to complete an online personality assessment. Potential informants were contacted via email and provided with a web address at which to complete their ratings. Of the 108 targets, 51 had two informant reports and 39 had one informant report, thus 83% of the sample had at least one informant report.

Judges were a separate set of 326 undergraduate students who participated in partial fulfillment of a course requirement. Of the 326 judges, 5 were not included in analyses as their target did not complete self-reports, thus analyses include 321 judges. Judges were predominantly female (74%) and of typical college age (M_{age} = 19.41 years, SD_{age} = 3.32), and most participants were either White (54%) or Black (34%).

2.2. Materials

All personality ratings (self-ratings, informant ratings, and all three target ratings) were made using the Big Five Inventory (BFI; John, Naumann, & Soto, 2008), which is a 44-item measure of the major markers of the Five Factor Model (FFM; Costa & McCrae, 1992). Participants responded using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) to a series of statements starting with the common stem, "I see myself as someone who…" The BFI contains 8-item scales for Extraversion (e.g., is talkative) and Neuroticism (e.g., is anxious, easily upset), 9-item scales for Agreeableness (e.g., is kind and considerate to almost everyone) and Conscientiousness (e.g., is reliable), and a 10-item scale for Openness to Experience (e.g., is sophisticated in art, music, or literature). Coefficient alphas for all measurement instances are available in supplementary materials.

2.3. Procedure

The stimuli used in the current study were created as part of a separate study. Each of the tasks served as a different information-component for the current study. First, targets were photographed and completed a self-report BFI. They were then recorded (seated in a chair, body visible above the knee) while responding to a set of five standard questions: "Where are you from? What's your major? What are your plans after graduating? What do you fear? and What makes you happy?"; and then while walking down an approximately 30-foot hallway towards the camera. The muted video segments are the "nonverbal" information in the current study, and consisted first of the target walking down the hallway and then the muted interview (average length of the two video segments combined was approximately 70 s). In addition to the interview, targets were asked to produce two separate hand-written lists of personal information: a list of three things that made them different from other people, and a list of three things they valued most in life (see the Appendix A for example items from each type of list). The lists of unique characteristics are the "individuating facts" or simply "facts," and the lists of values are the "values." The written information about both facts and values was shown to contain at least some personality-relevant information in a previous study (Beer & Brooks, 2011).

Judges first completed a self-report version of the BFI. This was followed by the judgment task, which consisted of evaluating a target three separate times, each time after receiving a novel piece of information. Each judge was randomly assigned to (a) one target

and (b) a judgment order[3]. There were three possible orders, constructed so that each class of stimulus information (nonverbal, facts, values) would appear in each possible time sequence. Specifically, the three orders used were: nonverbal-fact-value (NFV), fact-value-nonverbal (FVN), and value-nonverbal-fact (VNF). This design allowed for an examination of the relative quality of each information class in addition to the simple additive effect of accumulating information.

Judges were first shown a photograph of the target and asked if they were acquainted with that individual. If so, another target was selected. If not, the judge was shown the information in the randomly selected order. For example, in the nonverbal-fact-value condition, judges first viewed the video, then evaluated the target using the BFI. Judges were then shown the list of individuating facts provided by the target and asked to rate the target again in light of the new information. Finally, judges were shown the list of values generated by the target and asked to make a third and final evaluation of personality, again in light of the new information. In all, each target was rated by three separate judges, once in each of the three orders.

2.4. Analytic approach

The accuracy criterion was the composite of self-ratings made by targets and ratings from acquaintances of the targets. When ratings from two acquaintances were available, these ratings were averaged before being averaged with the self-ratings. When only the self-rating of the target was available, that was used for the accuracy criterion. The composite score was used as the accuracy criterion in order to increase the reliability of the criterion as the result of having more than one rating. This is typically done in accuracy research in order to go beyond a self-report of personality when determining accuracy and therefore go beyond a simpler conceptualization of accuracy as only agreement between judges and the targets' self-ratings (Colman, in press; Letzring et al., 2006; Rogers & Biesanz, 2019). Furthermore, ratings from both the self and acquaintances are likely to contain some bias (Funder, 2012; Vazire, 2010), and combining ratings may offset some of that bias. However, it is possible that judges may agree differentially with self-ratings and acquaintance ratings, especially when these ratings are not strongly associated with each other. For this reason, accuracy was also examined in comparison to only self-reports and only acquaintance reports, and the full set of these results can be found in the online supplementary materials (Tables S4–S6 and Figs. S2 and S3). Overall, the results were quite similar when the accuracy criterion was the composite of self and acquaintance ratings vs. only self-ratings vs. only acquaintance ratings.

To examine impressions, we followed the Social Accuracy Model (SAM; Biesanz, 2010) in order to examine three components of judgments – distinctive accuracy, normativity, and positivity. In brief, SAM is a crossed-random effects multilevel regression model that can estimate judge, target, and dyadic effects of two components of accuracy across traits simultaneously (for more details and empirical examples of SAM see Biesanz, 2010; Letzring & Human, 2014). Using SAM, there are four variables used to assess distinctive accuracy, normativity, and positivity: the judge's ratings of the personality of the target, the target validity measure or accuracy criterion of personality (in this case, the composite of self- and informant reports), the normative personality profile (the average of the target validity assessments for each item),

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[3] One judge failed to complete ratings after trial 1, meaning that analyses using only trial 1 included 320 judges instead of 321. Additionally, two judges completed the study twice, but for different targets. Their ratings are included in the analyses, as they still formed first impressions of each target and completing the study twice should not affect their ratings.

and item social desirability (Paulhus, 2009; based on ratings completed by a separate group of 486 individuals as part of a previous study (Rogers & Biesanz, 2014, 2015). In the current study, the normative profile was based on the 111 target validity assessments (30 for males, 81 for females). The judges' ratings of the personalities of the targets were simultaneously predicted by (a) the target validity measure deviated from the average response on that item (which estimates distinctive accuracy), (b) the normative personality rating on each item (which estimates normativity), and (c) the social desirability of each item (which estimates positivity). The average target validity measure (normative profile) is different based on target gender, although the male and female profiles are highly correlated ($r = 0.94$). Items were not reverse-coded. The specific analytical model can be expressed as:

$$Y_{ijkl} = \beta_{0_{ij}} + \beta_{1_{ij}}TValid_{jk} + \beta_{2_{ij}}NormativeMean_k$$
$$+ \beta_{3_{ij}}Positivity_k + e_{ijk} \qquad (1)$$

$$\beta_{0_{ij}} = \beta_{00} + \beta_{01}Trial_{ijl} + u_{0_j}$$

$$\beta_{1_{ij}} = \beta_{10} + \beta_{11}Trial_{ijl} + u_{1_j}$$

$$\beta_{2_{ij}} = \beta_{20} + \beta_{21}Trial_{ijl} + u_{2_j} \qquad (2)$$

$$\beta_{3_{ij}} = \beta_{30} + \beta_{31}Trial_{ijl} + u_{3_j}$$

Here, Y_{ijkl} is judge i's rating of target j on item k at trial l. $TValid_{jk}$ is target j's validity measure on item k after subtracting $NormativeMean_k$, $NormativeMean_k$ is the average validity measure, or the normative score, on item k, and $Desirability_k$ is the average social desirability on item k. The average personality ratings, $NormativeMean_k$, are based on the validity scores for all targets and were calculated separately for males and females. $NormativeMean_k$ and $Desirability_k$ are each grand mean centered. In this model, $Trial_{ijl}$ is used as a moderator in Level 2, and is coded as 0 at the first trial, 1 at the second trial, and 2 at the final trial. $\beta_{1_{ij}}$ is the level of distinctive accuracy for judge i with target j at trial 1 and captures the extent to which the judge perceived the target in line with the target's own unique traits. $\beta_{2_{ij}}$ is the level of normativity for judge i with target j at trial 1 and captures the extent to which the judge perceived the target as similar to the average person. $\beta_{3_{ij}}$ is the level of positivity for judge i with target j at trial 1 and captures the extent to which the judge perceived the target in a socially desirable and positive manner.

In Eq. (2), β_{10}, β_{20}, and β_{30} capture the average distinctive accuracy, normativity, and positivity, respectively, at trial 1. β_{11}, β_{21}, and β_{31} capture the change in distinctive accuracy, normativity and positivity, respectively, as trial increases. u_{1_j}, u_{2_j}, and u_{3_j} represent target random effects, averaged across judges, for distinctive accuracy, normativity, and positivity, respectively. Since judges only viewed one target, we do not estimate those random effects.

We assessed the impact of condition on distinctive accuracy, normativity, and positivity in two different manners. First, we examined how impressions differed by condition only after trial 1 by modifying Eq. (1). Specifically, we used a group codes approach with the Facts condition as the reference group. We created two dummy coded variables to indicate whether the judge was in the Nonverbal condition (NFV: 0 = no, 1 = yes) or the Values condition (VNF: 0 = no, 1 = yes). These variables were then included as moderators at level 2. Thus, each interaction condition indicates how distinctive accuracy, normativity, and positivity, respectively, differed in the relevant condition compared to the Facts condition. This approach allows for an understanding of how different types of information influence impressions. Second, we examined how impressions differed by condition only after trial 3 to provide us with information regarding whether the order in which different types of information were presented influenced impressions. At this point, judgments were based on the same information, but that information had been learned in different orders. Given that impressions after the final trial included the same information across conditions, no differences in distinctive accuracy, normativity, or positivity would be expected if order did not matter. We used the same group code approach as used for trial 1.

3. Results[4]

The first research question concerned the manner in which increased availability of information influences impressions. On average, after the first trial, judges' impressions in terms of distinctive accuracy, normativity, and positivity were statistically significant as depicted in the first three rows of Table 1. That is, on average, judges viewed targets in line with the targets' own unique traits, as similar to the average person, and as socially desirable. Additionally, results indicated that distinctive accuracy ($b = 0.01$, $SE = 0.007$, $p = .04$), normativity ($b = 0.05$, $SE = 0.018$, $p = .01$), and positivity ($b = 0.02$, $SE = 0.006$, $p = .0004$) all increased across trials (see Table 1 and Fig. 1). Thus, across all three trials–regardless of the order of information presentation--impressions increased in distinctive accuracy, normativity, and positivity as the total amount of information increased. This increase in distinctive accuracy is consistent with what would be predicted based on the good information moderator in RAM and the acquaintanceship effect. In sum, as the amount of information provided about a target increased, judges' viewed targets more in line with the targets' own unique traits, similar to the average person, and positively— though it is worth noting that judgments were accurate, normative, and socially desirable even after the first trial.

To address the second research question of whether one type of information is more likely to generate accurate impressions and is therefore more relevant to personality, judgments after the first trial--that were based on only one type of information–were compared. Specifically, ratings made after the first trial were examined using dummy coding with the FVN condition as the reference group and impressions after Trial 1 as the outcome variable. Thus, the first row of Table 2 contains the estimates for distinctive accuracy, normativity, and positivity for the FVN condition after Trials 1 (on the left side of the table) and 3 (on the right). The rows below present the comparisons at each trial with the other conditions. For distinctive accuracy, impressions formed from only values ($b = -0.13$, $SE = 0.025$, $p < .001$) or only nonverbal information ($b = -0.07$, $SE = 0.025$, $p = .003$) were less distinctively accurate (see Table 2). That is, facts about targets resulted in impressions more in line with the targets' own unique personality than the other types of information. For normativity, when compared to facts, impressions formed using values were more normative ($b = 0.25$, $SE = 0.063$, $p < .001$), but impressions formed using nonverbal information did not differ ($b = -0.05$, $SE = 0.063$, $p = .40$). For positivity, impressions formed using nonverbal information were less positive ($b = -0.12$, $SE = 0.022$, $p < .001$), but impressions formed using values did not differ ($b = -0.01$, $SE = 0.022$, $p = .69$). In sum, the type of information presented in the first trial influenced the accuracy, normativity, and positivity of impressions, such that facts were associated with the most accurate impressions, values were associated with the most normative impressions, and non-

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[4] As noted previously, for these analyses we utilized the Social Accuracy Model. However, analogous trait-based analyses are available in the online supplementary material.

Table 1
Distinctive accuracy, normativity, and positivity across trials.

Effect	b (SE)
Distinctive Accuracy	0.08*** (0.018)
Normativity	0.58*** (0.032)
Positivity	0.06*** (0.015)
Distinctive Accuracy × Trial	0.01* (0.007)
Normativity × Trial	0.05** (0.018)
Positivity × Trial	0.02*** (0.006)

Note. The first three rows of data refer to estimates computed after the first trial.
$^†p < .10$, $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

verbal information was associated with the least positive impressions.

The final research question concerns whether the order in which the different types of information were presented differentially impacted personality impressions. To answer this question, ratings made after the third trial were examined using dummy coding with the FVN condition as the reference group and impressions after Trial 3 as the outcome variable. For distinctive accuracy, neither the NFV condition ($b = 0.01$, $SE = 0.024$, $p = .71$) nor the VNF condition ($b = -0.02$, $SE = 0.024$, $p = .49$) differed from the FVN condition in terms of distinctive accuracy (see Table 2). For normativity, the VNF condition resulted in more normative impressions ($b = 0.13$, $SE = 0.062$, $p = .03$), but the NFV condition did not differ ($b = 0.01$, $SE = 0.062$, $p = .84$). For positivity, the NFV resulted in more positive impressions ($b = 0.05$, $SE = 0.021$, $p = .01$), but the VNF condition did not differ ($b = -0.03$, $SE = 0.021$, $p = .24$). Thus, it seems that a judge's understanding of a target individual's

unique personality profile is not particularly sensitive to the order in which different types of information are presented. However, the overall positivity or normativity of impressions may vary depending on the order in which information is learned.

How do these differences in impressions unfold? Answering this question involves examining how impressions changed as different information was presented, or in other words, by examining how impressions changed across trials within each condition. These analyses parallel the previous ones regarding how impressions change across trials, but instead each condition is examined separately. This allowed for an examination of how distinctive accuracy, normativity, and positivity changed within each condition, as a result of judges receiving more information. When facts were presented first, followed by values and then nonverbal information (FVN), there was no change in distinctive accuracy ($b = -0.02$, $SE = 0.012$, $p = .15$) or positivity ($b = -0.005$, $SE = 0.010$, $p = .66$) across trials, but normativity somewhat increased ($b = 0.05$, $SE = 0.014$, $p = .08$, see Table 3). When nonverbal information was presented first, followed by facts and then values (NFV), distinctive accuracy ($b = 0.02$, $SE = 0.012$, $p = .04$), normativity ($b = 0.09$, $SE = 0.0302$, $p = .003$), and positivity ($b = 0.08$, $SE = 0.010$, $p < .001$) all increased across trials. Finally, when values were presented first, followed by nonverbal information and then facts (VNF), normativity ($b = -0.003$, $SE = 0.030$, $p = .93$) and positivity ($b = -0.01$, $SE = 0.010$, $p = .21$) did not change, but distinctive accuracy increased across trials ($b = 0.04$, $SE = 0.012$, $p = .001$). In sum, distinctive accuracy seems to be the highest after learning factual information, and it did not decrease when additional information was learned; whereas normativity and positivity fluctuated more as a result of the order in which information was learned (see Fig. 2).
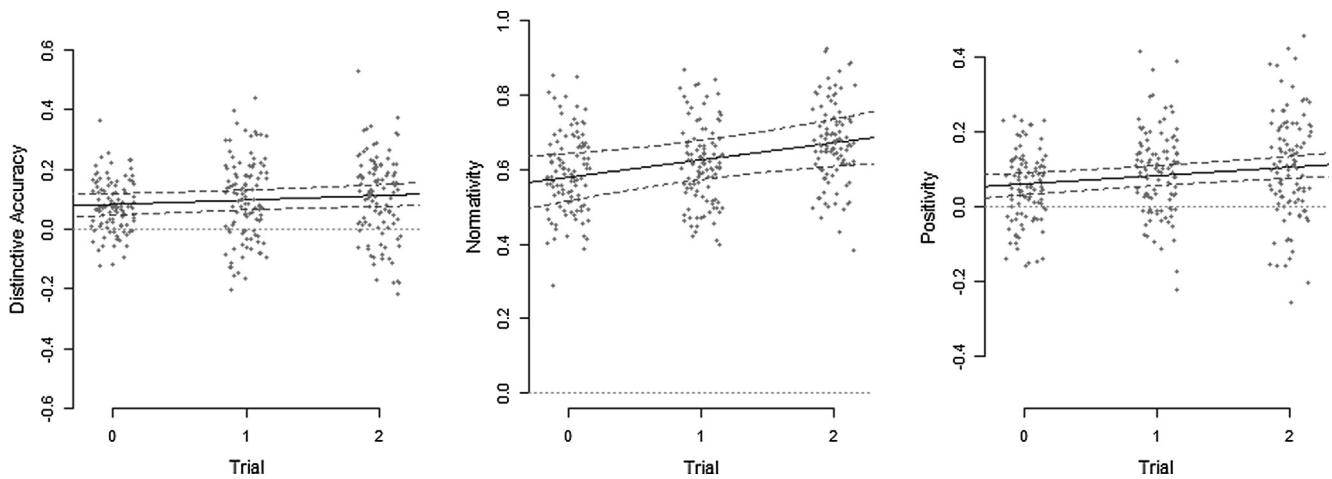

Fig. 1. Levels of distinctive accuracy, normativity, and positivity for all information orders combined, across trials, with 95% confidence intervals. Data points represent the distinctive accuracy, normativity, and positivity, respectively, of a particular target after that trial and are jittered horizontally to reduce overplotting.

Table 2
Comparing distinctive accuracy and normativity by information condition for trials 1 and 3.

Effect	Trial 1 Distinctive			Trial 3 Distinctive		
	Accuracy b (SE)	Normativity b (SE)	Positivity b (SE)	Accuracy b (SE)	Normativity b (SE)	Positivity b (SE)
FVN	0.14*** (0.022)	0.53*** (0.049)	0.10 (0.019)***	0.11*** (0.024)	0.62*** (0.047)	0.09*** (0.021)
FVN vs. NFV	−0.07** (0.025)	−0.05 (0.063)	−0.12 (0.022)***	0.01 (0.024)	0.01 (0.062)	0.05* (0.021)
FVN vs. VNF	−0.13*** (0.025)	0.25*** (0.063)	−0.01 (0.022)	−0.02 (0.024)	0.13* (0.062)	−0.03 (0.021)

Note. F = facts information, V = values information, N = nonverbal information. SE = standard error. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 3
Distinctive accuracy, normativity, and positivity across trials by condition.

	FVN b (SE)	NFV b (SE)	VNF b (SE)
Distinctive Accuracy	0.16*** (0.025)	0.07* (0.028)	0.02 (0.022)
Normativity	0.54*** (0.050)	0.48*** (0.051)	0.72*** (0.054)
Positivity	0.13*** (0.023)	−0.03 (0.022)	0.08*** (0.024)
Distinctive Accuracy × Trial	−0.02 (0.012)	0.02* (0.012)	0.04** (0.012)
Normativity × Trial	0.05† (0.014)	0.09** (0.030)	−0.003 (0.030)
Positivity × Trial	−0.005 (0.010)	0.08*** (0.010)	−0.01 (0.010)

Note. F = facts information, V = values information, N = nonverbal information. SE = standard error. *$p < .05$, **$p < .01$, ***$p < .001$.
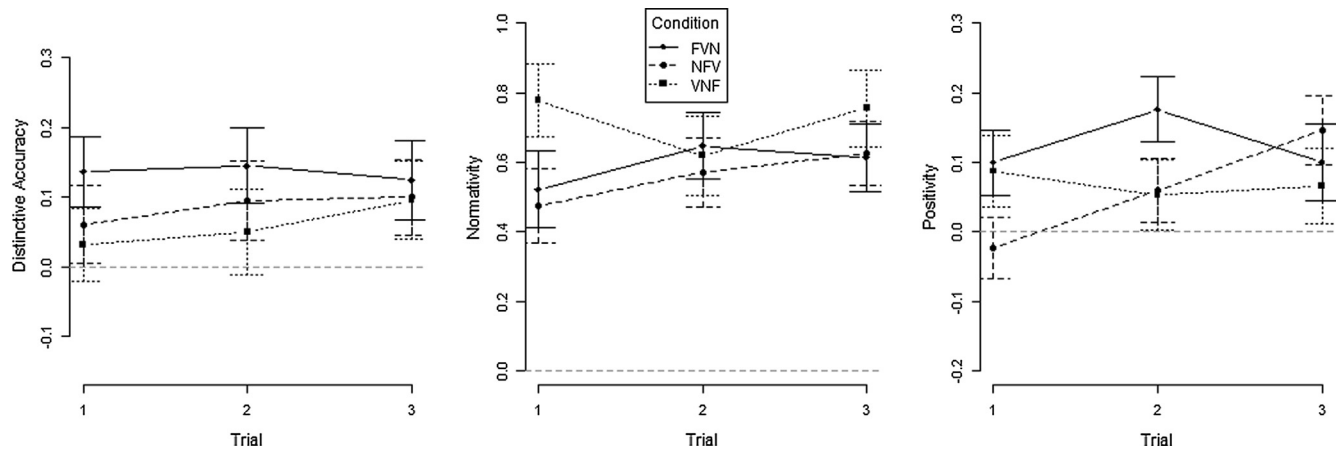

Fig. 2. Levels of distinctive accuracy, normativity, and positivity, respectively, after each trial, by each condition. F = facts information, V = values information, N = nonverbal information.

4. Discussion

We examined the impact of information quantity, information quality, and the potential interaction of quantity and quality on first impressions. First, as expected, as judges gained more information about a target, their impressions became more accurate. That is, as judges had more relevant personality cues made available to them, they had a greater understanding of the target's personality. Additionally, as information increased judges tended to view targets as more similar to the average person and positively. These results are in line with recent longitudinal research demonstrating that distinctive accuracy and normativity increased over four months (Human et al., 2018).

Furthermore, the type of information also impacted impressions. When participants only knew about a target's values, they formed particularly normative impressions. Additionally, in line with previous research (Rogers & Biesanz, 2014), nonverbal information was associated with the least positive impressions. Individuating facts were associated with the most distinctively accurate impressions. Thus, it seems individuating facts are most useful for forming distinctively accurate impressions, while values are most useful for normative impressions.

Finally, we considered the interaction of information quality and quantity in multiple ways. First, we considered whether the order of the information influenced final impressions and found that distinctive accuracy did not differ across conditions. However, normativity and positivity were impacted by the order in which the different types of information were presented. Presenting nonverbal information, facts, and then values resulted in the most positive impressions, whereas values, nonverbal information, and then facts resulted in the most normative impressions. Next, we examined how impressions changed across trials for each condition separately. When individuating facts were presented first, normativity

somewhat increased, but distinctive accuracy and positivity did not change. However, when values were presented first, distinctive accuracy increased across trials, but normativity and positivity did not change. Finally, when nonverbal information was presented first, distinctive accuracy, normativity, and positivity all increased. This pattern suggests that nonverbal information on its own should probably be neither sought nor offered in isolation, as it leads to neither accurate nor positive impressions.

4.1. Broader implications

Precious few studies to date involve jointly evaluating the impact of varying quality and quantity of information on impressions of personality. In accordance with other such work, we observed general increases in accuracy as more information became available to judges, and this general trend was not strongly altered by the order in which information was received. Thus, as long as the same information is available, we can expect similar levels of accuracy regardless of when—relatively speaking—the information was learned by the judges. That said, individuating facts seem to carry more weight in terms of generating more accurate judgments than do the other types of information used in the current study.

Findings with respect to normativity and positivity of judgments were more complex. Recent research has highlighted that despite the strong relationship between the normative profile and social desirability, these are two independent components in first impressions (Rogers & Biesanz, 2015; Wessels, Zimmermann, Biesanz, & Leising, in press; Zimmermann, Schindler, Klaus, & Leising, 2018). That normativity and positivity had independent relationships with impressions over time and frequently had different relationships with types of information

and information order further support the independence of these two components.

4.2. Limitations

The conclusions based on these results must be considered tentative for several reasons. First, although this sample is relatively diverse by the standards of personality and social psychology, it is still WEIRD (Western, Educated, Industrialized, Rich, and Democratic; cf Henrich, Heine, & Norenzayan, 2010) and covers a relatively narrow age range, thus findings should only be generalized to a relatively young, educated, Western population (Simons, Shoda, & Lindsay, 2017).

Second, the experimental design is not completely balanced in that all possible orders of stimulus introduction were not represented. This is particularly problematic when interpreting some of the findings regarding the (negative) impact of values information on distinctive accuracy when it appears early in the judgment process. Given the current design, one cannot be certain that the findings are not born of some very specific configural effect (i.e., the general inaccuracy across all three trials may not have existed in the untested VFN condition).

Third, it is possible that asking participants to repeatedly assess—in fairly close temporal proximity—the same individual may introduce a demand characteristic in that judges feel implicitly pressured to alter their evaluations in light of the newly-introduced information. An alternate method could involve asking participants to simply amend previous judgments, but this introduces (a) a different set of interpretive issues, akin to those involving classic checklist measures (i.e., is lack of change indicative of enduring thought or negligence or inattentiveness) and (b) demand characteristics in the opposite direction (i.e., implicit pressure to maintain previous beliefs).

Fourth, in order to maintain greater experimental control, the judgment context is rather divorced from the phenomenon as it occurs in the world outside the laboratory. It is relatively uncommon that one receives bits of information in isolation and without deeper context. However, it is common to form an impression based on very minimal information, and to then learn more information and be faced with maintaining or altering the initial impression.

Finally, the types of information presented in the study were certainly not representative of all the various types of information available in natural settings. Distinguishing facts, personal values, and nonverbal behavior were chosen because previous work had established that these sources contained some personality-relevant information, but there are many other possible sources that might have been equally sensible choices for a study such as this one.

4.3. Future directions

Given that these results were largely exploratory, it is important to replicate these findings going forward to provide greater confidence in the results. Further study in this area should obviously involve improving on the aforementioned shortcomings of the current study, jointly or separately. Ideally, researchers should establish that these effects occur in different populations and judgment contexts. Specific attention should be paid to grounding study design choices in theories of information quantity and quality. For example, some research (Starzyk, Holden, Fabrigar, & McDonald, 2006) suggests that acquaintanceship has several distinct dimensions (frequency of contact, duration of relationship, knowledge of goals, physical intimacy, self-disclosure, and social network familiarity). Future studies of the impact of different types of information on personality judgment accuracy might employ manipulations of those factors akin to what transpired in this study. Furthermore, these phenomena could be studied in more natural contexts by including specific measures of information exchange in traditional longitudinal studies of acquaintanceship. Perhaps distinguishing facts are not typically revealed early in naturally-forming relationships, and this could, in part, explain the gradual nature of the acquaintanceship effect. Finally, future studies of the personality judgment process might benefit from connecting to the more traditional social cognition and judgment and decision-making literatures, as some findings relevant to other types of social perception may be relevant to this specific process, as was the case with the dilution effect in the current study.

5. Conclusion

People form first impressions of others through a variety of mediums, from resumes to online dating profiles to face-to-face encounters. The current study provided additional evidence that not all sources of personality information are created equal when forming first impressions. Given that first impressions can impact important life outcomes such as occupational success (Posthuma, Morgeson, & Campion, 2002) and relationship development (Human, Sandstrom, Biesanz, & Dunn, 2013), understanding what type of information will lead to the most accurate, as well as the most positive first impressions can help people determine what information to seek or provide. Based on the results of the current study, information about factual information about what makes a person unique seems to result in the most distinctively accurate judgments while information about what a person values seems to result in the most normative and positive judgments.

6. Data link

https://osf.io/qkb7z/.

Acknowledgement

Appendix A. Instructions and Examples for Written Stimuli

A.1. Instructions

A.1.1. Facts
In the following space, please write down three specific things that are very unique to you as a person. This could be anything unusual about you, something that differentiates you from most other people you know. It can be something large or small, exciting or mundane, just something different. Here are some examples of unique facts that may apply:

Own an exotic pet	Absolutely must eat the same breakfast daily.
Have an extensive hat collection.	Only wear socks with individual toes in them.
Will only drink soda out of a can.	Can juggle.
Worked as a grave digger.	Have a pilot's license.

A.1.2. Values
In the following space, please write down three specific things that are very important to you in life. Here are some examples of core values that people frequently name:

Artistic or musical skills or appreciation	Financial security
Sense of humor	Relations with friends
Spontaneity/living in the moment	Religious/spiritual activity
Educational accomplishment	Creativity
Organizational/managerial skills	Physical health
Social skill	Relations with family

A.2. Examples

Facts	Values
Target Participant #20	
I have the attention span of a four-year old most of the time.	My future
I enjoy and eat peanut butter sandwiches almost every day.	My family
I enjoy sports as much as some guys.	Becoming completely religious before I die
Target Participant #33	
I don't like chocolate.	God
I like to wear Ralph Lauren Polo clothing.	Family/friends
I don't like to sleep with doors open.	Being successful
Target Participant #74	
Prefer to drink bottled water; will not drink faucet water.	Religion
Wash my face three times a day.	Physical health
Very interested in classical music.	Marrying the right person.
Target Participant #106	
Can't live without sports.	Family relations, be happy
Use different socks on each foot.	Play sports, be social
Like to eat cheese with everything.	Financial security, but happy first

Appendix B. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jrp.2019.103864.

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