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ONCE CARELESS, ALWAYS CARELESS? TEMPORAL AND SITUATIONAL
STABILITY OF INSUFFICIENT EFFORT RESPONDING (IER)

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science

By

KELLY ANN CAMUS

B.A., Washington and Lee University, 2011

2015

Wright State University

WRIGHT STATE UNIVERSITY
GRADUATE SCHOOL

August 11, 2015

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER
MY SUPERVISION BY Kelly Ann Camus ENTITLED Once Careless,
Always Careless? Temporal and Situational Stability of Insufficient Effort
Responding (IER) BE ACCEPTED IN PARTIAL FULFILLMENT OF THE
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ABSTRACT

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Once Careless, Always Careless? Temporal and Situational Stability of Insufficient Effort
Responding (IER).

In the current paper, I examined insufficient effort responding (IER) as a substantive construct rather than as a methodological nuisance as other researchers have done. Specifically, I focused on the relationship between personality traits and IER and the temporal and situational stability of IER. I hypothesized that agreeableness, conscientiousness, openness, and extraversion would be negatively associated with IER and that neuroticism would be positively related to IER. Also, I predicted that the extent to which a given participant engages in IER would be relatively stable across time and across tasks. The current sample ($N = 288$) consisted of students from undergraduate psychology courses at a public university in the Midwestern United States. I found little evidence that Five-Factor Model (FFM; McCrae & Costa, 1987) traits were related to IER and no support for IER being stable across tasks. However, I found evidence suggesting that IER was stable across time. I discussed theoretical and practical implications of the study as well as future research directions.

Keywords: Insufficient Effort Responding; Careless Responding; Behavioral Consistency; Personality

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I. INTRODUCTION

Technological advances have allowed for the extensive use of computer-based questionnaire administration for psychological research. Lower costs, greater convenience, and increased speed for collection of greater volumes of data have all led to the prevalence of computer-based surveys in research (Barak & English, 2002; Ward & Pond, 2015). The common use of computer-based data collection suggests that researchers expect that their participants are attentive and provide the most honest, accurate responses possible when completing questionnaires. However, because computer-based questionnaires collect data at varying times and places, this common research method introduces unknown context effects on participants' responses. This phenomenon was less of an issue before the computer era because then data were collected via paper-and-pencil surveys (see Beach, 1989). Researchers have found that on-line anonymity in computer-based surveys may encourage participants to respond carelessly to questionnaire items due to the lack of accountability (Douglas & McGarty, 2001; Lee, 2006; Meade & Craig, 2012). Furthermore, the inherent lack of environmental control with on-line questionnaires may cause participants to respond more carelessly to items due to possibly increased environmental distractions. Now in the context of computer-based questionnaires, researchers are beginning to realize that not all participants are attentive when completing a self-report questionnaire. Insufficient effort responding (IER), also called careless responding, describes a situation in which a participant inattentively responds to self-report questionnaire items (Huang, Curran, Keeney, Poposki, & DeShon, 2012; Meade & Craig, 2012).

IER is one way in which participants can provide poor quality data. Nichols, Greene, and Schmolck (1989) described content responsive faking and content nonresponsivity as the two main types of problematic respondent behavior. Content responsive faking occurs when

participants pay attention to item content, but they provide inaccurate responses. Thus, their responses correlate with the item content, but their responses demonstrate some degree of inaccuracy (Nichols, Greene, & Schmolck, 1989). This respondent behavior includes both intentional and unintentional faking. Social desirability refers to the tendency of participants to respond to questionnaire items in such a way that they are favored by the researchers (Paulhus, 1984). The behavior can be either good or bad faking: participants can over-report desirable behavior or under-report behavior deemed undesirable. For instance, a job applicant completing a self-report questionnaire as part of an interview assessment will want to appear favorably to the prospective employer. So, the applicant might respond to items to appear highly conscientious when, in fact, the applicant is low in conscientiousness. Thus, the applicant might be motivated to respond to the questionnaire items in such a way that does not accurately represent the applicant's true personality, negatively influencing the data quality.

This undesirable respondent behavior is different from content nonresponsivity. Content nonresponsivity occurs when a participant responds to questionnaire items without paying attention to the item content. Meade and Craig (2012) identified random responding (Beach, 1989), careless responding (Curran, Kotrba, & Denison, 2010), and protocol invalidity (Johnson, 2005) as different terms used to refer to content nonresponsivity. To capture these constructs into one concept, Huang et al. (2012) proposed the term *insufficient effort responding* (IER) and defined it as “a response set in which the respondent answers a survey measure with low or little motivation to comply with survey instructions, correctly interpret item content, and provide accurate responses” (Huang et al., 2012, p. 100). Therefore, IER includes both random and nonrandom responding and can be intentional or unintentional. However, what makes IER distinct from content responsive faking and impression management is that IER demonstrates a

lack of effort and inattentiveness rather than the effortful attention and diligence inherent in both social desirability and faking (Huang et al., 2012; McGrath et al., 2010). In fact, researchers have suggested that both social desirability and faking may be negatively related to IER (Maniaci & Rogge, 2014; Meade & Craig, 2012).

IER Prevalence

Researchers have found that participants vary in which points in a self-report questionnaire they engage in IER (Huang et al., 2012; Meade & Craig, 2012). It seems likely that if a participant is not interested in the questionnaire from the start that the participant could engage in IER right at the beginning of the questionnaire until the end whether they engage in IER consistently or sporadically (see Schwartz, 1999). More research needs to be conducted directly examining individual differences regarding where in a questionnaire that participants engage more in IER. Despite whether a participant engages in IER from the beginning of a questionnaire, Meade and Craig (2012) suggested that IER engagement becomes more common as a participant spends more time completing a questionnaire.

In addition to the differences regarding in which parts of a questionnaire participants tend to engage in IER, discrepancies exist in the estimated prevalence of IER. Researchers have found that IER estimates range from anywhere as low as 3.5% to as high as 73% (Baer, Ballenger, Berry, & Wetter, 1997; Berry et al, 1992; Ehlers, Greene-Shortridge, Weekley, & Zajack, 2009; Johnson, 2005; Kurtz & Parrish, 2001). Differences in the particular indices used to detect IER partially explain the varying reports of IER prevalence (Curran, Kotrba, & Denison, 2010). Estimates of IER tend to be high when researchers have assessed whether participants have engaged in IER when flagged by an IER index, but estimates of IER tend to be

low when researchers have assessed whether participants have engaged in IER throughout most of a questionnaire (see Meade & Craig, 2012).

IER Detection Methods

Researchers have used various approaches to detect IER. One approach is employed by inserting items designed to detect IER within a self-report questionnaire prior to administration (e.g., bogus items; Beach, 1989). The second approach, known as post-hoc (Meade & Craig, 2012), involves conducting statistical analyses (e.g., examining response patterns) after data is collected (Meade & Craig, 2012). In the following sub-sections, I discuss in greater detail common methods used to detect IER.

Psychometric Synonyms and Antonyms. Two of the most common ways to detect IER are psychometric synonyms and psychometric antonyms (Goldberg & Kilkowski, 1985). These methods are based on the premise that participants who are paying attention will respond to similar items in a consistent manner throughout a questionnaire. Psychometric synonyms are items that are conceptually the same (e.g., “I tend to enjoy social events” and “I am an outgoing person”). Thus, they are positively correlated. On the other hand, psychometric antonyms are items that are conceptually opposites of each other (e.g., “I am anxious most of the time” and “I tend to be calm”). Thus, they are negatively correlated.

Psychometric synonyms and antonyms are computed by examining the within-person correlations across item pairs. Traditionally, if a pair of items has a correlation of .60 or higher for the sample as a whole, that item pair is the psychometric synonym index, and if a pair of items has a correlation of $-.60$ or lower for the sample as a whole, that particular item pair is the psychometric antonym index (Meade & Craig, 2012). Then, scores for each of the two indices are computed by performing within-person correlations between each set of items. Thus, the

overall psychometric synonym and antonym index scores range from -1 to 1. A higher psychometric synonym score indicates that it is less likely that the participant engaged in IER. Similarly, a lower psychometric antonym score indicates that it is less likely that the participant engaged in IER. Although researchers consider these indices to be some of the more useful IER detection methods (Huang et al., 2012; Meade & Craig, 2012), the psychometric synonyms and antonyms indices can be used only within long questionnaires with hundreds of items (Goldberg & Kilkowski, 1985; Meade & Craig, 2012).

Bogus Items. Another method used to detect IER is by inserting bogus items into a self-report questionnaire. A bogus item is an item in a survey that has an obvious correct response (Beach, 1989). Bogus items are worded in such a way that all item responses from all participants who read and understood the items would be identical. For example, “I was born on February 30th” is a bogus item. This item is phrased so that if any participant attentively reads the item, the participant will not endorse the item. If the participant does endorse the item, that participant will be flagged for engaging in IER.

One advantage of bogus items is that they can detect IER throughout a questionnaire because they can be inserted at any point in a questionnaire. However, there are a few disadvantages to bogus items. Because they are added to a survey prior to administration, they make surveys longer, which could affect participants’ fatigue. Moreover, participants may interpret some bogus items as funny because of how nonsensical they are (e.g., All my friends say I would make a great poodle; Meade & Craig, 2012). These funny items might cause participants to respond differently, such as endorsing the item because they thought it was funny or not taking the rest of the survey seriously because they thought the researchers did not take their research seriously. Therefore, using bogus items should be considered if survey fatigue is

not too much of a concern, i.e., if the survey is not long prior to inserting the bogus items, and if the bogus items do not seem so nonsensical that the participants change how they would otherwise respond.

Long String. Whereas the prior two methods involve inserting items, the next methods I describe involve statistical analyses. Meade and Craig (2012) referred to two different ways to identify participants with nonrandom IER response patterns (i.e., responses that are too consistent): the “maximum long string index” and the “average long string index.” The maximum long string index assesses the greatest number of times that the participant provided the same response to consecutive items throughout a questionnaire (Costa & McCrae, 2008; Meade & Craig, 2012). The average long string index refers to the average of the longest string of repeated responses for each page on a questionnaire (Meade & Craig, 2012). Because the Long String methods were designed to detect nonrandom IER behavior, they are unable to effectively identify random, or inconsistent, IER (Meade & Craig, 2012).

Outlier Index. A multivariate outlier analysis approach to IER detection involves flagging participants who consistently respond to items far from the mean of an item set (Ehlers et al., 2009). For example, suppose there is a sample of survey respondents with varying item responses that center around a particular mean (i.e., 3), but there are two respondents with averages (i.e., 5) that fall multiple standard deviations away from the sample mean. These two respondents would be considered outliers and thus would be flagged by the outlier index. The idea behind the IER outlier index is that if a participant pays sufficient attention throughout a questionnaire, that participant’s average item responses will be close to the mean item responses for the entire sample. However, if a participant is engaging in IER, that participant’s average item responses will be far from the mean sample average responses. Meade and Craig (2012)

used an outlier analysis in which they computed three dichotomous flag variables. Specifically, an item was flagged as IER if the averaged Mahalanobis distance, the multivariate distance between a response and the response sample mean, exceeded a critical value associated with $p = .05$, $p = .01$, and $p = .001$ (Meade & Craig, 2012). Thus because researchers have found that IER scores tend to center around the midpoint of a scale (see Maniaci & Rogge, 2014; Meade & Pappalardo, 2013), any scores that are far away from the midpoint should be viewed as outliers for typical IER engagement.

Response Time. The two common ways to detect IER by examining participant response time are the total time spent responding to the questionnaire and the average time spent responding to a single page of the questionnaire (Huang et al., 2012). Although response times that are too short are an obvious indicator of IER, it still remains unclear what long response times mean. Because there are many other factors that can influence a person's response time, interpretation of response time for IER can be a problem and thus should be approached with caution.

Regardless of the type of detection approach, IER negatively impacts data quality (Huang et al., 2012; Meade & Craig, 2012). For instance, IER can either attenuate or artificially inflate predictor-criterion relationships and thus increase the chances of Type I and Type II errors (Clark, Girona, & Young, 2003; Huang, Liu, & Bowling, 2015). Therefore, because detection of IER is critical for maintaining data quality, researchers are concerned also with how to minimize the likelihood that participants engage in IER.

IER Prevention Methods

Similar to IER detection methods, researchers use different ways to try to prevent participants from engaging in IER. One approach to IER prevention is through incentives. If a

participant does not have an incentive to respond carefully, then there is an increased chance that the participant will engage in IER. Incentives relate to strong situations which describe when individual differences in behavior are less likely to occur due to the pervasive situational cues that dictate how a person should behave (Meyer, Dalal, & Hermida, 2010). Stronger or greater numbers of incentives are indicative of strong situations. If an incentive is strong enough, individual differences in behavior are less likely to occur, making behavior across individuals more uniform. For instance, if a job applicant is completing a survey as part of an interview process, the applicant should have a strong incentive to read and respond carefully to each item because the applicant's responses influence the likelihood of receiving the job. However, a job incumbent who is completing a survey for his employer should have less of an incentive to respond carefully compared to the job applicant because the incumbent already has the job. Thus, there is no strong incentive for the incumbent to provide accurate responses.

Another way to prevent IER via incentives is through warnings. In one study, researchers warned participants that inattentive survey responses could be detected and participants who provided such responses would no longer be eligible to receive credit for participation (Huang et al., 2012). The researchers found that the warning condition was effective at preventing IER. Specifically, participants engaged in less IER if presented with the warning compared to receiving no warning (Huang et al., 2012).

A final approach to IER prevention may be questionnaire anonymity. Although some researchers have asserted that anonymity of questionnaires increases likelihood for participants to engage in IER because they feel less accountable for their responses thus leading to less of an incentive to respond carefully (Douglas & McGarty, 2001; Lee, 2006; Meade & Craig, 2012), other researchers have argued that this anonymity helps to decrease IER in questionnaires.

Specifically, Meade and Craig (2012) found that when participants disclosed their identity, they endorsed fewer bogus items (i.e., a way to detect IER) and scored higher on a self-reported attention scale. I have discussed ways to prevent IER. Next, I discuss possible causes of IER.

Possible Causes of IER

Meade and Craig (2012) identified four possible causes of IER. Questionnaire length might cause IER (Huang et al., 2012; Meade & Craig, 2012). A participant needs a certain amount of cognitive resources to be able to complete a questionnaire. Questionnaires that are long can deplete a person's resources. This resource depletion can lead even the most careful participants to become fatigued and thus respond carelessly in questionnaires. Meade and Craig (2012) suggested that there is a positive correlation between IER and survey length. In fact, researchers have found that IER is positively associated with survey length (Baer et al., 1997; Berry et al., 1992).

Also, researchers have suggested that social contact may be a cause of IER (Meade & Craig, 2012). The prevalence of online questionnaires has created a common lack of social contact between the participant and the researcher. Because no researcher is present when a participant completes an online questionnaire at a place of his or her choosing, increased social distance may cause a participant to feel less accountable for his or her actions and thus provide less motivation for the participant to respond carefully to a survey item (Johnson, 2005; Meade & Craig, 2012).

Another possible cause of IER is environmental distractions. Because research is collected typically through online questionnaires, participants usually have the flexibility of completing the questionnaire at a time and place of their choosing. Although this has led to greater convenience on the part of the participant, this has led also to a lack of environmental

control. Because there is a lack of control over the environment in which a participant chooses to complete the questionnaire, there is a chance that a participant chooses to complete the questionnaire in a setting that is rife with distractions (e.g., people loudly talking, television blaring, music playing). Moreover, the participant could be multitasking while completing the questionnaire. Researchers have suggested that increased environmental distractions lead to higher levels of IER (Carrier et al., 2009; Meade & Craig, 2012; Spelke, Hirst, & Neisser, 1976). I have discussed possible causes of IER. Next, I discuss where there is a lack in the IER literature.

IER as a Substantive Variable

Previous studies have investigated IER primarily as a methodological nuisance (Huang et al., 2012; Meade & Craig, 2012). In other words, researchers have focused on the detection of IER and the removal of high-IER respondents from further analyses. Rather than treat IER as a methodological nuisance, I examined IER as a *substantive* variable. Because researchers have conducted previous IER research mainly in the context of single-survey administration within a single setting rather than within longitudinal contexts, little is known about the within-person stability of IER over time and across situations. As a result, it is unclear whether IER is a product of enduring characteristics of respondents or a product of the situation. Therefore, the main purpose of the current study was to investigate whether IER is temporally and situationally stable. In the following section, I discuss personality to provide a theoretical basis for why IER can be expected to display significant within-person stability across time and across situations.

Stability of IER: Impact of Personality and Situations

By definition, personality is stable across time and across situations, meaning that a person's personality—and hence behavior—generally will remain consistent across different

contexts (Funder & Colvin, 1991; Leikas, Lönnqvist, & Verkasalo, 2012; Sherman, Nave, & Funder, 2010). Personality traits are related to different constructs. For example, researchers have found that both agreeableness and neuroticism are associated with social desirability (Ones, Viswesvaran, & Reiss, 1996). Because social desirability and personality traits are related and social desirability relates to IER, it seems plausible that there is an association between personality traits and IER. If certain participants tend to provide low-quality self-report data and this tendency is dependent on particular personality traits, then these traits may affect the extent to which the participants engage in IER, thus supporting an existing relationship between personality and IER. Therefore, in this section, I first address the main effects of personality traits on IER. Then, I discuss the possibility that IER partially reflects an individual difference in how people respond to self-report questionnaires.

Main Effects of Personality on IER. Personality likely influences the degree to which a person engages in IER (Maniaci & Rogge, 2014; Meade & Pappalardo, 2013). For example, Meade and Pappalardo (2013) found that extraversion, agreeableness, and conscientiousness were related to respondents' likelihood of engaging in IER. However, the results of that study should be regarded with caution because the researchers did not make any *a priori* hypotheses regarding the relationships between personality traits and IER prior to conducting the study. Furthermore, they used *self-report* measures to assess personality, which presents a methodological problem. That is, if a given participant engaged in IER throughout the study, then he or she can be expected to have engaged in IER when completing the personality measures. This would jeopardize the researcher's ability to assess the personality of that participant. Moreover, researchers have found advantages of using *other-report* measures rather than self-reports to assess personality traits; other-reports often provide more accurate measures

of personality than do self-reports (Connelly & Hülshager, 2012; Connelly & Ones, 2010; Kolar, Funder, & Colvin, 1996). For instance, Bowling et al. (2015) used other-reports from one rater and found that agreeableness, conscientiousness, extraversion, and neuroticism were related to participants' IER behavior. Given the problems associated with using self-report measures of personality, I used other-reported measures of personality. Also, I built upon the Bowling et al. paper by using reports from multiple raters.

Furthermore, because researchers have found that the Five-Factor Model (FFM; McCrae & Costa, 1987) personality traits, which represent individual differences, correlate with IER (Bowling et al., 2015; Maniaci & Rogge, 2014; Meade & Pappalardo, 2013), there is a strong conceptual basis for expecting that the extent to which a survey respondent engages in IER will reflect enduring individual differences. Thus, in the current study, I viewed IER as a trait, positing that IER is a relatively stable and enduring personality attribute. Further, I posited that IER reflects individual differences in how a person responds to a self-report measure, which can be characterized by the extent to which the person 1) possesses the motivation to be attentive and inquisitive when completing a self-report measure and 2) complies with the researchers' instructions such that the person provides accurate self-report data. In the following subsections, I discuss the conceptual links between specific FFM traits (Costa & McCrae, 1992; McCrae & Costa, 1987) and IER.

Agreeableness. Because people who are high in agreeableness tend to comply with others' requests and have the desire to please others (Costa & McCrae, 1992), researchers have expected that agreeable participants closely follow researchers' instructions. On the other hand, if a participant is low in agreeableness, he or she is less likely to be concerned with following the researcher's requests. Thus, a disagreeable participant would have less motivation to remain

attentive throughout the completion of the survey. Using other-report personality data, Bowling et al. (2015) found that participants low in agreeableness tend to engage in higher levels of IER. Given the above theorizing, I expected to observe a negative relationship between other-reported agreeableness and IER.

Hypothesis 1: Other-reported agreeableness will be negatively associated with IER.

Conscientiousness. People who are high in conscientiousness have a tendency to pay close attention to detail, are thorough and diligent, have self-discipline, and are high in need for achievement (Costa & McCrae, 1992; Goldberg, 1990). As a result, I posited that participants who are conscientious would take the time to closely read questionnaires and be motivated to exert effort when responding to survey items. On the other hand, people low in conscientiousness lack a high need for achievement and motivation to pay attention to detail. Therefore, I posited that low-conscientiousness participants would engage in IER. Using other-report personality data, researchers have found that survey respondents who are low in conscientiousness tend to be more careless in their responses to questionnaires than are those who are highly conscientious (Bowling et al., 2015). Given the above theorizing, I expected to observe a negative relationship between other-reported conscientiousness and IER.

Hypothesis 2: Other-reported conscientiousness will be negatively associated with IER.

Openness. People who are high in openness are curious about the world around them and they value learning (Costa & McCrae, 1992; Goldberg, 1990). Furthermore, people who are high in openness tend to enjoy reading (Goldberg, 1992). Participation in a questionnaire study can be a valuable learning experience, and it requires reading. As a result, participants who are high in openness should be relatively careful when responding to self-report questionnaires. However, people who are low in openness tend to be uninterested in learning, and they dislike

reading. Bowling et al. (2015) found evidence that participants who are low in other-reported openness tend to engage in more IER. Given the above theorizing, I expected to observe a negative relationship between other-reported openness and IER.

Hypothesis 3: Other-reported openness will be negatively associated with IER.

Extraversion. Because people who are high in extraversion are talkative and engaging towards others, extraverts tend to enjoy social interactions (Costa & McCrae, 1992; Goldberg, 1990). In situations that involve interacting and communicating with others, extraverts tend to be sociable and outgoing compared to people who are low in extraversion. Thus, in a research study conducted in the laboratory, a participant who is high rather than low in extraversion will tend to be more talkative and engaging towards the researcher. It might be that these social interactions motivate the participant to care more about the study, and, therefore, engage less in IER, compared to a less communicative, more quiet and reserved participant. Using other-report personality data, Bowling et al. (2015) found that participants low in extraversion tend to engage in higher levels of IER. Given the above theorizing, I expected to observe a negative relationship between other-reported extraversion and IER.

Hypothesis 4: Other-reported extraversion will be negatively associated with IER.

Neuroticism. People who are high in neuroticism are likely to experience feelings of stress, anxiety, anger, and depression (Costa & McCrae, 1992; Goldberg, 1990). These people tend to have intense negative emotional reactions to simple everyday events and are more likely to perceive those events as stressful. On the other hand, people who are low in neuroticism are more emotionally stable and less anxious. Because people who are high in neuroticism more easily experience stress, they may interpret a seemingly simple task such as completing a questionnaire as a daunting and stressful experience. This experienced stress could negatively

affect participants' thinking so that they do not respond as carefully and thus engage in greater IER. Moreover, because people who are high in neuroticism are high in negative affect compared to people who are low in neuroticism, a highly neurotic participant might experience negative affect towards the researcher or might become easily annoyed with research participation. These negatively-charged emotional experiences might lead a participant to be less motivated to remain attentive. In fact, Bowling et al. (2015) found that participants high in neuroticism tend to engage in higher levels of IER. Given the above theorizing, I expected to observe a positive relationship between other-reported neuroticism and IER.

Hypothesis 5: Other-reported neuroticism will be positively associated with IER.

Behavioral Consistency across Different Situations. Situational factors likely influence IER. For example, the degree to which a participant engages in IER might vary depending on whether he or she is completing a survey at home while surrounded by numerous distractions (e.g., television, cell phone, music, people talking) or alone in a quiet room without any distractions (Buchanan, 2000; Meade & Craig, 2012). As described above, personality is in some instances the primary cause of behavior. In other instances the situation is the primary cause of behavior. This concept is consistent with situational strength theory. Specifically, situational strength describes when certain behaviors are more desirable than others due to environmental cues (Meyer, Dalal, & Hermida, 2010). When a strong situation is present (e.g., being in a research lab), the relationship between the person's personality and his or her behaviors is less important because the person's behavior is more likely to be determined by the environment than by his or her personality. For example, being a research participant in a laboratory is a strong situation. Being a research participant in a laboratory (a situational cue) dictates that the participant is expected by the researcher to remain attentive throughout the

study. Outside a laboratory setting, the participant's attentive behavior might be dictated by the person's conscientious personality. However, when a weak situation is present, the association between a person's personality and behavior strengthens because the cues in the environment are more ambiguous. For example, being a research participant for an online study is a weak situation. Whether the participant decides to remain attentive throughout completing the survey depends more upon the participant's personality, whether he or she is conscientious, than upon the actual environment because a researcher is not present to emphasize the importance of paying attention while completing the questionnaire. This intersection between personality and situations relates to the theory of behavioral consistency, which asserts that people's behaviors are generally stable across time and across situations (Funder & Colvin, 1991; Leikas, Lönnqvist, & Verkasalo, 2012; Sherman, Nave, & Funder, 2010).

There are different ways to categorize behavioral consistency. In the current study, I focused on rank-order behavioral consistency (see Sherman, Nave, & Funder, 2010). Rank-order consistency occurs when a given person's behavior remains stable *relative* to the behavior of others (e.g., Funder & Colvin, 1991; Sherman et al., 2010). For example, Funder and Colvin (1991) found that people who demonstrated expressive nonverbal behaviors during a conversation were expressive also during a debate. Although the context or the situation changed, the people who were most expressive in one context tended to be the most expressive in a different context. In other words, their behavior remained consistent relative to that of others. In the current study, I focused on IER's rank-order behavioral consistency. Specifically, I examined whether a person's relative level of IER remains stable across time. I note that being stable across time also meant being stable across situations because all participants completed

the measures on-line at Time 1 and in a laboratory setting at Time 2. This confounded time and setting, and this confound was necessitated by data collection constraints.

Hypothesis 6: IER will be relatively stable across time. Specifically, the extent to which participants engage in IER at Time 1 will be positively associated with the extent to which they engage in IER at Time 2.

Finally, I examined situational similarity effects on rank-ordered behavioral consistency in relation to IER in terms of task type. That is, I examined the degree to which a person engages in IER in two different tasks (i.e., a self-report questionnaire and an open-ended narrative-writing task). The two tasks were different from each other in terms of what they demanded from participants (see Table 1). The questionnaire contained items with a response format on a graphic rating scale, ranging from “strongly disagree” to “strongly agree.” A person was presented with several options from which to choose for each item. The narrative-writing task was different. Because the person was instructed to think about a hypothetical situation and provide his or her thoughts, the person was not presented with response options. The narrative was an open-ended response format whereas the questionnaire was closed-ended. Also, given the diversity in the content of these two tasks, rank-order consistency in the performance across the tasks provided a relatively conservative test of the effects of IER.

Hypothesis 7: IER will be relatively stable across tasks. Specifically, the extent to which participants engage in IER while completing one task will be positively associated with the extent to which they engage in IER while completing the other tasks.

However, the two tasks shared one common feature. They each demanded the participant’s careful attention, and participants were likely to perform well on both if they put

forth sufficient effort. I predicted that stable personality traits are related to IER (see Hypotheses 1, 2, 3, 4, and 5).

II. METHOD

Participants

I used a sample of 288 undergraduates enrolled in an undergraduate psychology course at a medium-sized public university in the Midwestern United States. Because I was unable to match some participants' data across the two phases and some participants only completed the first phase, 3 participants were dropped from analyses. The final sample size was 285. Because some participants did not have any other-report personality data, 73 participants were dropped from the personality analyses for Hypotheses 1 through 5. So, a sample size of 212 was used for the analyses testing Hypotheses 1 through 5. All participants were native English speakers; 66.3% ($n = 189$) of participants were female, and the mean age was 19.93 years. Participants received class credit for their participation.

Design

The study used a within-person design. There were two separate phases to the study: an "on-line phase" and a "laboratory phase." In the on-line phase, participants completed both a self-report questionnaire and an open-ended narrative task. The order in which the participants completed the two on-line tasks was counterbalanced. In the laboratory phase, participants completed both a self-report questionnaire and an open-ended narrative task. The order in which the participants completed the two laboratory tasks was counterbalanced. The self-report questionnaire that participants completed was identical across the two phases. Participants were randomly assigned to complete one of two different open-ended narrative tasks in the on-line phase; whichever narrative task they did not complete in the first phase is the task that they

received and completed in the laboratory phase. On average, there were 10 days between the on-line and laboratory phases. The on-line phase occurred on-line at a place of the participant's choosing. All participants completed the laboratory phase after the on-line phase.

On-Line and Laboratory Measures

Self-report questionnaire. Participants completed a self-report questionnaire during both the on-line and laboratory phases. The questionnaire included bogus item IER measures (Huang, Bowling, Liu, & Li, 2015; Maniaci & Rogge, 2014; Meade & Craig, 2012) as well as substantive personality measures from the International Personality Item Pool (IPIP; Goldberg, 1992, 1999, 2006). The bogus items and the personality items in the on-line questionnaire were identical to the bogus items and the personality items in the laboratory questionnaire. Both questionnaires consisted of 50 personality items and 7 bogus items. The complete questionnaire is included in Appendix A, and a table detailing the source of each item is in Appendix B.

Bogus item. A bogus item (Beach, 1989) has an obvious correct answer. That is, a bogus item is worded in such a way that if a person reads the item, he or she should easily be able to provide the correct response. If a person responds incorrectly to a bogus item, that person is likely engaging in IER. An example item is "I was born on February 30th." Clearly, it is impossible to be born on February 30th, and thus the correct response to that item is "*disagree*." Agreeing with this example item is therefore evidence of IER. The response options for each item were anchored on a 7-point graphic rating scale ranging from *strongly disagree* to *strongly agree*. Refer to Appendix C for a complete list of the bogus items and their correct responses.

The questionnaire contained seven bogus items from Huang, et al. (2015) and Meade and Craig (2012). It is important to include multiple bogus items in a questionnaire so that the items can be dispersed throughout the questionnaire. Participants can vary at which point they engage

in IER when completing a questionnaire (see Huang et al., 2012; Meade & Craig, 2012). Some participants may engage in IER towards the beginning of a questionnaire; some may engage in IER towards the middle; some may engage in IER towards the end of the questionnaire; and, some participants may engage in IER throughout the entire questionnaire. Therefore, dispersing bogus items throughout the questionnaire was imperative to be able to flag a participant who engaged in IER.

IER scores for each participant were computed by summing the dichotomously scored bogus items. If a participant responded with *agree* or *strongly agree* to true items (e.g., I am using a computer currently; see Meade & Craig, 2012), then the response to the bogus item was considered correct and was scored as “0.” However, if a participant provided any response other than agree or strongly agree to true items, the response was considered incorrect and was scored as “1,” indicating the presence of IER. If a participant responded with *disagree* or *strongly disagree* to false items (e.g., I have never used a computer), the response to the bogus item was considered correct and was scored as “0,” whereas if a participant provided any other response, the response was considered incorrect and was scored as “1.” Therefore, a high total score of bogus items was indication that a person engaged in IER. I computed separate IER scores for the on-line phase and the laboratory phase. The Cronbach’s alpha obtained for bogus items in the on-line phase was .61 and .47 in the laboratory phase.

Personality items. The questionnaire included self-report measures of substantive variables, specifically items from the International Personality Item Pool (IPIP; Goldberg, 1992; Goldberg 1999). The IPIP consists of items for each of the FFM personality factors (i.e., extraversion, agreeableness, conscientiousness, emotional stability [neuroticism], and intellect/imagination [openness]). Ten items for each of the FFM personality traits were

included in the self-report questionnaire. All items were administered on a rating scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Example of items included “I am quiet around strangers” (extraversion), “I feel others’ emotions” (agreeableness), “I shirk my duties” (conscientiousness), “I get irritated easily” (emotional stability), and “I spend time reflecting on things” (intellect/imagination). These items were included to ensure that the questionnaire was reasonably long enough to induce IER and served as a medium in which to imbed the bogus items. Note that the length of the current questionnaire was shorter than is typical in IER research. As a result, I was unlikely to observe inflated levels of IER in the current questionnaire. Although this might have provided a conservative test of my hypotheses, Huang et al. (2015) found high levels of IER within a short questionnaire. Reliabilities obtained for the self-reported FFM traits in the on-line phase were .57 for openness, .63 for conscientiousness, .59 for extraversion, .68 for agreeableness, and .65 for neuroticism. And reliabilities for the self-reported traits in the laboratory phase were .65 for openness, .78 for conscientiousness, .69 for extraversion, .77 for agreeableness, and .72 for neuroticism.

Open-ended narrative task. Participants completed two different open-ended narrative tasks (one during the on-line phase and one during the laboratory phase; see Appendix D). Half of the participants were randomly assigned to complete a narrative about their ideal vacation in the on-line phase and a narrative about their dream job in the laboratory phase; and half of the participants were randomly assigned to complete a narrative about their dream job in the on-line phase and a narrative about their ideal vacation in the laboratory phase. I tracked which narrative each participant completed in the on-line phase so that he or she did not complete the same narrative during the laboratory phase.

The number of words written in response to each of the narrative tasks was used to indicate the amount of effort that participants put into the open-ended narrative tasks. Writing few words indicated that the participant likely engaged in IER. So that a high score reflected high IER—as it did with the bogus item measure—open-ended narrative IER scores were computed by multiplying the number of words written by -1. Huang et al. (2014) used a similar open-ended narrative task in their research—specifically, number of written words for an open-ended question about the participant’s job description—and found a negative correlation between IER and word count ($r = -.19, p < .05$). Bowling et al. (2015) used a similar task in their study and found a negative correlation between IER and the number of written follow-up journals ($r = -.33, p < .001$). I computed separate narrative task scores for the on-line phase and the laboratory phase.

Other-Reported Measure

Other-reported personality. Participants were asked to identify five people who they knew well to serve as judges of the participant’s personality. The judges identified by the participants were e-mailed an on-line short form of the IPIP (see Donnellan, Oswald, Baird, & Lucas, 2006). This scale consists of 20 items and assesses each of the FFM traits (four items per FFM trait). The short form of the IPIP was used for the other-reported measure of personality because the FFM trait items were examined as predictors of IER. Participants with data from at least one judge were used to test Hypotheses 1 through 5. On average, each participant had 2.61 judges of personality. Reliabilities obtained for the other-reported FFM traits were .55 for openness, .67 for conscientiousness, .71 for extraversion, .35 for agreeableness, and .62 for neuroticism. Refer to Appendix E for the other-report questionnaire and Appendix F for a table detailing the source of each item.

Procedure

The study included two phases: An on-line phase and a laboratory phase. The on-line phase was completed prior to the laboratory phase for all participants. I recorded the number of days elapsed between the on-line phase and the laboratory phase. This average elapsed time was roughly 10 days. The on-line phase included a self-report questionnaire and an open-ended narrative (see Table 2). The order of administration of these two tasks was counter-balanced. The laboratory phase included a self-report questionnaire and an open-ended narrative. The order of administration of these two tasks was counter-balanced. At the end of the laboratory phase, participants completed two additional tasks (e.g., proofreading and grading an exam), which were not used in the current study's analyses.

III. RESULTS

Preliminary Analyses

Normality of IER indices. Before conducting analyses to test my hypotheses, I examined first the normality of the distributions of the on-line bogus item IER measure, laboratory bogus item IER measure, on-line narrative IER score, and laboratory narrative IER score variables. These preliminary analyses used the skewness and kurtosis statistics with their respective standard errors for each of the variables. A distribution was considered non-normal if the z-score values for skewness and kurtosis were greater than 3.3 (Tabachnick & Fidell, 2000). The on-line bogus item IER measure was non-normally distributed, with skewness of 3.87 ($SE = 0.14$) and kurtosis of 21.12 ($SE = 0.29$). The laboratory bogus item IER measure was non-normally distributed, with skewness of 3.51 ($SE = 0.14$) and kurtosis of 17.13 ($SE = 0.29$). The on-line narrative IER score was non-normally distributed, with skewness of -2.42 ($SE = 0.14$)

and kurtosis of 9.43 ($SE = 0.29$). The laboratory narrative IER score was non-normally distributed, with skewness of -0.88 ($SE = 0.14$) and kurtosis of 1.41 ($SE = 0.29$).

Because all four variables were non-normally distributed, I performed both square root and log10 transformations in an attempt to normalize the distributions (see Tabachnick & Fidell, 2000). However, because the transformations did not make the distributions normal and because the conclusions from the hypothesis tests were the same with both the transformed and non-transformed data, I used the original non-transformed data in all of the subsequently reported analyses. It is important to note that the non-normal distributions of the bogus items variables were not surprising because past studies typically have found that relatively few participants engage in IER (see Meade & Craig, 2012). Thus most of the participant data for bogus item scores was close to zero, which would be indicative of a skewed, non-normal distribution. Moreover, the non-normal distributions of the open-ended narrative task variables were likely due to the large number of extreme values within the data, leading to skewed distributions. Furthermore, I examined multivariate outliers within the other- and the self- reports of the FFM traits, and there was not a difference in the conclusions from the hypothesis tests when the outliers were excluded from analyses, so I kept the outliers for inclusion of data analysis.

Intraclass correlations for other reported personality. I computed intraclass correlations (ICC_{1s}) to estimate the extent to which personality scores provided by different raters of the same target resembled each other. Aggregating personality scores across raters generally is appropriate when agreement index values are greater than .70 (Dixon & Cunningham, 2006). A moderate level of consistency was found between the other-reported ratings for openness: the average measure ICC was .55 with a 95% confidence interval from .15 to .79, $F(20, 80) = 2.21, p < .01$. A substantial level of consistency was found between the other-

reported ratings for conscientiousness: the average measure ICC was .68 with a 95% confidence interval from .39 to .85, $F(20, 80) = 3.04, p < .01$. A substantial level of consistency was found between the other-reported ratings for extraversion: the average measure ICC was .72 with a 95% confidence interval from .46 to .87, $F(20, 80) = 3.48, p < .01$. A moderate level of consistency was found between the other-reported ratings for agreeableness: the average measure ICC was .35 with a 95% confidence interval from -.23 to .70, $F(20, 80) = 1.53, n.s.$. A substantial level of consistency was found between the other-reported ratings for neuroticism: the average measure ICC was .62 with a 95% confidence interval from .28 to .83, $F(20, 80) = 2.61, p < .01$. In sum, the ICCs suggest that, with the exception of extraversion, the raters were not sufficiently high in consistency of the other-reported ratings for the personality traits. It should be noted that for all subsequent analyses, I controlled for the number of raters.

FFM Traits and IER (Hypotheses 1 through 5)

I predicted that other-reported agreeableness, conscientiousness, openness, and extraversion would be negatively related to IER (Hypotheses 1 through 4) and that neuroticism would be positively related to IER (Hypothesis 5). To test these hypotheses, I computed four Pearson product-moment correlations for each of the five personality traits: (a) a correlation between the other-reported personality trait and IER on the on-line bogus item measure, (b) a correlation between the other-reported personality trait and IER on the on-line narrative, (c) a correlation between the other-reported personality trait and IER on the laboratory bogus item measure, and (d) a correlation between the other-reported personality trait and IER on the laboratory narrative. The correlations and descriptive statistics are reported in Table 3. I found very limited support for any of these five personality hypotheses. However, there was one exception to these null findings. Openness was significantly related to the on-line narrative IER

score ($r = -.14, p < .05$). Also, I dichotomized IER so that a participant was flagged as engaging in IER or not engaging in IER rather than analyzing IER as being continuous, and then I ran a point-biserial correlation between the other-reported personality and IER measures. Although the correlations were stronger and closer to statistical significance, this analysis did not change the conclusions from analyses of the hypotheses. Overall, the findings related to personality and IER were weak with FFM trait-IER correlations ranging from $-.14$ to $.10$. Thus Hypotheses 1 through 5 received very limited support.

Stability of IER across Time (Hypothesis 6)

I predicted that IER would be relatively stable across time (Hypothesis 6). In other words, I predicted that the extent to which a participant engaged in IER during the on-line phase would be positively related to the extent to which he or she engaged in IER during the laboratory phase. To test Hypothesis 6, I examined (a) the correlation between the on-line bogus item measure and the laboratory bogus item measure and (b) the correlation between the on-line narrative IER score and the laboratory narrative IER score.

Hypothesis 6 was supported (see Table 3). In both instances, the given IER index assessed during the on-line phase showed a significant ($p < .01$) positive relationship with the same IER index assessed during the laboratory phase. Specifically, the correlation for the bogus item IER measure was $.55$ and the correlation for the narrative IER score was $.43$.

Stability of IER across Tasks (Hypothesis 7)

Also, I predicted that IER would be relatively stable across tasks (Hypothesis 7). That is, I expected that the extent to which a participant displayed IER on the bogus items would be positively related to the extent to which he or she displayed IER on the narrative task. To test Hypothesis 7, I examined four correlations: (a) the correlation between the on-line bogus item

measure and the on-line narrative IER score, (b) the correlation between the laboratory bogus item measure and the laboratory narrative IER score, (c) the correlation between the on-line bogus item measure and the laboratory narrative IER score, and (d) the correlation between the laboratory bogus item measure and the on-line narrative IER score. Hypothesis 7 was not supported. Each of the above correlations was below .10, and none were statistically significant.

Supplementary Analyses

Researchers have suggested that both social contact and environmental distractions may be causes of IER (Meade & Craig, 2012). Specifically, participants may be less likely to engage in IER when there is an increased level of social contact and when there are few environmental distractions. In the current study, the two phases potentially reflected these environmental differences. The laboratory phase had both a higher level of social contact and less potential for environmental distractions than did the on-line phase. Thus, I expected that participants would have engaged in less IER in the laboratory phase than in the on-line phase.

To provide further insight into social contact and environmental distractions as potential predictors of IER, I conducted the following analyses. First, I conducted a repeated measure *t* test to compare the absolute differences of the on-line bogus item measure versus the laboratory bogus item measure. There was a significant difference in the scores for the on-line bogus item measure ($M = .38, SD = .86$) vs. the laboratory bogus item measure ($M = .29, SD = .68, t(284) = -1.98, p = .049$). Cohen's effect size value ($d = 0.12$) suggested modest practical significance of these findings.

Similarly, I conducted a repeated measure *t* test to compare the absolute differences of the on-line narrative IER score versus the laboratory narrative IER score. There was a significant difference in the scores for the on-line narrative IER score ($M = -43.82, SD = 37.92$)

vs. the laboratory narrative IER score ($M = -51.10$, $SD = 22.80$, $t(284) = 3.52$, $p = .001$).

Cohen's effect size value ($d = -0.23$) suggested modest practical significance of these findings.

IV. DISCUSSION

The purpose of this study was to examine whether respondent personality is related to IER and to examine whether IER is stable across time and across situations. I found little evidence that FFM traits were related to IER. Agreeableness, conscientiousness, extraversion, and neuroticism were each unrelated to IER, and openness was related to only some measures of IER. Because Bowling et al. (2015) found that other-reports of FFM personality traits from a single acquaintance were related to respondent IER (they observed correlations in the $-.20$ s), I expected that other-report measures computed from the mean score of multiple acquaintances would be even more strongly related to IER. However, my results showed little evidence that other-reported personality traits were related to IER. There is at least one reasonable explanation for why the current findings differed from those of Bowling et al. Specifically, very few respondents in the current study engaged in IER. For example, 75.1% of participants correctly responded to every bogus item within the on-line phase, and 78.6% of participants correctly responded to every bogus item with the laboratory phase. As a result of such range restriction in IER, the observed personality-IER relationships may have been attenuated.

Furthermore, I found no evidence of the stability of IER across tasks. That is, the extent to which participants displayed IER on the bogus item measures was unrelated to the extent to which they displayed IER on the narrative tasks. However, I did find that IER was relatively stable across time (and situational context, i.e., on-line versus laboratory). Specifically, the bogus item IER measure in the on-line phase was positively related to the bogus item IER

measure in the laboratory phase. Similarly, the narrative IER score in the on-line phase was positively related to the narrative IER score in the laboratory phase.

Also, I observed several noteworthy supplementary findings. First, participants generally engaged in less IER within the laboratory (Time 2) than within the on-line setting (Time 1). These findings are consistent with situational strength theory (Meyer, Dalal, & Hermida, 2010; Meyer, Dalal, & Bonaccio, 2009; Mischel, 1973, 1979). That is, the laboratory phase may have presented a stronger situation than did the on-line phase. In other words, there may have been more powerful cues regarding how one was expected to behave when he or she was in the laboratory compared with the on-line setting. Because no researcher was present during the on-line phase and the participant could complete the on-line phase wherever he or she desired, the situation was weaker, leading the participant to be freer to engage in IER. However, because a researcher was present during the laboratory phase, there was social exchange between the researcher and the participant, which may have created a stronger situation. This stronger situation, in turn, may have discouraged participants from engaging in IER. Furthermore, differences in levels of environmental distractions may have led to participants engaging in less IER within the laboratory than within the on-line setting. Participants may have been distracted (e.g., talking to friends, watching television, texting) when completing the on-line phase. Thus, they may have engaged in relatively high levels of IER during the on-line phase (see Meade & Craig, 2012). Alternatively, the laboratory was relatively free from such environmental distractions. This may have led to relatively lower levels of IER within the laboratory phase.

Although these findings suggested that participants displayed more effort during the laboratory phase than during the on-line phase, the design of my study allowed for a low-rigor test of Meade and Craig's prediction that IER is highest when social contact with the researcher

is low and when environmental distractions are high. Because these two predictors were likely confounded (i.e., the on-line phase had low social contact and potentially high distractions; the laboratory phase had high social contact and low distractions), it is impossible to disentangle whether IER was lower in the lab setting because of either greater social contact, fewer distractions, or some other factor.

Observed Incidence of IER

Most participants—66.3%—responded correctly to every bogus item. The range restriction that was present in each of the four IER measures may have explained the weak correlations I found between personality traits and IER, as well as the weak correlations I found between IER measures taken across different tasks. Unfortunately, there is not enough research on IER thus far to correct for range restriction. It might have been that the short length of the questionnaire (i.e., the on-line and laboratory questionnaires each included only 57 items) contributed to this range restriction. Thus, the observed correlations might have been stronger if I had used longer questionnaires. Moreover, the short length of the self-report questionnaire might have been the cause of the low rates of IER during both phases of the study as the self-report questionnaire may not have been long enough to induce IER. In other words, to “encourage” appreciable levels of IER researchers should perhaps use longer questionnaires than the ones used in the current study (see Meade & Craig, 2012).

Theoretical and Practical Implications

Researchers have primarily focused on IER from a methodological perspective in that they have examined how to detect IER and how to minimize its effects (e.g., Huang, Liu, & Bowling, 2015; Huang et al., 2012; Maniaci & Rogge, 2014; Meade & Craig, 2012). However, less research has been done to examine IER as a substantive variable, as I did in the current

study. Investigating IER as a substantive construct rather than a methodological artifact and at the within-subjects level is necessary in order for researchers to acquire a greater understanding of IER.

Researchers depend on quality data to provide the most accurate representation of phenomena of interest. IER is undesirable to researchers because IER can in some cases attenuate and in other cases artificially inflate predictor-criterion relationships (see Huang, Liu, & Bowling, 2015). Therefore, if participants engage in high levels of IER when completing a self-report questionnaire, then one's data may not provide the best representation of the true relationship between the predictor and criterion variables. Because IER has undesirable effects on data, any research that can help to make both researchers and practitioners more knowledgeable about the causes of IER is valuable because this awareness could help to reduce IER. The results of the current study provided insight into some of the potential causes of IER. Specifically, because I found that FFM traits were unrelated to IER, that IER was not stable across different tasks, but that IER was stable across time (and the confounded setting factor), the extent to which a person engaged in IER seemed to depend on a particular task. It might have been that a person was less likely to engage in IER if the task demanded a great amount of effort compared to a task that did not require much effort to do. Thus, in the current study, it might have been that the differences that the two IER indices (i.e., bogus item measure in the questionnaire, words written for open-ended narratives) required of the participant contributed to the finding that IER was task dependent. It is likely that writing about a hypothetical situation (i.e., open-ended narratives) demanded greater effort on a participant than did responding to a Likert-type item (i.e., bogus item measure in questionnaires). So, the amount of effort that was needed to complete the open-ended narrative tasks would have been greater than what the bogus

item measure in the questionnaires required. If a participant has expended a larger amount of energy to complete a task, then it is possible he or she might have been more likely to engage in IER. Thus, differences in required effort on the study tasks might explain part of the reason why IER was task dependent.

Future Research

Because range restriction of IER occurred, which may have resulted from my use of a short questionnaire, future researchers should examine the current study's hypotheses using a longer questionnaire. This would create increased opportunities for a participant to engage in IER, given that questionnaire length is a likely cause of IER (see Meade & Craig, 2012). Furthermore, researchers should examine non-FFM personality traits as predictors of IER. It might be that narrow personality traits, such as the sub-facets of the FFM (McCrae, Costa, & Martin, 2005), may be better predictors of IER than broad FFM personality traits. For instance, the sub-facet of intellect (Costa & McCrae, 1992; Goldberg, 1990), which is the tendency of a person to enjoy thinking deeply and solving challenging problems, likely predicts IER better than does broadly-measured openness. Also, other personality factors that I did not measure may have influenced participants' IER behavior. For instance, impulsiveness (McCrae, Costa, & Martin, 2005) may affect how quickly a participant reads and responds to a survey questionnaire. If a participant is low in impulse control, then that person may engage in IER because he or she is easily distracted by competing activities. Also, reading comprehension might be another predictor of IER (Johnson, 2005). Perhaps a participant who has a lower level of reading comprehension would engage in more IER because he or she lacks the ability to respond carefully.

Strengths and Limitations

There were several limitations of the present study. First, the Cronbach's alphas for the bogus item scales were low. Again, this may have resulted from the low base rate of IER observed within the current dataset. The questionnaires might have been too short to have induced appreciable levels of IER and therefore may have caused the range restriction in IER. Another possible explanation for the low reliabilities is that the levels of IER wax and wane for many participants. Thus, a participant who engages in IER on one part of the questionnaire might be careful throughout the rest of the questionnaire. Given that the bogus items appeared in different parts of the questionnaires, it is not surprising that the Cronbach's alphas are low.

Moreover, Hypothesis 6 (IER will be relatively stable across time) presented a confound because of the different settings used at Time 1 and Time 2. Setting (i.e., on-line versus laboratory) was confounded with time. Therefore, any results supporting this hypothesis should be approached with caution as it is not possible to disentangle whether statistical significance was found due to the effect of time or due to the effect of setting.

Although researchers have found some evidence for the validity of the open-ended narrative task as a measure IER (Bowling et al., 2015; Huang et al., 2014), this IER detection method might have been a limitation in the current study. One disadvantage to using this detection method was that the lack of control for verbal ability may have presented a possible confound. Rather than measuring IER, the open-ended narrative task may have measured some aspects of verbal or writing ability. Moreover, word count might not be the most effective way to detect the amount of effort a participant has exerted. A participant could have spent a significant amount of time thinking about the narrative prompt and planning how to best respond. Further, it could have been that a participant was a concise writer so the participant did not write many words as a response. The issue would be that that participant would be flagged

as engaging in IER because the participant provided such a short narrative response. Although other researchers have used this as a way to detect IER, this method should be regarded with caution.

Although efforts were taken to counterbalance the tasks within the two phases of the study, the order of the two phases was not counter-balanced (i.e., the on-line phase was always administered at T1 and the laboratory phase was always administered at T2). This created the confound between time and setting. I decided to not counterbalance the on-line and laboratory phases. I was concerned that if a participant had completed the laboratory phase prior to the on-line phase, context effects from interaction with the researcher in the first phase might have filtered into the on-line phase. Moreover, counterbalancing the phases would have complicated the study design. However, designing the study so that each participant completed the on-line phase before the laboratory phase created a confound.

Another possible limitation might have been the breach of anonymity at the end of the on-line phase. After participants completed the self-report questionnaire and the open-ended narrative task on-line, they were asked to provide information regarding several people who knew the participants well. The participants had to provide their names so that the raters would know for whom they were responding to the short IPIP. However, prior research has provided conflicting results regarding whether anonymity encourages or discourages IER (Douglas & McGarty, 2001; Lee, 2006; Meade & Craig (2012).

Another possible limitation might have been the use of the same self-report questionnaire during both phases of the study. Because the same questionnaire was administered in the two phases, participants were exposed to the same set of personality items and bogus items. This design could have influenced how participants attended to the bogus items. This is known as the

recency effect, a situation in which a cognitive bias increases the importance of a recently encountered stimulus (Bjork & Whitten, 1974; Craik & Lockhart, 1972). For instance, if a certain bogus item was especially salient to a participant during the on-line phase, there may have been a chance that the item remained salient to the participant while he or she completed the questionnaire in the laboratory phase. Thus, the participant's salient memory of the item could have inflated the chances that the participant was more aware of the item when encountering it in the laboratory phase, especially if the time elapsed between the two phases was short. This recency effect could have led to the participant being more attentive when completing the questionnaire than the participant would have otherwise been, thus decreasing the chances for the participant to engage in IER.

Despite these limitations, the present study had several strengths. First, I used multiple methods to measure IER (i.e., bogus items, open-ended narrative) rather than only one. The IER detection methods that I used have been found to be some of the more effective IER indices (see Huang et al., 2015; Huang et al., 2012; Huang, Liu, & Bowling, 2015). Specifically, Meade and Craig (2012) found that the bogus items were one of the most effective measures of IER compared to other methods. Furthermore, participants had the opportunity to provide other-reports of personality for as many as five different raters rather than for only one acquaintance. The inclusion of rating from multiple raters should have increased the reliability and validity of my personality data (Funder & Colvin, 1988).

Conclusion

The purpose of the current study was to examine personality as a predictor of IER and to determine whether IER can be considered a trait, similar to personality, by assessing the stability of IER across time and across tasks. I found limited evidence for relationships between FFM

personality traits and IER. Furthermore, I found no evidence that IER was stable across tasks. However, I did find that IER was stable across time (and the confounded setting factor), which provides partial support that IER is trait-like. This finding suggests that IER could be regarded more as a trait that is enduring rather than a state that is fleeting. Clearly, this new conceptualization of IER would have significant implications on how IER is studied in the future. For example, researchers might focus more on the substantive nature of IER, examining personality correlates and potential causes, rather than focus on the methodological nature of IER. Also, if IER is regarded more as a trait rather than a state, researchers might re-evaluate best practices for measuring IER. Given the theoretical and practical importance of IER, I encourage future research on the substantive nature of IER.

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Table 1.
Comparison between Study Tasks

Study Task	Amount of Researcher Supervision	Response Format
Self-report questionnaire completed outside the lab	Low	Closed-ended
Narrative completed outside the lab	Low	Open-ended
Self-report questionnaire completed within the lab	High	Closed-ended
Narrative completed within the lab	High	Open-ended

Table 2.
Tasks to be Administered During the Two Phases

On-line phase	Self-report questionnaire	The participant completed an on-line questionnaire.
	Open-ended narrative	The participant completed the open-ended narrative on-line.
Laboratory phase	Self-report questionnaire	The participant completed a pencil-and-paper questionnaire.
	Open-ended narrative	The participant wrote an open-ended narrative.

Table 3
Descriptive Statistics and Correlations for Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. On-line bogus item measure	.38	.86	—							
2. Laboratory bogus item measure	.29	.68	.55**	—						
3. On-line narrative IER score	-43.82	37.92	.07	.09	—					
4. Laboratory narrative IER score	-51.10	22.80	.05	.05	.43**	—				
5. Other-reported agreeableness	5.38	.92	-.08	-.12	-.08	-.10	—			
6. Other-reported conscientiousness	4.79	1.09	-.07	-.04	-.12	-.13	.24**	—		
7. Other-reported openness	5.18	.80	-.05	-.03	-.14*	-.06	.37**	.20**	—	
8. Other-reported extraversion	4.69	1.17	.02	-.09	-.04	.04	.29**	.02	.12	—
9. Other-reported neuroticism	3.67	.98	.04	.06	.10	.05	-.18**	-.24**	-.24**	-.01

Note. * $p < .05$; ** $p < .01$.

Table 4.
Correlations for Study Variables and Self-Reported Personality

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. On-line bogus	-																	
2. Laboratory bogus	.61**	-																
3. On-line narrative	.12	.11	-															
4. Laboratory narrative	.13	.12	.43**	-														
5. OR agreeableness	-.11	-.14	-.10	-.10	-													
6. OR conscientiousness	-.10	.03	-.11	-.11	.22**	-												
7. OR openness	-.12	.01	-.12*	-.12	.43**	.21**	-											
8. OR extraversion	.03	-.11	.02	.00	.35**	.23	.33	-										
9. OR neuroticism	.01	.12	.13	.12	-.27*	-.26*	-.21*	.02	-									
10. SO agreeableness	-.12	-.22	-.11	-.22	.64*	.42**	-.23	.44**	-.31*	-								
11. SO conscientiousness	-.10	.13	-.22	-.21	.41*	.31**	.23*	.33	-.21	.10*	-							
12. SO openness	.02	.10	-.21	-.12	.40	.30	.54*	.42*	-.32*	.30*	.23*	-						
13. SO extraversion	.14	.02	-.13	-.11	.42**	.31	.43	.65**	-.31	.32	.47*	.33	-					
14. SO neuroticism	.20	.21	.20	.13	-.35	-.44*	-.20	.23	.51*	-.42*	-.35**	.30	.32	-				
15. SL agreeableness	-.21	-.3	-.21	-.21	.71**	.64*	-.32	.52*	-.22*	.74*	.55**	.43	.51	-.43	-			
16. SL conscientiousness	-.31	.20	-.24	-.31	.42*	.75**	.31*	.34	-.40*	.52*	.68**	.41	.30	-.31	.44	-		
17. SL openness	-.23	.12	-.13	.10	.51*	.32*	.70*	.63**	-.42*	.41	.50	.61	.52	-.30	.51	.33	-	
18. SL extraversion	-.11	.14	-.20	.11	.60**	.40*	.71*	.76**	-.52*	.62*	.41	.50	.60	.32	.62	.51	.71	-
19. SL neuroticism	-.31	.32	.21	-.33	.52**	.31*	.23*	.34	.61*	.16*	-.38**	.52	.51	.17	-.41	-.50	.22	-.32

Note. * $p < .05$; ** $p < .01$. OR = other-reported. SO = self-reported online. SL = self-reported in laboratory.

APPENDIX A

Self-Report Questionnaire Used in Both On-Line and In-Lab Questionnaires.

Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please answer each question by selecting the response option that most closely matches your opinion.	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1. I am the life of the party.	1	2	3	4	5	6	7
2. I feel little concern for others.	1	2	3	4	5	6	7
3. I am always prepared.	1	2	3	4	5	6	7
4. I get stressed out easily.	1	2	3	4	5	6	7
5. I have a rich vocabulary.	1	2	3	4	5	6	7
6. I don't talk a lot.	1	2	3	4	5	6	7
7. I am interested in people.	1	2	3	4	5	6	7
8. I have been to every country in the world.	1	2	3	4	5	6	7
9. I leave my belongings around.	1	2	3	4	5	6	7
10. I am relaxed most of the time.	1	2	3	4	5	6	7
11. I have difficulty understanding abstract ideas.	1	2	3	4	5	6	7
12. I feel comfortable around people.	1	2	3	4	5	6	7
13. I insult people.	1	2	3	4	5	6	7
14. I pay attention to details.	1	2	3	4	5	6	7
15. I worry about things.	1	2	3	4	5	6	7
16. I have a vivid imagination.	1	2	3	4	5	6	7
17. I have never used a computer.	1	2	3	4	5	6	7
18. I keep in the background.	1	2	3	4	5	6	7
19. I sympathize with others' feelings.	1	2	3	4	5	6	7
20. I make a mess of things.	1	2	3	4	5	6	7
21. I seldom feel blue.	1	2	3	4	5	6	7
22. I am not interested in abstract ideas.	1	2	3	4	5	6	7
23. I start conversations.	1	2	3	4	5	6	7
24. I am not interested in other people's problems.	1	2	3	4	5	6	7
25. I sleep less than one hour per night.	1	2	3	4	5	6	7
26. I get chores done right away.	1	2	3	4	5	6	7

Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please answer each question by selecting the response option that most closely matches your opinion.	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
27. I am easily disturbed.	1	2	3	4	5	6	7
28. I have excellent ideas.	1	2	3	4	5	6	7
29. I have little to say.	1	2	3	4	5	6	7
30. I have a soft heart.	1	2	3	4	5	6	7
31. I often forget to put things back in their proper place.	1	2	3	4	5	6	7
32. I get upset easily.	1	2	3	4	5	6	7
33. I can teleport across time and space.	1	2	3	4	5	6	7
34. I do not have a good imagination.	1	2	3	4	5	6	7
35. I talk to a lot of different people at parties.	1	2	3	4	5	6	7
36. I am not really interested in others.	1	2	3	4	5	6	7
37. I like order.	1	2	3	4	5	6	7
38. I change my mood a lot.	1	2	3	4	5	6	7
39. I am quick to understand things.	1	2	3	4	5	6	7
40. I don't like to draw attention to myself.	1	2	3	4	5	6	7
41. I am enrolled in a Psychology course currently.	1	2	3	4	5	6	7
42. I take time out for others.	1	2	3	4	5	6	7
43. I shirk my duties.	1	2	3	4	5	6	7
44. I have frequent mood swings.	1	2	3	4	5	6	7
45. I use difficult words.	1	2	3	4	5	6	7
46. I don't mind being the center of attention.	1	2	3	4	5	6	7
47. I feel others' emotions.	1	2	3	4	5	6	7
48. I can run two miles in two minutes.	1	2	3	4	5	6	7
49. I follow a schedule.	1	2	3	4	5	6	7
50. I get irritated easily.	1	2	3	4	5	6	7
51. I spend time reflecting on things.	1	2	3	4	5	6	7
52. I am quiet around strangers.	1	2	3	4	5	6	7
53. I make people feel at ease.	1	2	3	4	5	6	7
54. I am exacting in my work.	1	2	3	4	5	6	7
55. I am using a computer currently.	1	2	3	4	5	6	7
56. I often feel blue.	1	2	3	4	5	6	7
57. I am full of ideas.	1	2	3	4	5	6	7

Demographic Questions (These items were included in the on-line questionnaire)

1. What is your gender? (Please select one) Female Male
2. What is your age in years?

The following questions will be used to track your participation throughout this study. Though your answers will likely be unique to you, please remember what you put for each question. If a question does not apply to you, please make up something that you will remember for the next testing session.

Please do not make up your name though. Your name will be sent to the person who will be filling out a questionnaire on your behalf and it will be how they know why they are getting the survey.

What are the last four (4) digits of your cell phone number?

What was your high school mascot?

What was your first job?

What was the name of your first pet?

What is your full name?

APPENDIX B

Descriptions of the Self-Report Questionnaire Items.

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional Stability	Bogus
1	"I am the life of the party."			X			
2	"I feel little concern for others." (R)				X		
3	"I am always prepared."		X				
4	"I get stressed out easily." (R)					X	
5	"I have a rich vocabulary."	X					
6	"I don't talk a lot." (R)			X			
7	"I am interested in people."				X		
8	"I have been to every country in the world."						X ^a
9	"I leave my belongings around." (R)		X				
10	"I am relaxed most of the time."					X	
11	"I have difficulty understanding abstract ideas." (R)	X					
12	"I feel comfortable around people."			X			
13	"I insult people." (R)				X		
14	"I pay attention to details."		X				

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional Stability	Bogus
15	"I worry about things." (R)					X	
16	"I have a vivid imagination."	X					
17	"I have never used a computer."						X ^b
18	"I keep in the background." (R)			X			
19	"I sympathize with others' feelings."				X		
20	"I make a mess of things." (R)		X				
21	"I seldom feel blue."					X	
22	"I am not interested in abstract ideas." (R)	X					
23	"I start conversations."			X			
24	"I am not interested in other people's problems." (R)				X		
25	"I sleep less than one hour per night."						X ^a
26	"I get chores done right away."		X				
27	"I am easily disturbed." (R)					X	
28	"I have excellent ideas."	X					
29	"I have little to say." (R)			X			
30	"I have a soft heart."				X		
31	"I often forget to put things back in their proper place." (R)		X				

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional Stability	Bogus
32	"I get upset easily." (R)					X	
33	"I can teleport across time and space."						X ^b
34	"I do not have a good imagination." (R)	X					
35	"I talk to a lot of different people at parties."			X			
36	"I am not really interested in others." (R)				X		
37	"I like order."		X				
38	"I change my mood a lot." (R)					X	
39	"I am quick to understand things."	X					
40	"I don't like to draw attention to myself." (R)			X			
41	"I am enrolled in a Psychology course currently."						X ^a
42	"I take time out for others."				X		
43	"I shirk my duties." (R)		X				
44	"I have frequent mood swings." (R)					X	
45	"I use difficult words."	X					
46	"I don't mind being the center of attention."			X			
47	"I feel others' emotions."				X		
48	"I can run two miles in two minutes."						X ^b
49	"I follow a schedule."		X				

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional Stability	Bogus
50	“I get irritated easily.” (R)					X	
51	“I spend time reflecting on things.”	X					
52	“I am quiet around strangers.” (R)			X			
53	“I make people feel at ease.”				X		
54	“I am exacting in my work.”		X				
55	“I am using a computer currently.”						X ^a
56	“I often feel blue.” (R)					X	
57	“I am full of ideas.”	X					

Note. Each of the FFM items were from the IPIP (Goldberg et al., 2006). “R” denotes reverse scored item. For the bogus items,

^a denotes Meade and Craig (2012); ^b denotes Huang et al. (In Press).

APPENDIX C

Bogus Items.

1. I have been to every country in the world (careful responses = “disagree” or “strongly disagree”).
2. I have never used a computer (careful responses = “disagree” or “strongly disagree”).
3. I sleep less than one hour per night (careful responses = “disagree” or “strongly disagree”).
4. I can teleport across time and space (careful responses = “disagree” or “strongly disagree”).
5. I am enrolled in a Psychology course currently (careful responses = “agree” or “strongly agree”).
6. I can run two miles in two minutes (careful responses = “disagree” or “strongly disagree”).
7. I am using a computer currently (careful responses for the on-line phase = “agree” or “strongly agree”; careful responses for the laboratory phase = “disagree” or “strongly disagree”).

APPENDIX D

Open-ended Narrative.

Using the space below, please describe your ideal vacation.

Using the space below, please describe your dream job.

APPENDIX E

Other-Report of Personality Questionnaire.

The following questions ask about different aspects of your PARTNER/FRIEND'S personality. Please mark the response that best reflects the extent to which each statement describes HIM/HER.	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
1. He/she is the life of the party.	1	2	3	4	5	6	7
2. He/she sympathizes with others' feelings.	1	2	3	4	5	6	7
3. He/she gets chores done right away.	1	2	3	4	5	6	7
4. He/she has frequent mood swings.	1	2	3	4	5	6	7
5. He/she has a vivid imagination.	1	2	3	4	5	6	7
6. He/she doesn't talk a lot. (R)	1	2	3	4	5	6	7
7. He/she is not interested in other people's problems. (R)	1	2	3	4	5	6	7
8. He/she often forgets to put things back in their proper place. (R)	1	2	3	4	5	6	7
9. He/she is relaxed most of the time. (R)	1	2	3	4	5	6	7
10. For this question, please choose 'slightly agree.' ^a	1	2	3	4	5	6	7
11. He/she is not interested in abstract ideas. (R)	1	2	3	4	5	6	7
12. He/she talks to a lot of different people at parties.	1	2	3	4	5	6	7
13. He/she feels others' emotions.	1	2	3	4	5	6	7
14. He/she likes order.	1	2	3	4	5	6	7
15. He/she gets upset easily.	1	2	3	4	5	6	7
16. He/she has difficulty understanding abstract ideas. (R)	1	2	3	4	5	6	7

17. He/she keeps in the background. (R)	1	2	3	4	5	6	7
18. He/she is not really interested in others. (R)	1	2	3	4	5	6	7
19. He/she makes a mess of things. (R)	1	2	3	4	5	6	7
20. For this question, please chose 'disagree.' ^a	1	2	3	4	5	6	7
21. He/she seldom feels blue. (R)	1	2	3	4	5	6	7
22. He/she does not have a good imagination. (R)	1	2	3	4	5	6	7

Note. Each of the FFM items were from the mini-IPIP (Donnellan et al., 2006). “R” denotes a reverse scored item. ^adenotes an instructed response item (Meade & Craig, 2012).

APPENDIX F

Descriptions of the Other-Report Questionnaire Items.

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Directed Response
1	“He/she is the life of the party.”			X			
2	“He/she sympathizes with others’ feelings.”				X		
3	“He/she gets chores done right away.”		X				
4	“He/she has frequent mood swings.”					X	
5	“He/she has a vivid imagination.”	X					
6	“He/she doesn’t talk a lot.” (R)			X			
7	“He/she is not interested in other people’s problems.” (R)				X		
8	“He/she often forgets to put things back in their proper place.”		X				

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Directed Response
9	“He/she is relaxed most of the time.” (R)					X	
10	“For this question, please choose ‘slightly agree.’”						X
11	“He/she is not interested in abstract ideas.” (R)	X					
12	“He/she talks to a lot of different people at parties.”			X			
13	“He/she feels others’ emotions.”				X		
14	“He/she likes order.”		X				
15	“He/she gets upset easily.”					X	
16	“He/she has difficulty understanding abstract ideas.” (R)	X					

Item Number	Item Content	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Directed Response
17	“He/she keeps in the background” (R)			X			
18	“He/she is not really interested in others.” (R)				X		
19	“He/she makes a mess of things.” (R)		X				
20	“For this question, please chose ‘disagree.’”						X
21	“He/she seldom feels blue.” (R)					X	
22	“He/she does not have a good imagination.” (R)	X				X	

Note. Each of the FFM items were from the IPIP (Goldberg et al., 2006). “R” denotes reverse scored item.

