Reducing Inattentive Responding by Promoting Autonomous Motivation

by

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Abstract

In some cases, as much as 9% of participants in self-report studies are extremely inattentive (Maniaci & Rogge, 2014). Previous researchers have dealt with this problem by removing inattentive participants from data analyses. A better solution would be to prevent inattentive responding. Self-Determination Theory may provide an effective approach to reducing inattentive responding, specifically by attempting to promote autonomous motivation in research participants. Providing participants with personalized feedback may increase participants' autonomous motivation, which in turn may lead to more attentive responding. Study 1 showed that participants who are interested in feedback are more attentive throughout an online survey than participants who are not interested in feedback. The next goal was to show through experimental manipulation that emphasizing the opportunity to receive personalized feedback would decrease levels of inattentive responding and increase autonomous motivation. No significant difference occurred between groups in levels of inattention, nor in autonomous motivation.

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Reducing Inattentive Responding by Promoting Autonomous Motivation

Many scientific studies rely on self-report data, especially in the field of psychology. As popular as it is, this method is not without its flaws, one of which is that it relies on the capability and capacity of participants to accurately report their beliefs, perspectives, and behavior. One common behavior of participants is to not pay sufficient attention to the study and thus respond inaccurately. This is referred to as inattentive responding, a behavior that has gained notice in recent years as methods for its detection have improved and are more widely used (Maniaci & Rogge, 2014; Meade & Craig, 2012; Ward & Meade, 2018). In some cases, more than 80% of participants in self-report studies report occasionally responding inattentively, and as many as 9% are found to be extremely inattentive (Maniaci & Rogge, 2014; Meade & Craig, 2012). With such a large proportion of research participants exhibiting inattentive behavior, it is possible that the results of studies retaining large proportions of inattentive participants may be biased, underpowered, or even misleading. As referenced by Maniaci and Rogge (2014), inattentive responding can impact correlational and factor analyses with enough significance that it may even give rise to spurious results (Johnson, 2005; Meade & Craig, 2012; Woods, 2006). Specifically, it can introduce random noise that attenuates correlations, impacts coefficient alphas, leads to weak correlations between positive and negative worded items, creates spurious results, and suppresses results (Woods, 2006; Huang, Li & Bowling, 2015). It is important for scientists to make sure that results are as

accurate as possible, which, in self-report analyses, means accounting for inattentive participants.

Measuring and Addressing Inattentive Responding

Before discussing the details of the current proposal, it is necessary to define exactly what is meant by the term 'inattentive responding.' There are a few commonly used terms that are synonymous with inattentive responding, such as careless responding, insufficient effort responding, and random responding. Each of these terms describes a potential behavior of research participants. This behavior results from a lack of care for, attentiveness to, interest in, or inability to comprehend the content of the research study, leading the participant to respond to the research in a manner that is untruthful, inaccurate, or inconsistent. This is different from socially desirable responding, which, as opposed to inattentive responding, requires high attention to self-report item content (Maniaci & Rogge, 2014). The current studies will focus only on inattentive responding and not on other forms of problematic responding behavior (e.g. lying, socially desirable responding).

There are many ways to detect and measure inattention, two common approaches being the long-string index and psychometric synonyms (e.g., Johnson, 2005; Meade & Craig, 2012). In the long-string index, the maximum number of consecutive responses selecting the same response option across questions measuring different constructs is calculated "post-hoc" (after data are collected). A threshold for an acceptable amount of consecutive congruent responses can then be identified as a cut score based on this calculation. If a participant exceeds this threshold, it suggests that they are responding inattentively by selecting the same response option across multiple questions measuring

different constructs. Another approach to measuring inattention uses psychometric synonyms, which are pairs of items that are selected post-hoc because they have very strong positive correlations over the entire sample (yielding two sets of items that should be highly correlated for any individual attentive participant). An acceptable threshold is then identified based on this calculation such that a participant with a within-person correlation across those items below that threshold would be identified as responding inattentively. In addition to these and other "post hoc" techniques that can be calculated for any self-report measures, researchers may add items or measures specifically designed to assess inattention, such as "bogus items" (Meade & Craig, 2012) or "directed questions" that ask participants to select specific response options (Maniaci & Rogge, 2014). These techniques, among others, have proven themselves useful in detecting inattention and in screening out highly inattentive respondents (Maniaci & Rogge 2014; Meade & Craig, 2012).

Evidence suggests that the exclusion of extremely inattentive participants from data analyses yields better results by allowing for higher internal consistency reliability, more accurate parameter estimates, and increased statistical power when compared to a data set that includes extremely inattentive respondents (Maniaci & Rogge, 2014). However, having to reduce sample size is not optimal and should not be the only option researchers have in dealing with this problem. Screening out highly inattentive participants may yield better results in some contexts, though there are some limitations to this approach (Maniaci & Rogge, 2014). In some cases, reducing sample size by excluding inattentive participants from analyses could actually reduce statistical power or introduce bias in the results of the study. Bias would arise from the exclusion of

participants with certain personality characteristics, such as being low in conscientiousness, agreeableness, or emotional stability, which have been shown to be correlated with inattentive responding (Bowling et al., 2016; McKay, Garcia, Clapper, & Schultz, 2018).

Another limitation of common approaches to dealing with inattention applies to methods that require researchers to set cutoff values or thresholds for acceptable amounts of participant inattention. There has yet to be any widely accepted declaration as to which values are the most appropriate for each measurement or whether these cutoff values generalize across samples (Maniaci & Rogge, 2014). In conclusion, while the methods used up to this point have helped solve part of the problem, they have failed to eliminate the problem altogether, in part due to the limitations mentioned above. In the current studies, an alternative approach that may provide a better solution to the problem of participant inattention is suggested and tested.

Preventing Inattentive Responding

The purpose of the present studies is to reduce the negative effects of inattentive responding without sacrificing sample size. The best way to accomplish this goal is to ensure that inattentive responding does not occur. Ward and Meade (2018) set out to reduce inattentive responding by applying social psychological theories in three separate studies geared towards increasing participant motivation to respond carefully. In the first of these studies, Ward and Meade aimed to increase the social influence of survey administrators on survey participants by manipulating survey instructions. They did this via a script condition in which the instructions included details about the researchers as well as what it meant to participate in the experiment, and a video condition in which the

researchers recited the instructions from the script condition for the participants to watch. Ward and Meade suggest that these manipulations could increase participant obedience, conformity, and compliance. However, this approach could also decrease participants' intrinsic or autonomous motivation for participating in the research study by instilling within the participants a sense of controlled motivation (Ryan & Deci, 2000). In their third study, Ward and Meade attempted to leverage social exchange theory in survey instructions by informing the participants that they would either receive a food item or that a charitable donation would be made on their behalf. However, according to Deci and Ryan (1999), tangible rewards often significantly undermine self-reported interest and intrinsic motivation. The potential for these approaches to undermine interest and intrinsic motivation may help explain why Ward and Meade's first and third studies failed to produce any large and consistent effects in regards to preventing inattention. They did find significant effects in their second study, in which instructions designed to induce cognitive dissonance increased logical consistency of responses and self-reported survey interest, while instructions designed to create a sense of hypocrisy increased accuracy on instructed-response items. Though most of their results were nonsignificant, Ward and Meade did show that manipulating survey design has the potential to influence facets of participant behavior that may lead to more attentive survey participation.

While Ward and Meade (2018) set out to increase participant motivation to respond carefully, they did not directly incorporate contemporary approaches to human motivation that may help explain inattentive responding behavior. This may be due to the theories they incorporated in their research, such as social exchange theory. Within the framework of social exchange theory is the core concept of interdependence, which is

heavily rooted and widely regarded in an economic context and is more closely related to properties of extrinsic motivation than to properties of intrinsic motivation (McDonell et al., 2006). Also, social exchange involves a connection with another person, whereas online surveys do not explicitly involve interaction with another person (Stafford, 2008). Another theory Ward and Meade incorporated into their research design is that of social influence. A few types of social influence that are specifically mentioned by Ward and Meade are obedience, conformity, and compliance. These types of social influence frequently involve some degree of external pressure, and according to Ryan and Deci (2000), external pressure facilitates a more external perceived locus of causality, which can diminish participants' autonomous motivation. For these reasons, we believe a different theoretical approach may be more successful, perhaps one that emphasizes different forms of motivation and the importance of autonomous motivation, such as Self-Determination Theory, rather than social exchange or social influence.

Self-determination theory, according to Ryan and Deci (2000), emphasizes the contexts in which the natural processes of self-motivation and the psychological need for autonomy flourish. This theory also calls attention to the human capability to develop personality and the resources involved with such capacity (Ryan & Deci, 2000). Whereas Ward and Meade (2018) tried to influence participants' attentiveness in their studies, their approach may have decreased autonomous motivation by undermining participants' sense of autonomy and increasing the sense of external control felt by participants, ultimately nullifying their attempts to prevent inattentive responding. Consistent with the importance of autonomous motivation, Maniaci and Rogge (2014) found that participants who reported participating in research for more internal or autonomous reasons (e.g.,

gaining insight about oneself or others) spent more time answering survey questions, were more likely to comply with study instructions, and had lower scores on the long string index (indicating more attentive responding).

In the present studies, we aimed to incorporate facets of self-determination theory into online research surveys using self-report methods to assess personality and related constructs. Specifically, we gave participants the chance to learn something about themselves using personalized feedback about their personality, which according to self-determination theory may increase autonomous motivation by encouraging participants to identify with the personal value of their research participation (Deci & Ryan, 1985). This, in turn, should reduce the frequency of inattentive responding, as autonomously motivated people "have more interest, excitement, and confidence, which in turn is manifest both as enhanced performance [and] persistence," (Ryan & Deci, 2000, p. 69). We accomplished this by conducting two studies, both of which involved online personality assessments and personalized feedback.

In the first study, we incentivized participants with and directly emphasize the potential for personalized feedback that is based on their responses within the survey. All participants were offered the option to view or to not view their personalized feedback. As it was part of the recruitment incentive and was emphasized in the study recruitment materials, we expected that participants who expressed interest in this personalized feedback by choosing to view it at the end of the survey would have been more motivated to give accurate and attentive responses so that their feedback was accurate. Thus, we hypothesized that participants who are interested in receiving personalized feedback would be more attentive throughout the survey than participants who are not interested in

receiving personalized feedback. This study would reveal whether a correlation between observed interest in viewing feedback and inattentive responding exists, but it does not allow us to directly examine causal associations or to rule out alternative explanations (e.g., that interest in feedback and inattentive responding are both caused by third variables).

In the second study, we used an experimental design to more directly examine whether offering personalized feedback increases participants' autonomous motivation for participating in the study and reduces rates of inattentive responding. Study 2 again offered all of the participants personalized feedback about themselves based on their responses within the survey. However, this feedback was not used as a recruitment incentive, and we informed only half of the participants prior to responding to any survey items that they would have the option to receive personalized feedback. Thus, we hypothesized that participants who were informed prior to the study that they would receive personalized feedback (the experimental group) would give more attentive responses than those who were not informed about the feedback until the end of the study (the control group). Given the opportunity to learn something about themselves, we also hypothesized that the experimental group would report higher levels of autonomous motivation for participating in the study than the control group.

Study 1 Method

Participants

A total of 264 individuals completed the survey (after removing duplicate responses). They were recruited from an undergraduate participant pool and from websites that advertise Internet-based studies to interested volunteers. Participants recruited from the undergraduate participant pool received credit toward meeting a course requirement. As an additional incentive, all participants were offered the opportunity to view personalized feedback about their personality.

Of the 264 participants retained in analyses, 31% identified as male, 68% identified as female, and one participant identified as transgender. A majority of participants (61%) identified as White, while 20% identified as Black or African American, 8% as Asian, and 11% selected another or multiple options. The mean age of participants was 23 years (SD = 8.48) and ranged from 18 to 56 years.

The recruitment materials indicated that participants should be in a romantic relationship, and the survey included several measures focused on romantic relationship evaluations. A total of 72 participants (27%) who initially described their relationship status as "single" were asked to confirm their relationship status on a subsequent page, with the warning that "many questions in the survey ask about your current romantic partner." Of those 72 participants, 30 again confirmed that they were single, while the remaining 42 indicated that they were in a romantic relationship. These 72 participants were retained in the current analyses, which do not focus on measures of relationship

evaluations. Excluding these 72 participants (or just the 30 who confirmed their single status) does not change the general pattern of results reported below, although their influence will be addressed in Supplemental Analyses.

Procedure

Participants completed the survey measures over the Internet. The study advertisements and consent form emphasized that all participants would have the option to view personalized feedback about their personality. Specifically, the study advertisements and consent form both stated, "At the end of the study, you will have the option to receive personalized feedback about your personality and your relationship based on the answers that you provide."

After reading a brief consent paragraph, participants completed a survey including demographic questions, self-report measures of personality, and other self-report measures that are not relevant to the current hypotheses. The entire survey included more than 200 self-report questions and was anticipated to take approximately 20-30 minutes to complete for a typical attentive participant not including time spent viewing personality feedback. The median amount of time spent on the survey was 36 minutes for those who viewed the feedback and 27 minutes for those who did not view the feedback. Upon completing the survey, all participants were asked whether or not they wanted to view the personalized feedback. Participants who chose to view feedback saw histograms showing how their scores on various personality dimensions compared to typical scores (e.g., low, average, high) on those dimensions, along with a brief explanation of what each score means.

Measures

As described above, the full survey included over 200 self-report questions. Several measures that are not relevant to the current hypotheses focus on the participant's behavior and evaluations of their close relationships. The current analyses include the measures described below.

Personality. Participants completed the 60-item version of the HEXACO personality inventory (Ashton & Lee, 2009), with items presented on three pages at different points in the survey. The HEXACO scale measures six dimensions of personality, each having acceptable internal consistency reliability in the current study. These dimensions are: honesty-humility ($\alpha = .767$), emotionality ($\alpha = .763$), extraversion ($\alpha = .770$), agreeableness ($\alpha = .739$), conscientiousness ($\alpha = .769$), and openness to experience ($\alpha = .761$). These personality data were not used in the main analyses but were used to provide personalized feedback to participants, to measure inattentive responding, and in supplemental analyses.

Interest in personality feedback. At the end of the study, participants were provided the opportunity to view personalized feedback based on their responses to the HEXACO personality inventory. Participants were asked to respond to the following question: "Would you like to see personalized feedback based on your responses to the questions in this study?" with a response of "Yes" or "No."

Measures of inattentive responding. For all participants, inattentive responding was measured using multiple indices that were embedded with other items throughout the survey, including the long-string index, even/odd correlations, psychometric synonyms/antonyms, directed questions, a measure of infrequent responding, and time spent on the survey. Two of these indices (directed questions and the infrequency

subscale) used items added to the survey specifically to assess inattentive responding. The other indices were calculated "post-hoc" using patterns of responses to the HEXACO personality scale and other survey measures.

Long-string index. In congruence with previous research (e.g., Maniaci & Rogge, 2014; Meade & Craig, 2012), we calculated (post-hoc) the maximum number of consecutive responses for which each participant selected the same response option across the 60-item HEXACO personality scale. Since the HEXACO personality scale includes items measuring different personality traits intermingled on each page, selecting the same response option over a large number of items indicates inattentive responding. The 60 HEXACO items were disbursed throughout three pages, with two pages including 24 consecutive items each, and the third page including 12 consecutive items. The long-string index was calculated separately within each page. Analyses were based on each participant's maximum long-string index value across the three pages of HEXACO questions (with a potential range from 1 to 24 for the first two pages, and 1 to 12 for the 3rd). Long-string scores ranged from 2 to 24 in the current sample, with a median of 3. A total of 7 participants (2.7%) had the maximum possible score of 24, indicating that they selected the same response option across an entire page of HEXACO items.

Even/odd correlations. Following previous research (e.g., Maniaci & Rogge, 2014; Meade & Craig, 2012), each of the six trait-level scales of the 60-item HEXACO personality assessment were split into even and odd halves based on the order of item presentation within the survey. We then calculated averages for all of the scale halves (e.g., a participant's average score for honesty-humility based on the 5 even items and based on the 5 odd items measuring honesty-humility). Within-subject correlations were

calculated between these scale halves (scores calculated for even and odd items) across the six personality traits. These even/odd index scores capture the degree to which a participant responds consistently to even and odd items within each subscale. Lower even/odd index scores suggest that the participant was responding inattentively. In the current sample, the median within-person correlation was .52, although 19% of participants had a negative within-person correlation, suggesting that they responded inconsistently across even and odd scale halves. These scores were reverse coded so that higher scores indicate more inattentive responding.

Psychometric synonyms and antonyms. In accordance with previous methodology (e.g., Maniaci & Rogge, 2014; Meade & Craig, 2012), we created a psychometric synonym index by selecting pairs of items within the 60-item HEXACO personality assessment that are calculated post-hoc to have the strongest positive correlations. However, as the survey used was the 60-item HEXACO personality inventory, it was possible that the item pairs with the strongest positive correlations could have been from the same personality domain. In order to avoid selecting multiple item pairs form the same personality domain, we calculated an item pair with the strongest positive correlation for each domain. This gave us a measurement that is distributed across the 6 personality dimensions measured by the HEXACO inventory. We then calculated across these item pairs for each subject. Since these pairs of items were strongly positively correlated across the entire sample (the median within-person correlation was .57), a weak or negative within-person correlation for an individual participant indicates inattentive responding. In the current sample, 12% of participants had a negative within-person correlation, suggesting that they responded inconsistently

across these psychometric synonym item pairs. Scores for psychometric synonyms were reverse coded so that higher scores indicate more inattentive responding.

Similarly, we calculated a psychometric antonym index by selecting pairs of HEXACO items from each domain that had the strongest negative correlations then calculated within-subject correlations across these item pairs. Since these psychometric antonym item pairs were strongly negatively correlated across the entire sample (the median within-person correlation was -.55), a weak or positive within-person correlation for an individual participant indicates inattentive responding. In the current sample, 13% of participants had a positive-within person correlation, suggesting that they responded inconsistently across these psychometric antonym item pairs.

***Directed questions*.** Following well-established practices (e.g., Maniaci & Rogge, 2014; Meade & Craig, 2012), 4 questions that instruct participants to select a specific response or to skip a question were embedded in the self-report measures throughout the survey. Three items asked participants to select a specific response ("Please choose 'Agree Strongly' as your response to this item"; "For this item, please select 'Disagree' as your response"; "For this item, please select 'Not at all' as your response"), with other responses indicating inattention. A fourth item asked participants to skip the question ("I read instructions carefully. To show that you are reading these instructions, please do not answer this question"), with any answer indicating inattention. These items were summed for an overall measure of inattention ranging from 0 to 4. Higher scores on this measure indicate more inattentive responding. In the current sample, 65% of participants did not miss any directed questions, 21% missed just one, and 14% missed more than one directed question.

ARS-18 infrequency subscale. Six items from the infrequency subscale of the Attentive Responding Scale (ARS-18; Maniaci & Rogge, 2014) were embedded with other self-report measures throughout the survey. These items were selected based on extreme skew, such that attentive participants generally respond similarly (e.g., "I don't like getting speeding tickets"). Each item was recoded to have a possible value ranging from 0 (a frequent response) to 5 (an infrequent response). Because the items were embedded within other scales, this 6-point response scale differed from the 5-point response scale used in Maniaci & Rogge, 2014. These scores were then summed across the six items for each participant, yielding an infrequency index that could range from 0 to 30. Higher scores in this measure represent more infrequent responses suggesting participant inattention. In the current sample, 31% of participants had a score of 0, the median score was 2, and the highest observed score was 20.

Time spent responding to HEXACO items. To measure the tendency to quickly rush through survey questions (Maniaci & Rogge, 2014; Wood, Harms, Lowman, & DeSimone, 2017), the survey website saved the time (in seconds) spent answering questions on each page. Time spent answering questions was added across the three pages containing HEXACO items. Other pages were excluded from this measure because participants recruited from some sources completed a longer version of the survey and viewed pages with survey items that others did not view, and thus they cannot be compared on time spent on the survey in its entirety. Time spent on the three pages with HEXACO items ranged from less than one minute to 163 minutes, with a median of 7.7 minutes. A total of 16 participants (6%) spent an average of less than 2 seconds answering each question, which has been suggested as a cutoff for identifying

excessively careless responses (Huang, Curran, Keeney, Poposki, & DeShon, 2012), although there is some debate about the suitability of this general cutscore (Curran, 2016).

Outliers were truncated to the 80th percentile (12.5 minutes) to minimize the influence of participants who took a break from the survey for an extended period of time during which they left the webpage open and came back to complete it later. Scores on this measure were reverse coded so that higher scores represent less time spent, indicating more inattentive responding. The reverse coded scores ranged from 0 (any response time of 12.5 minutes or longer) to 712 (the fastest response time, corresponding to less than 1 second per question across the three pages with HEXACO items).

Study 1 Results and Brief Discussion

Preliminary Analyses

In order to create a comprehensive inattentive responding index, psychometric synonyms and even/odd correlations had to be reverse scored so that they were in the same direction as the other indices of inattention. Each of the inattention measures was then standardized, and correlational analyses were run for all standardized inattention items. Results of the correlational analyses are listed in Table 1.

Since the individual indices of inattention were generally correlated with each other, a composite measure of inattention was calculated including all seven indices. The composite measure was calculated as the mean of an individual participant's scores on all available individual indices of inattention. Participants were given a score on this composite measure of inattention if they had scores on at least five out of the seven individual indices of inattention. This would allow participants who did not receive scores for specific indices (e.g., psychometric synonyms and antonyms could not be calculated for participants with no variability in responding to those item pairs since the within-person correlation would be undefined) to receive scores on the composite measure. This composite measure of inattention demonstrated internal consistency reliability of $\alpha = .679$ in the current sample.

Maniaci & Rogge (2014) argued that typical approaches used to examine reliability of self-report measures may not be appropriate for indices of inattentive responding, which include heterogeneous item content that is not likely to converge

among attentive participants. Consistent with this expectation, the inattention indices in the current study demonstrated significantly greater internal consistency reliability (α = .804) among participants who chose not to view feedback (and were hypothesized to be more inattentive) than among participants who viewed the feedback (α = .236), $\chi^2(1) = 25.64$, $p < .001$ (based on comparisons using AlphaTest; Lautenschlager & Meade, 2008). In contrast, participants who viewed feedback had significantly higher internal consistency for the HEXACO items assessing honesty-humility (α = .802), extraversion (α = .805) and openness to experience (α = .781) than participants who did not view feedback (αs = .530, .619, and .586, respectively), all χ^2s > 9.35, all *p*s < .003. The two feedback groups had comparable internal consistency reliability for the remaining HEXACO personality dimensions (emotionality, agreeableness, and conscientiousness, all χ^2s < 1.62, all *p*s > .11).

Table 1. Correlations of Individual Indices of Inattention in Study 1.

	Correlations							
Indices	1	2	3	4	5	6	7	8
1. DQs	--							
2. Infrequency	.61**	--						
3. Time	.40**	.47**	--					
4. Long-string	.43**	.54**	.32**	--				
5. Synonyms	.27**	.19**	.14*	.08	--			
6. Antonyms	.22**	.16*	.12	.19**	.26**	--		
7. Even/odd	.24**	.35**	.11	.18**	.27**	.12	--	
8. Composite	.74**	.78**	.60**	.67**	.53**	.52**	.51**	--

Note. **. $p < .01$, *. $p < .05$, DQs = Directed Questions, Time = time spent responding to HEXACO items in seconds (truncated to the 80th percentile), Composite = the comprehensive inattentive responding index. Time, Synonyms, and Even/odd were all reverse scored so that higher scores indicate more inattentive responding.

Interest in Feedback and Inattentive Responding

Out of the 264 participants, 187 (71%) chose to view the feedback at the end of the survey. Scores between the two groups (those who chose to view the personalized feedback and those who did not) on each individual measure of inattention as well as on the comprehensive inattentive responding index that incorporated all of the individual measures of inattention were compared using *t*-tests. The results of these *t*-tests are listed in Table 2. Equality of variances for each of the indices as well as the composite measure was calculated using Levene's test. For psychometric synonyms, psychometric antonyms, and even/odd correlations, Levene's test did not indicate significant differences in the variances between groups. For all other indices, Levene's test suggested that the groups had significantly unequal variances. Degrees of freedom for indices with unequal variances between groups were calculated using Satterthwaite approximation (equivalent

to Welch's *t*-test). A significant difference was found between the two groups on the comprehensive inattentive responding index such that participants who chose to view the feedback were generally less inattentive (M = -.17, SD = .34) than participants who chose not to view the feedback (M = .46, SD = .92), $t(185) = 5.00$, $p < .001$.

Table 2. Interest in Feedback and Inattentive Responding *T*-tests in Study 1.

	Yes Feedback		No Feedback			
Indices of Inattention	*M*	*SD*	*M*	*SD*	*df*	*t*
DQs	0.39	0.75	1.31	1.54	88.72	-4.94**
Infrequency	1.97	2.53	5.93	5.91	85.48	-5.60**
Time	221.07	162.19	340.29	228.40	108.92	-4.17**
Long-string	3.49	1.31	5.97	6.63	78.47	-3.27**
Synonyms[a]	0.49	0.38	0.60	0.41	260	-1.92
Antonyms[a]	-0.54	0.36	-0.29	0.41	256	-4.78**
Even/odd[a]	0.55	0.40	0.69	0.42	261	-2.39*
Composite	-0.17	0.34	0.46	0.92	84.68	-5.82**

Note. **. $p < .01$, *. $p < .05$, DQs = Directed Questions, Time = time spent responding to HEXACO items in seconds (truncated to the 80th percentile), [a]. Values reported for these indices are those with equal variances assumed as a nonsignificant value was calculated using Levene's Test for Equality of Variances, all other indices report values with unequal variances assumed. *M*s and *SD*s reported for Time, Synonyms, and Even/odd are after reverse scoring these items so that higher scores indicate more inattentive responding. All *M*s and *SD*s reported for individual indices are those for the unstandardized versions of these variables.

Additional analyses showed significant differences between the two groups in six out of seven individual measures of inattention (directed questions, infrequency subscale, time spent on survey, long-string, psychometric antonyms and even/odd correlations) such that participants who chose to view personalized feedback at the end of the survey showed fewer signs of inattentive responding than participants who chose not to view the feedback (all *p*s < .05). A marginally significant difference between the two groups

occurred in the psychometric synonyms measure such that participants who chose to view personalized feedback at the end of the survey had stronger positive correlations between psychometric synonym item pairs than did participants who did not choose to view the feedback (p = .06). After adjusting for multiple comparisons using Bonferroni correction, the two groups differed significantly in five out of seven individual measures of inattention (all except psychometric synonyms and even/odd correlations).

Supplemental Analyses

Participants Identifying as Single. As noted in the Methods section, 72 participants (27%) initially described their relationship status as "single," even though the study recruitment materials indicated that participants should be in a romantic relationship and that the survey included measures focused on relationship evaluations. When these 72 participants were asked to confirm their relationship status, 30 again confirmed that they were single, while 42 changed their response to indicate that they were in a romantic relationship. It is not clear if these self-reported responses were dishonest or inattentive, but these participants all presumably ignored the description of the study in the recruitment materials. These 72 participants scored significantly higher on the inattention composite (M = 0.23, SD = 0.82) than other participants (M = -0.07, SD = 0.54), $t(94.71) = -2.85$, p = .005.

These 72 participants were also significantly less likely to choose to view feedback, $\chi^2(1) = 9.24$, p = .002, with only 57% of them choosing to view feedback compared to 76% of other participants. Of the 77 participants who chose not to view the feedback, 31 (40%) had previously identified themselves as single. Excluding these 72 potentially ineligible participants who identified as "single" from analyses did not change

the general pattern of results previously reported. After excluding those participants, the remaining 46 participants who chose not to view feedback were still significantly higher on the inattention composite (M = 0.35, SD = 0.82) than the remaining 146 participants who viewed feedback (M = -0.20, SD = 0.32), $t(49.40) = -4.51$, $p < .001$.

Personality and Interest in Feedback. As previously mentioned, research has shown that inattention is related to personality (Bowling et al., 2016; McKay, Garcia, Clapper, & Schultz, 2018). As such, *t*-tests were run in order to see if feedback groups differed in HEXACO personality dimensions. Results of these *t*-tests are listed in Table 3. Levene's test suggested that variances differed significantly between groups for honesty/humility, emotionality, extraversion and openness to experience. Degrees of freedom for domains in which unequal variances was assumed between groups was calculated using Satterthwaite approximation. Significant differences between the two groups were found in Honesty-Humility, Extraversion, Conscientiousness, and Openness to Experience such that participants who were interested in viewing the feedback scored higher on each of these personality domains than did participants who were not interested in the feedback.

Personality and Inattention. In order to further address the relation between personality and inattention, a multiple regression analysis regressing the inattention composite simultaneously onto all six HEXACO personality domains indicated that personality traits (as measured by the 60-item HEXACO personality inventory) jointly accounted for 17% of the variance in inattention observed in the current sample ($R^2 = .17$, $F(6, 256) = 8.55$, $p < .001$). After controlling for the six HEXACO personality domains, the decision to view feedback at the end of the study accounted for an additional 12% of

the variance in inattention over and above the HEXACO personality domains ($\Delta R^2 = .12$, $F(1,255) = 41.66$, $p < .001$). Feedback choice was a significant predictor of inattention ($\beta = -0.37$, $t = -6.46$, $p < .001$) even after controlling for the HEXACO personality domains. This suggests that the effects of personality on inattention and on interest in feedback do not fully explain the relation between participant inattention and interest in feedback in Study 1.

Table 3. Differences in HEXACO Personality Domains Between Groups *T*-tests Study 1.

	Yes Feedback		No Feedback			
Domains	*M*	*SD*	*M*	*SD*	*df*	*t*
Honesty/Humility	4.10	1.03	3.70	0.68	209	3.69**
Emotionality	4.02	0.92	3.81	0.75	172	1.86
Extraversion	4.05	0.91	3.84	0.72	179	1.99*
Agreeableness[a]	3.86	0.85	3.78	0.73	262	0.72
Conscientiousness[a]	4.40	0.79	3.97	0.80	262	4.07**
Openness to Experience	4.08	0.93	3.55	0.71	185	5.00**

Note. **. $p < .01$, *. $p < .05$, [a] Values reported for these domains are those with equal variances assumed as nonsignificant values were calculated for each using Levene's Test for Equality of Variances, all other domains report values with unequal variances assumed.

Brief Discussion

As predicted, participants who were interested in viewing personalized feedback about their personality based on their responses in a personality survey were more attentive than participants who were not interested in viewing said feedback. They also provided responses with significantly higher internal consistency reliability for 3 out of 6 HEXACO personality dimensions. However, as this study did not use experimental

methods, the directionality of the effect is ambiguous and causality cannot be inferred. It is yet to be understood whether inattention causes a diminished interest in personalized feedback or if participants who are more interested in personalized feedback are relatively more attentive. There is also the potential for a third variable related to time pressure. Participants who are in a rush may be less attentive and also less likely to take the time to view feedback.

For these reasons, a second study that addresses these limitations was conducted using an experimental method and without emphasizing feedback as a recruitment incentive. Instead, we recruited participants through Amazon Mechanical Turk (MTurk), a website that allows users to participate in online research for financial compensation, and randomly assigned them to different versions of the study that emphasized their ability to receive personalized feedback either at the beginning of the study or at the end of the study. This allowed us to determine whether the experimental manipulation causally affected participant attentiveness.

Study 2 Method

Participants

After excluding duplicate responses, a total of 387 individuals (after removing duplicate responses) accessed the survey and continued past the consent paragraph. Of those, 382 completed at least one of the outcome measures described below and were retained in analyses, and 336 participants completed the entire survey and indicated their interest or disinterest in viewing personality feedback. The proportion of participants who dropped out before finishing the study did not differ significantly between the control condition (15%) and the feedback condition (12%), $\chi^2(1) = 0.74$, $p = .39$.

All participants were recruited from MTurk and were each paid $1 for completing the survey. Of all participants who answered demographic questions, 49% identified as male and 51% identified as female. A majority of participants identified as White (77%), while 12% identified as Black or African American, 7% as Asian, and 5% selected another or multiple options. The mean age was 35.91 years (SD = 11.10) and ranged from 19 to 71 years. Participants were not expected to be in a romantic relationship (unlike Study 1), although a similar proportion of participants (31%) identified their relationship status as "single."

Procedure

Participants completed the personality assessment and relevant measures over the internet using a similar design to Study 1. Unlike Study 1, the recruitment materials and consent paragraph did not mention personalized feedback as a recruitment incentive. Participants read a consent paragraph before completing the study. After reading the consent paragraph, participants were randomly assigned to either the control group or the experimental group. Those assigned to the experimental group were informed before answering any survey questions that they would have the option to view personalized feedback based on their responses at the end of the survey. These participants viewed the following paragraph immediately following general survey instructions:

> After you finish this study, we will provide you with the opportunity to view personalized feedback about your personality based on your responses. This feedback will show your scores on several personality traits and descriptions of what these scores may suggest about you. This optional feedback is intended to help you understand your personality and behavior. **There are generally no right or wrong answers, but the personalized feedback will be most accurate if you take your time and provide an honest response to each question.** Thank you for your help with our research!

After viewing this paragraph, participants in the experimental group were then asked if they were interested in viewing said feedback. Additionally, participants in the experimental condition viewed the bolded sentence above each of the three survey pages that included questions from the HEXACO personality scale.

Participants in the control group were not informed about the personalized feedback until after completing all survey questions. After the general survey instructions, participants in the control condition viewed the following paragraph, then viewed the bolded sentence above each of the three survey pages with HEXACO items:

> This study includes several questions about your personality and behavior. **There are generally no right or wrong answers—we just want you take your time and provide an honest response to each question.** Thank you for your help with our research!

Upon completing the survey, all participants were given the option to view personalized feedback regardless of their experimental condition.

Measures

The full survey included several self-report questions not relevant to the proposed analyses and was designed to take an attentive participant approximately 15-20 minutes to complete. The current study focused on the measures described below, including the same measures of personality and inattentive responding used in Study 1 as well as some new measures.

Personality. Participants completed the same 60-item version of the HEXACO personality inventory (Ashton & Lee, 2009) described in Study 1, with items presented on three pages at different points in the survey. Cronbach's alpha was calculated for each of the HEXACO domains to be as follows: honesty-humility ($\alpha = .780$), emotionality ($\alpha = .779$), extraversion ($\alpha = .833$), agreeableness ($\alpha = .792$), conscientiousness ($\alpha = .803$), and openness to experience ($\alpha = .802$). As in Study 1, these personality data were not

used in the following main analyses, but were used to provide personalized feedback to participants to measure inattentive responding, and also in supplemental analyses.

Interest in personality feedback. As in Study 1, all participants were provided the opportunity to view personalized feedback based on their responses to the HEXACO personality inventory at the end of the study. Participants in the feedback condition responded to the following question both at the beginning of the survey and at the end of the survey: "Would you like to see personalized feedback based on your responses to the questions in this study?" with a response of "Yes" or "No." Participants in the control condition were asked this question only at the end of the survey.

Autonomous motivation. Participants answered several questions about their motivation for participating in research, with each item using the same stem, "For each reason, please rate the extent to which it is a reason you are participating in this study." The following items were included as a way to assess participant levels of autonomous motivation: "supporting research", "gaining insight about myself", "learning about myself," "learning something personally important or useful," "for fun," "it seemed enjoyable," "out of curiosity or interest." Responses to these items were provided on a 6-point Likert scale ranging from "1 = Not at all," to "6 = Completely." Because this group of items demonstrated high internal consistency ($\alpha = .942$), scores for this measure were calculated by averaging a participant's responses to all of these items. Higher scores represent more autonomous motivation for participating in this study.

Measures of inattentive responding. Inattentive responding was assessed using the same measures as Study 1, including the long-string index, even/odd correlations,

psychometric synonyms/antonyms, directed questions, a measure of infrequent responding, and time spent answering survey questions.

The long-string index was calculated as described in Study 1, by calculating the maximum number of identical responses within each of three pages of HEXACO questions. Long-string scores ranged from 2 to 24, with a median of 3. The even-odd index, psychometric antonyms, and psychometric synonyms were also calculated as described in Study 1, and scores on the even-odd index and psychometric synonyms were again reversed so that higher scores indicated more inattentive responding. Study 2 also included the same 4 directed questions described in Study 1. A higher proportion of participants (78%) did not miss a single directed question in the current sample, with 17% missing one directed question, and 5.7% missing more than one.

Although Study 2 used the same ARS-18 infrequency subscale items described in Study 1, participants responded on the same 5-point response scale used by Maniaci & Rogge (2014), rather than the 6-point response scale used in Study 1. Each infrequency item was recoded to range from 0 (a frequent response) to 4 (an infrequent response) and summed across items. As a result, infrequency scores in Study 2 could theoretically range from 0 to 24. In Study 2, 32% of participants had an infrequency score of 0, the median score was 1, and the highest observed score was 17.

As in Study 1, response time across the three pages with HEXACO items, ranging from less than 1 minute to 32 minutes, with a median of 4.8 minutes. Approximately 16% of participants spent less than 2 seconds per question. As in Study 1, outliers were truncated to the 80th percentile (7.7 minutes) and reversed so that high scores indicated

faster responses. Reverse coded scores ranged from 0 (any response time of 7.7 minutes or longer) to 455 (the fastest response time).

Study 2 Results and Discussion

Preliminary Analyses

As in Study 1, in order to create a comprehensive inattentive responding index, psychometric synonyms and even/odd correlations had to be reverse scored so that they were in the same direction as the other indices of inattention. Each of the inattention measures was then standardized, and correlational analyses were run for all standardized inattention items. Results of the correlational analyses are listed in Table 4.

Table 4. Correlations of Individual Indices of Inattention in Study 2.

	Correlations								
Indices	1	2	3	4	5	6	7	8	9
1. DQs	--								
2. Infrequency	.67**	--							
3. Time	.42**	.48**	--						
4. Long-string	.18**	.04	.04	--					
5. Synonyms	.31**	.43**	.23**	-.07	--				
6. Antonyms	.49**	.59**	.41**	-.04	.36**	--			
7. Even/odd	.41**	.48**	.35**	.06	.31**	.37**	--		
8. Composite	.77**	.85**	.67**	.09	.61**	.75**	.69**	--	
9. Autonomous	.20**	.26**	.05	.05	.04	.18**	.10	.20**	--

Note. **. $p < .01$, *. $p < .05$, DQs = Directed Questions, Time = time spent responding to HEXACO items in seconds (truncated to the 80th percentile), Composite = the comprehensive inattentive responding index, Autonomous = autonomous motivation. Time, Synonyms, and Even/odd were all reverse scored so that higher scores indicate more inattentive responding.

All of the indices were significantly correlated with each other except for the long-string index. Because of this, the long-string index was removed from the composite measure of inattention. Again, the composite measure was calculated as the mean of an individual participant's scores on all available individual indices of inattention. Participants were given a score on this composite measure of inattention if they had scores on at least four out of the six individual indices of inattention included in the composite. This would allow participants who did not receive scores for psychometric synonyms and antonyms due to lack of variability in responding to receive scores on the composite measure.

Of the participants in the feedback condition, 82% initially said they wanted to view the feedback. When all participants were asked about their interest in viewing feedback at the end of the survey, 64% said they wanted to view the feedback. Chi-square analysis shows no significant difference in the proportion of participants who expressed interest in viewing the feedback when asked at the end of the study for those in the feedback condition (with 68% saying "yes") and control condition (with 60% saying "yes"), $\chi^2(1) = 1.92$, $p = .17$. The primary analyses report below include the 18% of participants in the feedback condition who initially expressed disinterest in viewing the feedback at the beginning of the study. Excluding those participants from analyses does not change the general pattern of results reported below.

Feedback Manipulation and Inattentive Responding

T-tests were conducted on all individual indices of inattention as well as on a composite measure of inattention in order to determine if there was a significant effect of experimental condition on participant levels of inattention. The results of these *t*-tests are

listed in Table 5. Levene's test was not significant for any of these analyses, indicating that the groups did not differ significantly in variances in any of the individual indices of inattention nor for the composite measure of inattention.

Results show no significant effect of experimental condition on participant levels of inattention in any of the individual indices of inattention (all $|t|$s < 1.58, all ps > .11). Similarly, there was also no significant effect of experimental condition on participant levels of inattention in the comprehensive inattentive responding index.

Because the measures of inattentive responding were skewed, a series of nonparametric *t*-tests were also conducted comparing participant levels of inattention between participants in the feedback condition and those in the control condition using the Mann-Whitney U test. Results remained nonsignificant for the composite measure of inattention in this nonparametric analysis ($p > .05$).

Table 5. Experimental Manipulation and Inattentive Responding *T*-tests Study 2.

	Feedback Condition		Control Condition			
Indices of Inattention	*M*	*SD*	*M*	*SD*	*df*	*t*
DQs	0.31	0.71	0.34	0.76	337	0.36
Infrequency	3.26	4.15	3.41	4.52	329	0.32
Time	185.19	133.68	162.80	130.70	343	-1.57
Long-string	3.91	2.00	4.00	2.45	374	0.39
Synonyms	0.56	0.49	0.52	0.46	365	-0.76
Antonyms	-0.56	0.46	-0.54	0.44	366	0.44
Even/odd	0.58	0.42	0.54	0.43	374	-0.86
Composite	0.01	0.72	-0.03	0.72	342	-0.46

Note. $p > .05$ for all *t* values, DQs = Directed Questions, Time = time spent responding to HEXACO items in seconds (truncated to the 80th percentile), Composite = the comprehensive inattentive responding index. All values reported for these indices are those with equal variances assumed as nonsignificant values were calculated for each using Levene's Test for Equality of Variances. *M*s and *SD*s reported for Time, Synonyms, and Even/odd are after reverse scoring these items so that higher scores indicate more inattentive responding. All *M*s and *SD*s reported for individual indices are those for the unstandardized versions of these variables.

Feedback Manipulation and Autonomous Motivation

A *t*-test was conducted in order to compare scores between the two groups in overall autonomous motivation. No significant effect was found, indicating that participants in the feedback condition did not report significantly greater autonomous motivation ($M = 3.64$, $SD = 1.36$) when compared to participants in the control condition ($M = 3.40$, $SD = 1.43$), $t(379) = -1.62$, $p = .106$. This finding does not confirm our hypothesis that participants who are informed at the beginning of a survey that they will be given the opportunity to view personalized feedback about their personality based on their responses to an online personality survey will report higher levels of autonomous

motivation than participants who are not informed about the opportunity to view said feedback until after completing the survey.

Significant positive correlations were found between autonomous motivation and several individual indices of inattention as well as the composite measure of inattention. These results are also listed in Table 4. The direction of these associations was not consistent with expectations, such that participants who endorsed more autonomous motivation for participating in the survey tended to have *higher* rates of inattentive responding as measured by directed questions, the infrequency subscale, psychometric antonyms, and the composite index. This association remained significant after controlling for experimental condition in a multiple regression analysis, and was not significantly moderated by experimental condition (β = -0.08, t = -1.16, p = .25).

Interest in Feedback and Inattentive Responding

Although the hypotheses regarding the experimental manipulation in Study 2 were not supported, the pattern of results for interest in feedback from Study 1 was replicated in Study 2. Participants who expressed interest in viewing the feedback when asked at the end of the survey (regardless of experimental condition), showed significantly lower levels of inattentive responding based on the comprehensive inattentive responding composite (M = -0.08, SD = 0.70) than participants who did not express interest in viewing the feedback (M = 0.11, SD = 0.72), t(334) = -2.46, p = .015. This suggests again that people who are interested in viewing personalized personality feedback based on their responses to a personality survey are more attentive than participants who are not interested in feedback. This association remained significant

after controlling for experimental condition in a multiple regression analysis, and was not significantly moderated by experimental condition ($\beta = 0.06$, $t = 0.33$, $p = .74$).

Because results were highly skewed, a nonparametric alternative to the *t*-test (the Mann Whitney U test) was also conducted comparing participant levels of inattention between participants who expressed interest in viewing feedback at the end of the study to those who did not. Results remained significant for the composite measure of inattention in this nonparametric analysis ($p < .01$).

Supplemental Analyses

As in Study 1, differences in personality between those who chose to view feedback at the end of the survey and those who chose not to view feedback were also examined using *t*-tests. Results of these *t*-tests are listed in Table 6. Equality of variances for each of the HEXACO personality domains was calculated using Levene's Test. For all domains, Levene's test was nonsignificant, thus, equal variances were assumed. Significant differences between the two groups were found in Honesty-Humility ($p < .05$), Agreeableness ($p < .001$), Conscientiousness ($p < .05$), and Openness to Experience ($p < .01$), such that participants who were interested in viewing the feedback scored higher on each of these personality domains than did participants who were not interested in the feedback.

In order to assess the effects of personality on inattention, a multiple regression analysis regressing the inattention composite simultaneously onto all six HEXACO personality domains indicated that personality traits (as measured by the 60-item HEXACO personality inventory) jointly accounted for 46% of the variance in inattention observed in the current sample ($R^2 = .46$, $F(6, 329) = 45.95$, $p < .001$). After controlling

for the six HEXACO personality domains, the decision to view feedback at the end of the study did not account for significant variance in inattention, ($\Delta R^2 = .00$, $F(1,328) = 0.06$, $p = 0.80$). This suggests that, as opposed to the results of Study 1, individual differences may account for the association between interest in feedback and inattention in Study 2.

Table 6. Differences in HEXACO Personality Domains and Autonomous Motivation Between Groups Based on Interest in Viewing Feedback *T*-tests Study 2.

	Yes Feedback		No Feedback			
Domains	*M*	*SD*	*M*	*SD*	*df*	*t*
Honesty/Humility	4.12	0.92	3.86	0.97	334	2.38*
Emotionality	3.67	0.91	3.65	0.88	334	0.19
Extraversion	3.83	0.97	3.67	0.94	334	1.49
Agreeableness	4.10	0.84	3.71	0.91	334	3.95**
Conscientiousness	4.50	0.83	4.28	0.87	334	2.32*
Openness	4.32	0.95	4.04	0.93	334	2.67**
Autonomous	3.70	1.32	3.15	1.39	334	3.56**

Note. **. $p < .01$, *. $p < .05$, Openness = openness to experience, Autonomous = autonomous motivation, All values reported for these domains are those with equal variances assumed as nonsignificant values were calculated for each using Levene's Test for Equality of Variances.

Levels of self-reported autonomous motivation were compared between participants who were interested in feedback and those who were not (based on their responses when asked at the end of the survey) using *t*-tests. These results are also listed in Table 6. Results show a significant difference in autonomous motivation between those who were interested in viewing the feedback and those who were not such that participants who chose to view feedback reported higher levels of autonomous motivation ($p < .001$).

General Discussion

In Study 1, participants who were interested in viewing personalized feedback about their personality based on their responses in an online personality survey were generally more attentive than participants who were not interested in viewing said feedback. This was shown through *t*-tests comparing the two groups on several well-established indices of inattention as well as a comprehensive inattentive responding index that combined all of these indices into one variable. Supplemental analyses showed that participants who are interested in viewing personalized personality feedback score higher in honesty/humility, extraversion, conscientiousness, and openness to experience than participants who are not interested in viewing feedback as measured by the 60-item HEXACO personality inventory. Since this was not an experimental manipulation, a second study was conducted in order to determine whether offering personalized feedback to participants increased their attentiveness by increasing their autonomous motivation.

Study 2 found no significant effect of offering participants personalized feedback about their personality based on their responses in a personality survey on general attentiveness, nor on self-reported autonomous motivation. Supplemental analyses showed that participants who are interested in viewing personalized personality feedback score higher in honesty/humility, agreeableness, conscientiousness, and openness to experience as measured by the 60-item HEXACO personality inventory, as well as higher

in autonomous motivation, than participants who are not interested in viewing said feedback.

Results from Study 1 were replicated in Study 2 such that participants who expressed interest in viewing feedback when asked at the end of the survey showed lower levels of inattention overall than participants who were not interested in viewing the feedback when asked at the end of the survey. However, according to results from Study 2, offering participants the opportunity to receive personalized personality feedback did not significantly influence participant attentiveness. This suggests that the significant effects of choosing to view feedback on inattention may be explained by individual differences in the participants themselves (between those who are interested in feedback and those who are not) such that those who are interested in feedback are generally more attentive. Supplemental analyses from both studies confirm this possibility, showing significant differences in several personality domains between the two groups.

In light of these findings, a few possibilities seem applicable as to why the experimental manipulation in Study 2 did not demonstrate significant effects on inattention. It may be that people with these personality traits or people who are interested in personality feedback for other reasons are generally more attentive than other participants, regardless of whether or not feedback is emphasized. It could also be that people with these personality traits or people who are interested in personality feedback are not susceptible to the experimental manipulation. In order to address these possibilities, ensuing research should be conducted in which participants are pre-screened for having these personality traits or for being interested in personality feedback before they are allowed to participate in the survey. Then, using a similar feedback

manipulation, examine the effects of the manipulation on participants who possess said personality traits.

Another possible explanation for the nonsignificant results of the manipulation in Study 2 is that the manipulation may not have been sufficient to influence participants' interest in feedback and subsequent behavior. In order for such a manipulation to work, participants in the feedback condition must have carefully read the page containing the manipulation. It is possible that the manipulation was not salient enough and that some participants in the feedback condition did not adequately understand the nature of the feedback manipulation, or were not sufficiently interested in the feedback. This may explain why the manipulation did not significantly influence autonomous motivation. However, participants who actually chose to view the feedback at the end of the study (regardless of condition) reported more autonomous motivation than participants who did not choose to view the feedback. Future research should examine a more salient manipulation, or find some way to ensure that participants understood the manipulation. This could potentially be done using eye-tracking software, or by including an open-ended question immediately after the manipulation asking participants to briefly explain what they had read thus verifying whether they were made aware of the manipulation.

Yet another potential reason as to why the experimental manipulation had no significant effect may be due to the participant population recruited in Study 2. It is possible that MTurk users are more experienced in survey-taking, are more accustomed to inattention checks, and are more attentive than participants recruited from other sources, college students in particular, as a good portion of the research involving inattentive responding has been conducted using undergraduate students as the main

source of participants. Because this study consisted only of MTurk participants, there could have been less variance in inattention, personality traits related to inattention, or autonomous motivation in the current sample as compared to previous research and thus the experimental manipulation had less of an impact than it could have had if the experiment were conducted using an undergraduate research pool. Future research should conduct a similar experiment using other participant populations, such as an undergraduate participant pool or community volunteers.

Additionally, the fact that all of the participants in Study 2 were recruited through MTurk presents another limitation. The undermining effect, which is the idea that providing tangible incentives to participants may undermine intrinsic/autonomous motivation (Deci & Ryan, 1999), was mentioned in the introduction as a potential explanation as to why Meade and Craig's (2018) attempts to influence participant inattention were unsuccessful. However, as MTurk is a web-based data collection tool that offers monetary incentives to all participants, the undermining effect may have occurred in Study 2 as all participants were receiving a tangible monetary incentive. This may be another reason as to why the experimental manipulation in Study 2 was unsuccessful, as this monetary incentive may have masked any potential effects of the feedback manipulation. However, as time was short, the need to gather many participants quickly made Mturk the best choice for Study 2. If the effects of similar studies in other participant populations differ significantly it would suggest a potential moderator that could be examined. The effects could be identical, though, as it was shown in Study 2 that personality plays a sizeable role in the relation between interest in feedback and inattention.

Inconsistent with expectations and with previous research (e.g., Maniaci & Rogge, 2014), a significant positive correlation was found between autonomous motivation and the composite measure of inattention in Study 2. Again, this finding could be unique to the MTurk participant population as those motivated by financial incentives may be more worried about mistakes and therefore less likely to miss attention check questions. Alternatively, MTurk participants who participate for fun may be less concerned about making mistakes and therefore more likely to miss attention check questions. Future research should address this issue by conducting research on participants without the use of financial incentives and, in general, should also be conducted on samples that more accurately reflect the general population.

Vallacher and Wegner's action identification theory (1989) offers an alternative explanation to this finding. According to action identification theory, it is possible that autonomously motivated participants think about their survey participation in "higher-level" terms (i.e. defining who they are as people) as opposed to "lower-level" terms (i.e. answering a series of questions about themselves). Vallacher and Wegner point out that high-level identification may be maladaptive for some tasks. Thus, future research should examine the relationship between action identification and inattentive responding, autonomous motivation, and interest in feedback.

Although the results from Study 2 did not confirm the hypotheses about the experimental manipulation, results from both studies confirm the usefulness of forming a comprehensive inattentive responding index that integrates multiple indices of inattention. Although the individual indices of inattention generally converged across studies, the long-string index did not converge as well in Study 2 as in Study 1. Future

research should consider using a similar comprehensive inattentive responding index and examining the correspondence among inattention measures as measures of inattention.

Results related to personality may be informed by previous research involving motivational factors that influence how people seek out and respond to self-related information, such as the feedback provided at the end of both studies. According to Sedikides (1993), participants seek information about themselves that confirms their central positive traits. For example, someone who believes they are high in conscientiousness would look for information that verifies this belief. Conversely, these motives might also cause participants to disengage from studies involving feedback so as to avoid receiving feedback that disagrees with their central positive traits, which could manifest as increased inattention. This may explain the relationship between interest in feedback and personality observed in both studies, as the feedback provided to participants might have been a way for them to confirm their central positive traits. Future research should examine the relationship between these motivational factors, interest in feedback, and inattention.

In conclusion, the current studies suggest that participants who are interested in viewing personalized personality feedback are more attentive throughout an online personality survey than are participants who are not interested in viewing personalized personality feedback. However, offering such feedback to participants beforehand did not significantly influence their self-reported autonomous motivation or attentiveness throughout an ensuing online personality survey. It appears as though autonomous motivation and general attentiveness are related, but the directionality of this relationship warrants further research, as the current findings are somewhat inconsistent with previous

research. In congruence with previous research, significant correlations between personality and inattention were found. Additional analyses revealed that personality and other stable individual differences could account for these findings. This research has shed some light on participant inattention and its relativity to personality and autonomous motivation. However, it has also brought forth many new questions regarding inattention and the factors that may influence it. Future research should seek to examine the potential relationships discussed herein in the pursuit of finding more effective methods to increase research participant engagement and reduce participant inattention.

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