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Do Age and On-screen Reading vs. On-paper Reading Affect Reader's Trust and Risk in
Reading Financial Content?

by

John Phillip Harrison, Jr.

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Executive Doctorate in Business

In the Robinson College of Business

Of

Georgia State University

GEORGIA STATE UNIVERSITY

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2021

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ACCEPTANCE

This dissertation was prepared under the direction of the *JOHN PHILLIP HARRISON, JR* Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

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ABSTRACT

Do Age and On-screen Reading vs. On-paper Reading Affect Reader's Trust and Risk in Reading Financial Content?

by

John Phillip Harrison, Jr.

April 2021

Chair: Subhashish Samaddar

Major Academic Unit: Doctorate in Business Administration

Seldom if ever has there been such a sudden shift in a society's reading medium (the last time was from parchment to paper). The current migration is from on paper reading (OPR) to reading on electronic screen (OSR). Many studies and several meta-analyses show varied results in comparing OPR and OSR, and for most metrics OPR may be superior, depending on the subject area of the text. Only one other known study compared OPR to OSR regarding financial material.

To test whether or not reading financial material on screen or on paper affects the reader's decision making, we ran an experiment. We announced the experiment as a test of the reader's financial literacy as it relates to the reader's age. However, the actual dependent variables of interest were the readers' self-reported trust and risk tolerance measurements accompanying the financial literacy scenarios and questions. Subjects (N=212) recruited via Amazon MTurk were given the test instrument either via onscreen or on paper (with the print version not previewed onscreen ahead of printing).

The hierarchical regression analysis results showed that the reading medium had no effect (at $p < .05$) on the subjects self-reported trust, but reading medium had an effect on risk tolerance, with OSR showing significantly more risk tolerance than OPR (at $p < .01$). This

increased risk tolerance with OSR was most pronounced in the younger ages (18-34 years). Also shown were mixed results on the relationship of trust to age (at $p < .05$), but that risk tolerance was negatively related to age (at $p < .05$). Trust and risk results by gender differences were not statistically significant (at $p < .05$). These results show that the reading medium makes a difference in risk tolerance, with OSR being higher in risk than OPR.

INDEX WORDS: Financial communication, digital vs. paper, computer screen vs. print, risk tolerance and trust in investing, reading and risk

I INTRODUCTION

Something is happening now that has rarely occurred before in human history: the medium for the common written word is changing. Over six centuries ago, the medium for writing changed from vellum to paper¹; but with the exception of handling pages or scrolls whose weight is less, the experience of reading the text remains presumably the same—although there are no known studies of any experiential reading differences between parchment and paper.²

However, the move to reading the written word digitally—On Screen Reading (OSR)—instead of On Paper Reading (OPR) is an area of recent research interest. The results of the many published studies expressly comparing OSR to OPR have been remarkably mixed in terms of determining a difference in reading comprehension results (the major metric of reading) between the two media. Some of the differences involve the type of text, such as fiction vs. non-fiction (i.e., expository vs. narrative) (Clinton, 2019), but only one published study was found in the literature on the effects of OSR to OPR with purely financial literature: Hurwitz, Lahav, and Mugerma (2019).

Why would any difference in reading text describing finances be important? Because most Americans invest in the stock market--much of this in retirement accounts. This has led to over 88% of those with incomes over \$100k per year owning stock (Parker, 2020). These accounts report information at least quarterly back to their investors with statements either online or in print or both—often at the reader’s choice. Additionally, financial advisers and their

¹ This classic substitution was enabled by the invention of the printing press, an increase in rag supply (a result in part of the Plague), and a demand for religious texts (Burke, 2007). We overlook the early clay, stone, etc., media since their use was neither commonplace nor consistently portable.

² It was not until 2016 that British Parliament ceased publishing its official legislation on parchment (Taylor, 2016).

investing clients rely on reading not only these reports but frequent market and news updates to better direct investments. Factors such as the change in the US retirement structure from company-funded defined benefit pensions toward the now predominant defined contribution funds make basic investment knowledge an advantage for every household.

Given that this ever-increasing number of investors needs to read at least the basics of investing, knowledge of how financial information is best relayed, including any influence of reading medium, becomes important to wise investing. To deliver information for wisest decision making, a financial adviser or an investor should know if it matters whether his or her financial information gets delivered by way of OSR or by way of OPR (Hurwitz et al., 2019) .

This study aims to test if reading financial material on paper or on screen has an effect on two measurable components of investment behavior, risk and trust. Why these two behaviors in particular? First, risk preference is a fundamental element every financial adviser tries to ascertain of the investor, and indeed is a major element used to construct an investment portfolio. In fact, risk preference is perhaps the only factor a computerized financial adviser (i.e., robo-adviser) might use in designing an investor's portfolio (Harrison & Samaddar, 2020). Furthermore, the research literature shows that risk preference and confidence (i.e., showing personality traits related to confidence) are related (Carducci & Wong, 1998). This is not surprising, and researchers have also shown that readers are more confident (i.e., tend to overestimate their reading performance) with OSR relative to OPR (Ackerman & Lauterman, 2012; Clinton, 2019; Lauterman & Ackerman, 2014); therefore, we might expect OSR to reflect greater risk preference.

Secondly, trust, although potentially related to risk tolerance, is a broader concept more swayed by informed judgement (Eckel & Wilson, 2004) and likely to affect whether or not the investor judges the reading material to be sound. Thus, the reading material's likelihood of affecting trust sets the tone for the adviser's ability to ascertain an investor's risk preference, and in the absence of an adviser may affect an investor's risk preference overall.

II LITERATURE REVIEW

There are three literature streams of interest to this study: 1) the overarching comparison of OSR vs. OPR, 2) trust as it relates to investing, and 3) risk as it relates to investing (a more precise definition of risk to come). In designing the experimental instrument, we also look at the literature around examining financial literacy itself.

II.1 On Screen Reading vs. On Paper Reading

Since the beginning of widespread computer use, there has been interest in the possible differences of OSR vs. OPR. Work began in earnest in the 1980s as the use of computer screens spread, and longer text articles became available on screen. An early investigation compared reading from a CRT (Cathode Ray Tube) screen to reading from a book; they concluded that reading from a screen was slower (Muter, Latrémouille, Treurniet, & Beam, 1982).

Much of the early research though—gathered and critiqued in a seminal comprehensive literature review by Andrew Dillon—concentrated on the physical factors of OSR, that is font size, color, screen size and visibility, in other words overall legibility per se of text on screens. Of the early studies, Dillon (1992) notes the difficulty in drawing any firm conclusions since many were centered around the earliest versions of VDU (Visual Display Units) and more elementary typographical issues of that time.

In evaluating the early studies which compared OSR to OPR, Dillon (1992) categorized whether the measurement variables examined outcome measures (speed, time, accuracy, recall, etc.) or process measures such as navigation, text manipulation, and viewer spatial manipulations. And even though several studies supported OPR as being superior to OSR in terms of reading speed, Dillon rejected this conclusion:

“...the evidence surrounding the argument for a speed deficit in reading from VDUs [OSR] is less than conclusive. A number of variables, such as the size, type and quality of the VDU may have contaminated the results.” (Dillon, p. 1301)

The only study in Dillon’s early literature review which involved reading material even distantly related to financial material was that of Egan, Remde, Landauer, Lochbaum, and Gomez (1989) which analyzed reading accuracy in statistical text on paper and on screen. The authors found that OSR provided superior search capability and given the ability of a computer search to find specific words and phrases, this is not surprising. However, when the search was more generalized—without specific words to look up in the question, no significant difference was found between OSR and OPR.

During the early 1990s the advent of standardized testing using computers begat further interest in comparing what had theretofore only been done with paper-and-pencil tests to the newer computerized format. The first meta-analysis comparing the two media as testing formats (a form of OSR vs. OPR) was conducted and showed a cross-media correlation of .97 for timed power tests and .72 for speeded tests (Mead & Drasgow, 1993). Speeded tests are defined as those tests for which the questions are generally all answerable correctly by the test taker if given just enough time—so a test of speed more than just pure ability; whereas power tests seek to find out what the test taker knows given no time limit—so a test of strict ability or power. Familiar tests such as the SAT, ACT, GRE, etc. are combined formats called Timed Power Tests (Mead & Drasgow, 1993).

Just as there is a subset literature stream on psychological inventory testing by computer vs. on paper as exemplified in Dillon (1992), there are many studies comparing the results of

standardized aptitude tests (e.g., GRE, SAT) on traditional (paper) compared to the same test given by computer. Indeed, there is considerable interest in the adaptive (or tailored) approach to testing enabled by computer-mediated testing; that is, the test-taker's response on a given question causes the computer to select a particular level of difficulty for the next question. Thus, the "flat" playing field of the same questions for everyone in a traditional test is adjusted to offer level-specific questions; therefore, the low-ability test taker may never make it to the hardest questions in time (and "feels" better), and the high-ability test taker gets fewer relatively easy questions and "feels" more challenged (Mead & Drasgow, 1993). Since this line of research does not by necessity compare the exact same material across media, it is not applicable here. Suffice it to say that this early meta-analysis of Mead and Drasgow (1993) showed that there may not be a significant difference between OSR vs. OPR in this context (as it relates to standardized test taking) unless the element of time is taken into consideration, which is normally the case.

A second critical review of the empirical literature on OSR vs. OPR was done in 2008 by JM Noyes and KJ Garland; they did their work, in part, because the visual quality of OSR had progressed significantly, and the science of investigating the two media as purveyors of similar text had also grown more sophisticated. Whereas Dillon's review looked at approximately 20 studies in 1992, and found rather mixed results, Noyes and Garland (2008) looked at almost twice that many from 1992 – 2008, and found that results differed specific to the task and required outcomes.

It is fair to say that the work of Noyes and Garland (2008) emphasized measuring the outcomes while Dillon (1992) concentrated more on the process, and it is quite likely that this

also indicates that the studies of the earlier years were more concerned about OSR's functionality and whether or not it could "catch up" to OPR in terms of use and appearance. Thus, the Noyes and Garland (2008) review in many ways picks up at the point of assuming a more or less "similar enough" qualitative appearance between the two media and thus moves on to measuring effects centered around the outcome score.

About the same time as the Noyes and Garland (2008) study, meta-analyses of computer-based vs. paper-and-pencil testing for reading and for mathematics in grades K-12 were published, showing overall similar testing outcomes for students. In two studies, published as research of the Harcourt Assessment, Inc. (at the time, a company creating tests nationwide for scholastic usage), the authors showed overall similar testing outcomes for students K-12 between computer-based and paper-based testing as long as the computer testing was not adaptive. They further surmised that there was considerable variation around each test and that complete equivalence could not be assumed between the media, but would need to be examined for each type of test separately (S. Wang, Jiao, Young, Brooks, & Olson, 2007, 2008). Indeed, in this method of research in comparing large numbers of standardized test results taken by computer or paper and pencil under varying conditions such as regions, frequency of prior administration, time of year, etc., it would seem difficult to determine more specific effects and moderators.

The inconsistency in the results of the testing comparison of computer vs. paper-based studies led to a further meta-analysis of 81 studies from 1997 – 2007 by Kingston (2008), including many of the studies used in the S. Wang et al. (2008) and S. Wang et al. (2007) meta-analyses. In Kingston's meta-analysis, each study was considered separately; whereas, in the

Wang meta-analyses each test data set even if within the same study was treated as a separate and countable study for the purposes of the meta-analysis. The purpose in Kingston's method was to preserve the independence of observations in the synthesis, and he further noted that many studies did not use random assignment of the test medium (computer vs. paper), but instead allowed the students to choose which medium they preferred (Kingston, 2008). Kingston surmised that various political and other societal concerns also may affect results:

“Not surprisingly (given the variety of measurement and statistical sampling issues that can affect any one study) the results of such studies [meta-analyses] have not always been consistent. ...[Because of] concern over equity, or general political issues, many testing programs find it necessary to offer their constituencies (districts, school, or individuals) choice. Thus it becomes imperative to demonstrate the comparability of scores from computer and paper administrations.” (Kingston, pp. 22-23).

The results of the Kingston (2008) meta-analysis indicated only small effect sizes between computer-based and paper-based testing and no effect for grade level. The findings showed a small advantage for paper-based testing for mathematics, and a small advantage for English language arts and social studies for computer-based testing.

Several important meta-analyses sought to determine the comparability of OSR vs. OPR overall (especially as regards reading measurements per se) not specifically on just standardized testing given to students, which often occurred during the normal course of transitioning from one medium to another (and perhaps with some influence by political concerns). There were three such notable meta-analyses: Kong, Seo, and Zhai (2018); Delgado, Vargas, Ackerman, and Salmerón (2018); and Clinton (2019). All of these meta-analyses came to the fore after at least

two “phases” in the literature had become apparent: the first period, prior to Dillon (1992), where many of the comparative reading medium studies were understandably concerned with the physical appearance of computer screens (per the level of technology of the time), and the second period of time, from 1992 to around 2008, where much of the research activity was about the outcome parity of computer vs. paper-based standardized testing (either scholastic or psychometric). The three meta-analyses of 2018-19 follow up on earlier research showing mixed results between OSR vs. OPR, and the studies often concentrate—although with some notable exceptions—on reading comprehension and/or recall and moderating influences such as type of text, type of screen (handheld vs. larger), timing or other moderators.

Kong et al. (2018) looked at 17 studies, mostly from 2011-2016 (three were from 2001 – 2005) that involved research on reading comprehension and reading speed as dependent variables, and type of text, and OSR vs. OPR as the major independent variables. For some studies there was also consideration given to type of screen (e-book, computer, iPad), country of study, and year of publication. This meta-analysis showed that OPR was superior to OSR in reading comprehension, but no difference in reading speed. The lack of effect of OSR vs. OPR on reading speed was in contrast to earlier studies, showing OPR to be superior (Ackerman & Lauterman, 2012; Hartley, 1995; Mead & Drasgow, 1993) although some other studies showed no difference as well (Noyes & Garland, 2008). The meta-analysis also indicated some decline in the difference of reading comprehension between studies that were before 2013 and those 2013 and after although it was not statistically significant. Their meta-analysis did not indicate any effects of the other moderators on reading comprehension or speed (Kong et al., 2018).

Just after the Kong et al. (2018) study was published, Delgado et al. (2018) published a more extensive meta-analysis of the studies of OSR vs. OPR from 2000 – 2017. After identifying 165 full-text articles, the authors culled the studies down to 54, using quality criteria such as samples from normative populations, parametric data, English language, and comparability of texts. This yielded a dataset of 171,055 participants. Included in the 54 studies were investigations both between-subjects and within-subject. Both between and within subject studies indicated a superiority of reading comprehension of OPR over OSR (Hedge's $g = -.21$; $d = -.21$) with the significant moderators of time-frame, text type, and the year of publication (Delgado et al., 2018).

This meta-analysis showed that those reading under time pressure performed better with OPR in terms of comprehension, but that this advantage did not appear when subjects read under no time pressure. As previously noted, Ackerman and Lauterman (2012) showed that timing plays a large part in comparing reading comprehension across media, and Delgado et al. (2018) emphasized that comparing OSR to OPR must take into account the type of digital text (e.g., linear instead of hyperlink or animated) in order to arrive at a fair comparison. Text genre was also shown to be an important moderator: while OPR maintains an advantage over OSR in reading informational text, there does not seem to be a significant difference in reading comprehension between the media for narrative text (Delgado et al., 2018). In the vernacular, this might equate to saying that reading non-fiction is better on paper and for fiction, it makes no difference.

Perhaps the most interesting finding is that the advantage of OPR over OSR seems to be increasing rather than decreasing over time as witnessed by the publication year and effect size

(Delgado et al., 2018). In other words, everyday experience with technology over time does not inherently bestow an ability of OSR to “catch up” to OPR (assuming those being tested are like most of us and have more experience with technology as the decades unfold). This runs counter to the assumption that the advantage of print over digital will diminish over the years simply because of more and more on-screen reading which would result normally given the ubiquity of digital devices in daily life.

Confirming most of the results of Delgado et al. (2018), a third important recent meta-analysis was conducted by Virginia Clinton and showed that reading may be more efficient and meta-cognition higher in OPR (Clinton, 2019). Like Delgado et al. (2018), Clinton (2019) put restrictive parameters on the studies before meta-analysis: random assignment of subjects, required fundamental reading skill, and the years 2008-2018 for study publication. She also investigated the level of comprehension, going beyond recall and lighter comprehension to more inferential foci. Meta-cognitive accuracy (i.e., how well does a subject self-reflect on what he or she knows and thus can provide a prediction of their own performance) was tested as well as some measures of inferential comprehension. Clinton (2019) analyzed 33 studies and further noted that subjects were better able to recall details from OPR than OSR, but OPR did take a slightly longer time than OSR; however, she also found some differences in reading time of graphical representations (graphs and illustrations) by media: OSR taking longer.

“The process of reading text with visual representations is different than that of text alone because text with visual representations requires splitting attention between the verbal and visual information” (Clinton, p. 315).

In contemplating differences between OSR and OPR as it regards literature in the financial domain, there have been hardly any dedicated studies. Some studies do contain comparisons of general standardized tests which cover mathematics (S. Wang et al., 2007), and the Noyes and Garland (2008) review touched on economic text; neither study showed any effect between OSR and OPR, but nothing particular on financial literature was reported. Interestingly, one study directly comparing OSR vs. OPR in reading prospectuses showed OPR more informative on shorter reports and OSR more informative on longer reports (Hurwitz et al., 2019).

The OSR vs. OPR literature is rich in meta-analyses (perhaps because of conflicting results in the studies measured). Of the 100+ studies touched on in meta-analyses (see Table 1) or otherwise mentioned, only a few have investigated the concept of “deeper” reading or more cognitive reading. This may be because of the illusive or undefined nature of what defines deep reading or meta-cognition. Few empirical studies exist, but the concept is touched on in one meta-analysis where there is mention that deeper reading may be hampered by the distractive elements of hypertext and animations that are often included within digital texts (Delgado et al., 2018). Indeed, there is a demonstrable tendency of readers to be distracted during OSR with non-linear, interrupted reading with less sustained attention; it is posited that fewer cognitive resources are mobilized for comprehension and meta-comprehension (Lauterman & Ackerman, 2014). This loss of “deep literacy” is lamented in some non-empirical academic literature, whereby the intuitive process of reading and intermittently pausing for deep thought and cognitive processing is instead filled up by near constant intrusion of distracting messaging or other tasking available during OSR (Garfinkle, 2020). Additionally, at least two studies have shown that overconfidence in one’s cognitive ability to perform is more likely during OSR than

OPR, and the “shallowness” of comprehension in OSR is mentioned (Ackerman & Lauterman, 2012; Lauterman & Ackerman, 2014). Clearly, further exploration of the outcomes associated with OSR vs. OPR beside reading comprehension and reading speed is in order.

Table 1 Summary of Meta-Analyses

Meta-analysis	Parameters	Findings	Notes
Dillon (1992)*	Comprehensive Review of all prior studies, 80+.	No explanatory variables at present	Early phase, mostly on ergonomic issues of OSR
Mead and Drasgow (1993)	28 studies of paper-and-pencil tests vs. computer-based tests.	Overall correlation of paper to screen was .91 for timed power tests; speeded tests however favored OPR.	Primarily compared SAT, GRE type exam performances (timed power tests).
Noyes and Garland (2008)	20 studies, 733+ Ss on physicality metrics of OSR (1981-1992); 61 studies 1993-2007, 9,358 Ss (K-12 and young adults).	Comparing large regional tests too confounded by external factors; however, rough equivalence in computer and paper-based tests for K-12.	Task type is of importance, and if test is designed on paper then transferred to OSR more difficulty in measurement ensues.
S. Wang et al. (2008); S. Wang et al. (2007)	Two meta-analyses: one of 44 studies on math and one of 42 studies on English and language arts of K-12; approx. 63k Ss.	No findings of significant differences.	Sponsored by Harcourt publishing, potential conflict of interest.
Kingston (2008)	81 studies (1997-2007); 21 overlap with Wang et al studies. No. of Ss not reported.	Medium had some effect depending on subject (ELA, Math, etc.): OSR slightly better for ELA and Social Studies (effect size of .11 and .15), and OPR better for Math (-.06); no significant result differences in demographics of Ss.	Introduced element of political factors and policy concerns in interpretation of effects of OPR vs. OSR studies. Noted student preference for computers in some studies.
Kong et al. (2018)	17 studies (2005-2016) with effect size analysis (Hedge’s <i>g</i>). No. of Ss not reported.	OPR is better than OSR in comprehension, no difference in speed (RVE meta of -.21, <i>p</i> = .02). Differences diminishing over publication dates.	
Delgado et al. (2018)	54 studies from 2000-2017. Total Ss = 171k.	OPR superior in time-based, and with expository text and mixed text; no difference in narrative. text. Advantage of OPR increasing with time. Media effect size= (Hedge’s <i>g</i> = -.21; 95% CI: -.028, -.014; <i>k</i> =56).	Included w/in and between S designs. 74% of studies random assignment. Some studies showed OSR categorization into hand-held as well. OPR superiority increasing

			over historical time most surprising.
Clinton (2019)	33 studies, 1,382 Ss., Used standard search strategy and then Google Scholar to counter publication bias.	Similar to Delgado's results. OSR negative effect vs. OPR ($g = -.25$) overall, more significant with expository text, and no effect of timing. OPR yielded more accurate meta-cognition ($g = .20$). Reading of graphs better with OPR.	Meta-cognition here relates to self-expectation on performance results. This study confirmed Delgado et al. (2018).

*Although this study was not an empirical meta-analysis, it was the first comprehensive comparative work of studies.

II.2 Risk tolerance

It has long been known that in the financial arena losses loom larger than gains (a key element of prospect theory), and such an influence along with many others factors shaping risk—such as personality type and education level—have been investigated (Beauchamp, Cesarini, & Johannesson, 2017; Boyce, Wood, Banks, Clark, & Brown, 2013; Kahneman & Tversky, 1979). For this study, the influencing factors on risk preference of interest are those of cognition, reading medium, and age.

Risk preference comprises the continuum from risk aversion at one end and risk tolerance at the other. The labels of risk averse or risk tolerant are inversely related, but it is common for a study to test in one direction or the other. Although there is variation, the area of behavioral finance tends to use risk tolerance as an approach to testing risk preference while the broader field of general psychology tends to use risk aversion. In that financial arena of risk tolerance, it has been shown that risk tolerance decreases eventually with age and increases with wealth and education (Faff, Mulino, & Chai, 2008).

Such risk tolerance is normally tested in two ways: assessing risky behavior by means of an objective measure (e.g., buying/selling in a simulation or real life behavior), or a more subjective measure of a survey question related to risk tolerance (Park & Yao, 2015). Subjective

risk tolerance is also very highly correlated to objective risk tolerance (measured by risky assets/net worth) although that correlation does seem to decline with advanced age (Chang, DeVaney, & Chiremba, 2004). Further investigation shows some inconsistency in the correlation between subjective self-assessment and actual investment risk behavior (as evidenced by portfolio construction) depending on variables such as marital status and financial literacy although the correlation is still high (Marinelli, Mazzoli, & Palmucci, 2017).

In terms of cognitive ability and risk preference, there is weak evidence that increased intelligence leads to a negative relationship with risk aversion in the domain of gains. Those scoring better in tests of cognition are less likely to be risk averse. In other words, the Lilleholt (2019) meta-analysis (in 97 studies) found little to connect cognitive ability with risk preference except that more intelligent test-takers were slightly more likely to behave as rational calculators of risk; however the relationship was barely significant.

Beyond general cognitive ability, financial knowledge may also be related to risk tolerance in investing. Financial knowledge, according to A. Wang (2009), has two different aspects: objective and subjective. The objective aspect is straightforward factual knowledge, and the subjective aspect is similar to meta-cognition or confidence in one's own knowledge. Objective and subjective knowledge together are correlated to risk tolerance (Alba & Hutchinson, 2000). In other words, with increasing financial knowledge comes increasing confidence which results in more risk tolerance. Other factors such as satisfaction with current income and future orientation—expectations about future earnings plus anxiety over current debt also come into play in shaping one's financial risk tolerance (Martin & Davari, 2018).

II.3 Trust

Trust is a core concept in economics and psychology, and therefore behavioral finance; it is a part of most every financial transaction (Arrow, 1974). Exploration of trust as an element in the financial domain produced noted research such as the Trust Game, which showed trust and reciprocity as basic elements of human behavior (J. Berg, Dickhaut, & McCabe, 1995). Trust is a transfer of a good or favor to another with potential, but not guaranteed, reciprocity. This definition implies both a trustor and a trustee, which brings in the related concept of trustworthiness. Thus we have trust from the trustor, and we have trustworthiness from the trustee (Ben-Ner & Halldorsson, 2010).

To measure the level of trust and/or trustworthiness, survey questions such as “Most people can be trusted,” and “you can’t be too careful in dealing with others” indicate general feelings of trust, and more specific measures are used in addition to trust games such as Berg’s (1995). Common and simple survey instruments such as the GSS have been used extensively for self-reported measurements of trust.³ Both the amounts used in trust games and the scaled self-assessments in the surveys are currently the most popular measurements of trust (Ben-Ner & Halldorsson, 2010). Since trust as a concept is essential to economic transactions and financial systems (Arrow, 1974), much of the exploration is macro-economic and beyond the scope here; however, there is growing experimental literature in micro-economic purposes. (Corgnet, Espín, Hernán-González, Kujal, & Rassenti, 2016).

Currently, the literature regarding trust, at least as it affects the economic and behavioral finance realm shows mixed results, particularly around the influence of age. In general, the older

³ The General Social Survey from NORC at the University of Chicago occurs periodically <https://gss.norc.org/About-The-GSS>.

the age, the more trust in positive information overall, and this may be because of a decrease in reliance on negative information—which is more mentally taxing to process (Bailey & Leon, 2019). This becomes important particularly in guarding the elderly against untrustworthy information regarding finances.

Research into the interaction of both risk preference and trust on investment behavior is limited and best exemplified in the Vuk (2017) survey on relating self-assessments of trust and risk preference as independent variables on intention to invest as a dependent variable. Their findings were that trust is not always a reliable indicator of intention to invest, and risk tolerance is only marginally so:

“...our study revealed that trust is not the strongest personal factor that influences investor behaviour...we assume that some other personal factors (e.g., self-confidence or personality traits) play a more relevant role...”(Vuk, 2017, p. 65)

It stands to reason that trust involves an element of risk, for the trustor risks that the trustee will perform (Ben-Ner & Halldorsson, 2010); however this relationship may not be as simple as that assumption posits. Eckel and Wilson (2004) explored the relationship between risk preference and the decision to trust an anonymous partner and found no significant relationship. Their experiments show that trust is viewed by the trustor as more a reflection of his or her ability to judge character than it is a risk along the lines of a financial decision. “We infer that subjects do not see trust as a problem of risk, but rather as a problem of judgment. People pride themselves on their ability to ‘read’ others...the choice to trust appears to be one of conditional judgment, not a calculated financial gamble,” (Eckel & Wilson, 2004, p. 464).

Furthermore, it is also shown that overconfident individuals tend to trust more, especially regarding financial investments, and that in their experimental variation on the J. Berg, J. Dickhaut, and K. McCabe (1995) trust game “financial overconfidence, interacted with risk preferences, explains much of the investment behavior,” (McCannon, Asaad, & Wilson, 2016, p. 604). Thus, in the literature explored here, there are at least two studies where overconfidence plays a role in investment: the overconfidence in financial literacy as part of more trust in investing (McCannon et al., 2016), and the overconfidence in one’s cognitive ability as affecting performance in OSR vs. OPR (Ackerman & Lauterman, 2012; Lauterman & Ackerman, 2014).

III EXPERIMENTAL CONSTRUCT

III.1 Variables

To further explore the effect of on-screen vs. on-paper reading of financial information, this study asks the following research question:

RQ: Do Age and Reading Medium (OSR vs. OPR) influence trust and risk tolerance in reading financial material?

The research design is a two-group randomized experiment to measure the effect of the medium of reading (OSR vs OPR) and age (Age) of the subject on the dependent variables of trust level (Trust) and risk tolerance (Risk). The variables being tested, besides Age, are not precisely described to the Subjects so as to minimize anticipation and bias (sensitization). The test is presented to the Subjects as being a measurement of financial literacy as related to age.

Table 2. Variables

Category	Name/description/source	SPSS Type/SPSS Measure/Test Question No.
Dependent	1. Trust – trust level, measured by combined subjective responses from test instrument 2. Risk – risk tolerance, measured by combined subjective responses from test instrument	1. Numeric, Scale, continuous (combined from Q7, Q11, Q10, Q12, Q20) 2. Numeric, Scale, continuous (combined from Q3, Q5, Q14, Q15, Q17)
Independent	1. Age – age in years, reported from MTurk and self-report 2. Reading Medium – OSR or OPR, determined by recruitment pathway	1. Numeric, Scale, continuous; if divided into groups for some analyses, then Ordinal (these instances identified in data) 2. Numeric, Nominal, binary: OSR or OPR (1=OSR, 2=OPR)

Control	Education level	Numeric, Scale, self-reported using supplied category choices based on US Census classifications (see Table 3, Q23)
Other (used only in descriptive summaries)	1. Gender 2. Financial literacy, measured by objective responses on test instrument	1. Numeric, Nominal, binary, self-reported fill-in blank (1=Male, 2=Female) 2. Numeric, Scale, continuous (combined from Q4, Q6, Q9)

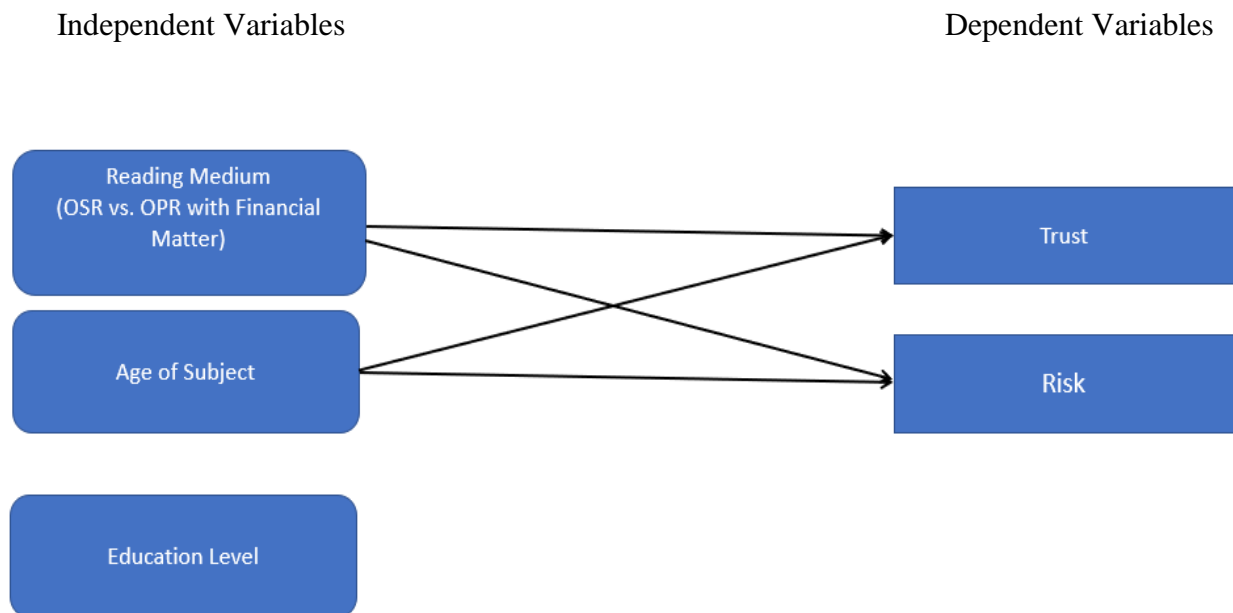
Note on variables as hereafter listed:

Age (with initial upper case) = self-reported age in years as a continuous variable
 Risk (with initial upper case) = self-reported risk tolerance as measured on the Risk Scale
 Trust (with initial upper case) = self-reported risk tolerance as measured on the Trust Scale

The variable of “financial literacy,” is the metric which we are declaring to test. The financial literature passages were held consistent throughout and were generic in nature; their “non-interference” with the main effect variables was tested in a pilot experiment. The test instrument intersperses among the financial literacy questions which surreptitiously test the metrics of Trust and Risk. Depending on the analysis, the factor of age will either be a continuous variable (Age) or as a categorical variable divided by three levels, evenly distributed.

Other independent variables for which data are collected are Education level, Gender, and a financial literacy score Financial Literacy (FinLit) are also calculated.

Figure 1 Experimental Design



III.2 Hypotheses

Based on the research literature review, further hypotheses are developed to be applied to the reading of financial information:

H1: Reading Medium influences Trust, with OPR affecting Trust more than with OSR.

H1 emerges from the notion that increased use of OSR, especially by the young (for daily informal education, video games, and entertainment, etc.) gives greater seriousness to OPR relative to OSR. Although alluded to in the reviewed literature but not explicitly shown (Clinton, 2019; Delgado et al., 2018), it seems a reasonable postulation and an important contribution if demonstrated.

H2: Age influences Trust positively in reading financial material.

If H2 is shown valid, it will correspond to at least part of the mixed literature on age and trust (Bailey & Leon, 2019). This is explained in the Discussion section.

H3: (interaction): Age and the Reading Medium, taken together, influence Trust.

Given H1 and H2, an interaction can be anticipated and would further this as a contribution to the understanding of how both an adviser and financial information itself might be better received by a potential investor.

H4: Reading Medium influences Risk, with OSR positively related to Risk more than with OPR.

H4 connects the tendency of OSR in promoting confidence (Ackerman & Lauterman, 2012) to confidence as an element in risk tolerance (Marinelli et al., 2017).

H5: Age influences Risk positively in reading financial material.

If H5 is validated, it will correspond to the literature (Chang et al., 2004; Faff et al., 2008)

H6: (interaction): Age and the Medium, taken together, influence Risk.

Similar to the form of H3, if H4 and H5 are shown, then an interaction can be anticipated and would also add an important contribution to our understanding of communicating financial information.

IV METHOD

IV.1 Adjustments for participant access during pandemic

Normally, the experimental groups would consist of live sessions of randomly assigned participants of university students (from freshmen to advanced executive program students) who would be given either the test instrument on screen or on paper in separate groups. However, the onset of the COVID-19 pandemic and the unavailability of live university subjects brought both obstacle and opportunity to amend that traditional design.

After exploration of various options, it was viewed that conducting the experiment by means of online crowdsourcing (Amazon MTurk) would provide a unique opportunity. Recruitment from MTurk draws from a large and diverse cross-sectional population albeit an online one. Here is the premise: if the MTurk sample population demonstrates a difference in Risk and Trust measures between OPR and OSR, then this would be remarkable since this sample population by its very nature is assumed to be digitally inclined. As pointed out from the literature, there is some indication that being a digital native does not necessarily mean one shows a performance difference favoring digital media—in fact, it may lead to results favoring OPR (Delgado et al., 2018).

We assume that disqualifying a sampling of online subjects such as MTurk on the basis of simply being digitally savvy or being digitally recruited per se is unsound. Furthermore, if statistically significant differences between OSR and OPR of the dependent variables display, this might be interpreted as more “meaningful” than if the same differences were shown between those of assumed generational differences in digital acumen (e.g., older students whose computer skills might lag in comparison to younger students who presumably are more adept at computer

science). In other words, if it works in a “digital” MTurk Worker population, then it may show an important medium difference because all of the subjects were assumed to be well-accustomed to—if not having a predilection for—OSR by the very nature of being MTurk Workers.

IV.2 Participants

The experiment was promoted to the pool of potential participants as a test of financial literacy by age level. The testing of the other variables of Reading Medium, Trust, and Risk remained unrevealed. In each level there was the equivalent of random assignment to either the OPR or the OSR group, without the subject’s knowledge that there is any reading medium in the experiment other than the one they experienced.

The stipulations for ALL the MTurk Workers were as follows.

- Test labelled as “Financial Literacy Study” with a description as “this survey tests various approaches to financial literacy instruction.”
- The reward per response was US\$5.80, with an allotted approximate time of the OPR is 30 minutes (this would allow enough time to print out, complete, scan, and upload); the allotted time of the OSR is published as also 30 minutes.
- There are 5 days in the open publication period in which Workers can respond, and Workers are approved and paid within 5 days of completing the test.
- Workers are from the USA and must have a HIT approval rate (past performance metric) of greater than or equal to 90%. A similar qualification was recommended in the literature (Sheehan, 2015).
- Workers were required to be unique; that is, Workers cannot take the test instrument more than once.
- Workers were required to have access to a printer/scanner—whether or not they were required to use it (OPR) or not (OSR).

No identifiable data were collected other than the Worker ID (which can only be matched to identity by MTurk), and the only demographic data collected were age, gender and education level. The test was administered in accordance with all permission requirements and stipulations of the IRB of Georgia State University (IRB Exemption Number H20745 with modification for MTurk 363406).

IV.3 Randomization

There are two types of randomization: random selection and random assignment (Bhattacharjee, 2012). First, at the macro level, there is ample evidence in the literature that the MTurk subject population (Workers) are a more representative sample of the general population than would be university populations (Hunt & Scheetz, 2019; Sheehan, 2015). Because of the large base of Workers (i.e., 10,000+) from the US who respond to the invitation (with pay) to participate, one assumes a “fair draw” because Workers who meet the qualifications are accepted without discrimination during the posted recruitment time period up to and until the desired number of subjects is reached using the next in queue. Thus, there is a constant supply of Workers who would be considered randomly selected.

Random assignment to either OSR or OPR groups exists in this study by several means. The unique qualification (in terms of MTurk subjects) of needing access to a printer/scanner was prescribed for all Workers, both the OPR and OSR groups. It is certainly debatable whether or not having access to a printer/scanner is indicative of some inherent advantage that might result in a bias. Practically though, any US-based Worker of any socioeconomic group can access a printer, whether it be at a public library, or local shipping point (e.g., UPS, FedEx/Kinko’s). It would certainly be more convenient for the groups to only participate in the test instrument

online—less time consuming in an environment where the Workers measure well their return on time investment (Sheehan, 2015). However, because of the recruitment occurring in distinct batches (with OPR going well before), Workers did not know of a choice between OPR and OSR; they only see OPR and would not know they could wait and take an OSR HIT later (the MTurk parlance for a task is HIT, Human Intelligence Task).

Thus both groups, OPR and OSR, had approximately equal initial motivation to complete the test instrument, both groups were required to have access to a printer (for the potential to print out the test instrument, scan, and upload it); however, only the OPR group was in the end required to use a printer. This stipulation was made so that the Workers would be similarly inclined (i.e., willing to print, if asked); plus the batch timing precautions prevent a potentially more “slack” group from selecting OSR over OPR. OPR was not offered at the same time and thus was not in direct competition with OSR. Since the recruitment factors for the Workers were essentially the same: generous payment, same completion time estimate, same qualification standards, whether a Worker performed an OPR HIT or an OSR HIT depended on their presumably random place in the queue in responding to the HIT.

This assumption would be further supported by a much higher HIT rejection rate (particularly for printer malfunction) of the OPR assignments as compared to the OSR. This indicates a Worker accepted the HIT without discrimination and only after attempting to print or upload had some difficulty.

The initial publication of the invitation to participate in the experiment by completing the test instrument HIT included the link for only printing the test instrument in order to perform the task of taking the test via OPR; the later publication of a second HIT contained the same

qualifications, only the link led to an online version only of the test instrument with no need to use a printer (OSR). To review the entire process of this experiment, which seeks to emulate what would have been laboratory testing, we view the Subject/data Participation Pathway in

Figure 2:

Time 1

1. The entire pool of MTurk Workers who are age 45-55 receive a HIT notification of the GSU Financial Literacy Study which appears as a one-shot notification, with information about participating. (We start with HIT 2 because HIT 1 was an abandoned trial run)

2. The Worker can choose to accept the HIT, print out the test and take it, and upload it to the AWS Bucket. There is no knowledge of a future option for an online test should that be their preference.

Time 2

3. The entire pool of MTurk Workers who are age 45-55 receive a HIT notification of the GSU Financial Literacy Study which now appears as a separate, additional notice (if they saw the first one), with instructions for participating. The notification mentions the need for access to a printer. Once into the “fine print” of the HIT, the Worker learns that the printer will not be required for this iteration.

4. The Worker is directed to the SurveyMonkey URL for on screen participation.

Time 3

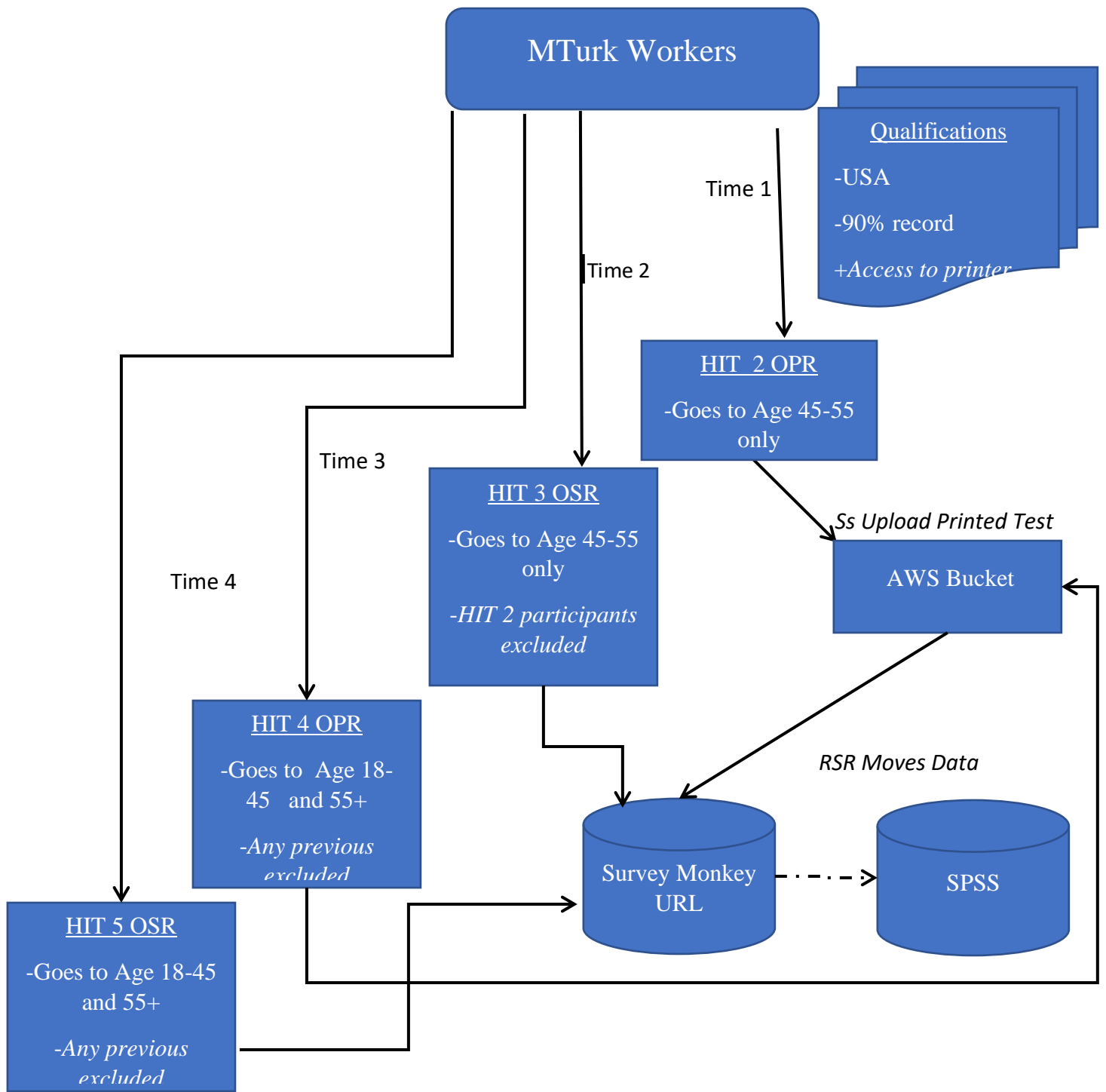
5. The entire pool of MTurk Workers who are NOT age 45-55 receive a HIT notification of the GSU Financial Literacy Test which appears with information similar to HIT 2 at Time 1.

6. The Worker can choose to accept the HIT, print out the test and take it, and upload it to the AWS Bucket. There is no knowledge of a future option for an online test should that be their preference.

Time 4

7. The entire pool of MTurk Workers who are NOT age 45-55 receive a HIT notification of the GSU Financial Literacy Study which now appears as a separate, additional notice (if they saw the first one), with instructions for participating. The notification mentions the need for access to a printer. Once into the “fine print” of the HIT, the Worker learns that the printer will not be required for this iteration.

8. The Worker is directed to the SurveyMonkey URL for on screen participation.



Italics = manual

Figure 2 Subject/data Pathway

IV.4 Measures

In using MTurk to supply the subjects in examining OSR vs. OPR, a method had to be devised to adequately provide for an OPR-only test instrument in an otherwise digital environment. A third-party IT consultant⁴ was engaged to construct a website which allowed for easy printing of the test instrument, but disallowed easy reading of the test instrument on screen. The onscreen preview functions gave only reduced font views of the text such that printing it out was the most reasonable way to view the instrument; therefore, this deterred any on screen reading of the test instrument before seeing it in print. For the OSR batch this was unnecessary, and the test instrument was supplied via a direct link to the SurveyMonkey URL, providing the OSR version.

Each group was given the same test instrument only via their group's separate medium. The test instruments' font, pagination, and general appearance between the media were near identical in presentation. The test instrument consisted of three short reading assignments having to do with finance (ranging from high school to college freshman level⁵), and each reading scenario was followed immediately by written multiple choice/fill-in-the-blank exam questions mostly on the material. We say "mostly" here because included in the examination questions were several questions on general trust level and risk tolerance, especially as they pertain to investing.

⁴ The IT consultant engaged for website construction of a print only link and also the AWS linkage for the upload of the scanned document was www.cdsitconsulting.com in Whiteland, Indiana.

⁵ MS Word readability statistics applied to Readings One and Three showed high school (Flesch-Kincaid GL 9), and Reading Two was taken from college introductory accounting text (Hornigren, Gary, & Elliot, 1996). The entire test instrument was approximately at the college freshman level (Flesch-Kincaid = 61)

Workers in the OPR batch were given the link and password to access the print only link; Workers in the OSR batch were given similar instructions with the exception of a different link to the OSR test instrument (via SurveyMonkey). The only difference in the instructions were the links themselves, and the upload step for the OPR batch; the OSR batch was told there was no need for any printing or scanning in their case after all.

IV.5 Test Instrument

The test instrument is best described as a concise test of three aspects of financial literacy (lending and small business, company financial performance, and personal finance and investing) which more importantly and surreptitiously contains several questions on the two traits of Risk and Trust in the investment setting. The instrument consisted of 24 questions in total: 10 questions are financial literacy questions from the three readings; five questions are Risk questions; five questions are Trust questions; three questions are demographic (age, gender, and education level), and the last question verifies the reading medium used for the test.

The test instrument sought to explore the research questions by the following:

- Simulating reading experience of the particular medium by using formats similar to the readings of about 20 minutes, derived from the mean number of question items from financial literacy tests (Huston, 2010).
- Immersing the subject into financial literature text for the purpose of being exposed to this genre of literature, not so much for ascertaining the subject's financial literacy per se.

- Interspersing investment behavior questions as a seemingly “normal” part of the scenarios. Thus, the financial literature questions are in part a decoy to cover the Risk and Trust questions.
- Creating some physical interactivity with some fill-in-the-blank engagement (either typing or handwriting, depending on reading medium) – not all questions are bubble answers. This is a cue for typical behavior differences between OSR and OPR, and choice of math as done strictly in head or written out (Daher & Kiewra, 2016; Mitchell, 2018).

Further, the data usefulness is anticipated by the following:

- Inclusion of numerical questions for trust and risk measures (Likert scale or binary value).
- There are five trust questions, all based on those frequently used in other studies. These questions, taken cumulatively comprise a scale denoting Trust (questions identified in Table 3).
- There are five risk questions, all based on those from other studies. These questions, taken cumulatively comprise a scale denoting Risk (questions identified in Table 3).

Test questions on financial literacy vary from 11th grade to collegiate level in difficulty (see footnote 5); however, all of the Trust questions, and all of the Risk questions (save one) are at high school reading levels. Given that the ideal audience would be “investors,” this assumes a more sophisticated audience than the general population although about half of the US population owns stock—meaning about half do not (Gallup, 2020).

The overall test structure of 20 substantive questions was surmised from the Huston (2010) meta-analysis of 71 financial literacy studies which showed the mean number of test items to be 16. The 20 questions used here are comprised of a framework of 10 financial literacy questions with an interspersed 10 questions on Risk and Trust. Although most of the Risk and Trust questions were unrelated to the actual scenarios presented, pilot testing indicated that the questions did appear potentially related or at least flowed with questions which might be expected normally by the reader—somewhat germane and not seeming out of place.

The instrument was constructed mostly by adapting examples and related questions used by sources in the literature. The following table indicates the question, source (if applicable), and rationale for use.

Table 3. Instrument Rationale

Text presented	Original text and adaptations	Rationale/notes
<p><u>Reading One: Lending and Small Business</u> Marcus, a young IT professional is ready to strike out on his own with plans for several new apps. He has some technical expertise but does not know the business side of getting such products to the market. At his own expense, he has met with a consultant who helped him develop a business plan including a budget. The budget estimate is that it will cost about \$50,000 to get his business up and running and his products to market—in the hope that one of the several app ideas he has will be profitable. Given that Marcus’ available savings to put into the new business are only about 10% of that amount needed, he will need to find additional money to start his business.</p>	<p>Based on no single text in particular, but language level and format modelled on financial literacy program scenarios like the following: “Blake just graduated college and accepted a new job as a graphic designer for a marketing firm. He wants to buy a \$100,000 condo near his new job and he has saved enough money for a 20% down payment. He is planning on taking out a loan, or a mortgage, for \$80,000 to purchase the property.” (Visa, 2020)</p>	<p>This scenario was created to engage reader using structures from Visa, Inc.’s financial literacy educational program sites aimed at different grade levels.</p> <p>Reinforcing Setting (RS) which engages S in a relatable financial scenario to a) reinforce the cover story of the test--i.e., financial literacy vs. age— (Krawczyk, 2019) and b) outline a scenario upon which risk and</p>

		trust questions can be connected.
1. How much will Marcus need to raise if in addition to his available savings, his parents also match the money he puts in initially?	Created as a simple measure of calculating percent.	In addition to the RS purpose, the format of this write-in answer creates some interactivity potentially stimulating different medium-related responses (Daher & Kiewra, 2016; Holtz, 2016; Mitchell, 2018)
2. Now that Marcus has his “seed” money of 20% of the amount needed to fund the startup company, he decides to seek a loan for the remaining 80%. How much will he need to borrow?	Created as further reading of financial literacy using calculation of raw value from percent.	In addition to the RS purpose, this answer requires a slightly harder calculation, and write-in answer creates some interactivity potentially stimulating different medium-related responses (Daher & Kiewra, 2016; Holtz, 2016; Mitchell, 2018)
3. How likely are you to invest a week of your income in Marcus’ startup? [8 point Likert scale] – part of Risk scale as a measure of financial risk.	Adapted from: “[your likelihood of] ‘Investing in a business that has a good chance of failing’ and ‘investing 10% of your annual income in a blue chip stock.’” [The response option was originally a 5-point Likert scale with the endpoint labeled Extremely Unlikely and Extremely Likely and a Not Sure label over the midpoint 3 value (Weber, Blais, & Betz, 2002)]	Risk tolerance question in general applied to given scenario. The answer is selected on an 8-point Likert-like scale with endpoints labelled as Extremely Unlikely and Extremely Likely. The 8-point scale has no midpoint labelling to deter fence-sitting.
4. One bank agrees to loan Marcus the needed funds at 10% interest, compounded annually. If Marcus takes the loan and makes all the payments on time for the life of the loan, about how much will he have	Based on no single text in particular, but language level and format modelled on financial literacy program scenarios like the following:	Simple FinLit approximation question which serves the RS purpose; this

<p>paid the bank as a fee (interest) for borrowing the money?</p>	<p>“Now, imagine that Brent charges \$2,000 in car repairs and plans on paying a minimum monthly payment of \$50. The card carries a 25% Annual Percentage Rate (APR). How much are those car repairs really costing Brent and when will he pay off the amount owed?...” (Visa, 2020) and “Suppose you owe \$1,000 on a loan and the interest rate you are charged is 20% per year compounded annually. If you didn’t pay anything off, at this interest rate, how many years would it take for the amount you owe to double?” (FINRA, 2018)</p>	<p>answer required is modelled on the high school level with a test of basic interest concept, with a “don’t know” option.</p>
<p>5. How likely are you to lend a friend an amount of money equivalent to one month of your income?</p> <p>[Response option is a 8-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely] part of Risk scale, as a measure of increasing financial risk.</p>	<p>Adapted from: [likelihood of] “Lending a friend an amount of money equal to one month’s salary”</p> <p>[the response option was a 5-point Likert scale with the endpoint labeled Extremely Unlikely and Extremely Likely and a Not Sure label over the midpoint 3 value (Weber et al., 2002)]</p>	<p>Risk tolerance question in general applied to given scenario. The answer is selected on an 8-point Likert-like scale with endpoints labelled as Extremely Unlikely and Extremely Likely. The 8-point scale has no midpoint labelling to deter fence-sitting.</p>
<p>6. If Marcus pays a higher amount per month on the principal of the loan than required and pays off the loan sooner than expected, he will end up paying the same amount in principal and less in total interest in a typical loan.</p> <p>a. True b. False c. Don’t know</p>	<p>Adapted from “A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.” (FINRA, 2018)</p>	<p>Simple true/false related FinLit financial question with “don’t know” option. The ease of this question should give momentum to the S.</p>
<p>7. How would you describe your interactions with other people?</p> <p>[followed by an 8-point Likert scale, same as original] Part of the Trust scale.</p>	<p>Initial trusting question verbatim: “On a scale of 1 to 6, where 1 is ‘Relatively cautious’ and 6 is ‘Relatively trusting,’ how would you describe your interactions with other people?” (Ben-Ner & Halldorsson, 2010)</p>	<p>Generic trust behavior measure using 8-point Likert for no neutral answer and to be consistent with the other 8-pt scales.</p>
<p><u>Reading Two: Company Financial Performance</u></p>	<p>“The balance sheet gives financial information about an entity...[it] is</p>	<p>This scenario explains a basic</p>

The balance sheet is a summary of an organization's finances at a specific point in time—a snapshot showing what they have at a given point in time. On the left side of the balance sheet are listed all of the tangible assets, that is items with some dollar value. The right side of the balance sheet lists the sources of those assets, that is, whether they are liabilities (owed to another party) or if they are owned as either direct equity investment or from profits already earned. The two sides must equal, and this gives us the equation (A) Assets = (L) Liabilities + (E) Equity.

Consider the following bank's balance sheet presentation*, shown in millions of dollars:

[presented here as stacked for spacing; actual display is horizontal]

<u>Assets</u>	
Cash	\$13,470
Securities	32,162
Loans receivable	122,871
Buildings	3,631
Other assets	<u>14,799</u>
Total assets (A)	\$186,933

<u>Liabilities and Stockholders' Equity</u>	
Deposits	\$141,618
Other liabilities	<u>28,171</u>
Total liabilities (L)	169,789
Stockholders' equity (E)	17,144
Total liabilities and equity (L + E)	\$186,933

This balance sheet illustrates how banks gather and use money. Nearly 75% of the total assets are in the form of investments in loans, and over 80% of the total liabilities and stockholders' equity are in the form of deposits, the major liability. That is, a bank is in the business of raising funds from depositors and, in turn, lends those funds to business, homeowners, home purchasers, and others.

*Adapted from a textbook example by Horngren et al. (1996, p. 35) using a national bank in the US.

a snapshot of the financial position of the entity at one moment in time...the heading of the left side is Assets and the heading of the right side is Liabilities...Assets are valuable resources owned by the entity...The balance sheet shows the amounts of each...The right side of the balance sheet shows the sources that provided the entity's assets...there are two general types of sources, Liabilities and Equity. Liabilities are the entity's obligations to outside parties who have furnished resources...The other source of the funds that an entity uses to acquire its assets is called Equity...[which is] (1) the amount provided directly by equity investors, and (2) the amount provided from profits...which is called retained earnings. (Anthony, 1996, pp. 3-4)
 [presented here as stacked for spacing; original display is horizontal].

Consider the following balance sheet accounts of Bank of America (in millions):

<u>Assets</u>	
Cash	\$13,470
Securities	32,162
Loans receivable	122,871
Buildings	3,631
Other assets	<u>14,799</u>
Total assets	\$186,933

<u>Liabilities and Stockholders' Equity</u>	
Deposits	\$141,618
Other liabilities	<u>28,171</u>
Total liabilities	169,789
Stockholders' equity	17,144
Total liabilities and equity	\$186,933

This balance sheet illustrates how banks gather and use money. Nearly 75% of

financial reporting concept, across various levels, from a freshman accounting textbook.

The purpose is to engage the S in an advanced but understandable financial scenario to a) RS the setting of the test (i.e., financial literacy vs. age), and b) outline a scenario upon which risk and trust questions can be connected.

	<p>the total assets are in the form of investments in loans, and over 80% of the total liabilities and stockholders' equity are in the form of deposits, the major liability. That is, these financial institutions are in the business of raising funds from depositors and, in turn, lends those funds to business, homeowners, home purchasers, and others. The stockholders' equity is usually tiny in comparison with the deposits (only about 6% in this case). (Horngren et al., 1996, p. 35)</p>	
<p>8. What items (accounts) in the list from above would be affected if you were an account holder and deposited money?</p> <p>[two blanks provided for write in]</p>	<p>“What Bank of America accounts would be affected if you deposited \$1,000?” (Horngren et al., 1996, p. 35)</p> <p>[open ended question]</p>	<p>In addition to the RS purpose, this answer requires either knowledge of reading a balance sheet or ability to interpret basic structure of financial data as explained. Additionally, a write-in answer creates some interactivity potentially stimulating different medium-related responses (Daher & Kiewra, 2016; Holtz, 2016; Mitchell, 2018)</p>
<p>9. Why are deposits listed in the liability section?</p> <ul style="list-style-type: none"> (a) Because you are liable to your creditors for that money. (b) Because the money you deposited is owed back to you by the bank. (c) Because the bank does not normally carry enough cash to equal all the deposits. (d) I don't know. 	<p>“Why are deposits listed as liabilities?” (Horngren et al., 1996, p. 35)</p> <p>[open ended question]</p>	<p>These specific accounting FinLit question to keep higher level interested with “don't know” option still available for other levels. The response options presented in multiple choice format.</p>

<p>10. Generally speaking, would you say that most people can be trusted or that you cannot be too careful when dealing with people? Choose one:</p> <p>(a) You cannot be too careful in dealing with people.</p> <p>(b) Most people can be trusted.</p> <p>Part of the Trust scale.</p>	<p>“Generally speaking, would you say that most people can be trusted or that you cannot be too careful when dealing with people? Choose one:</p> <p>(a) You cannot be too careful in dealing with people.</p> <p>(b) Most people can be trusted.” (NORC, 2018)</p>	<p>Gauge of trust level used by General Social Survey conducted every 3 yrs world-wide since 2007 by Univ. of Chicago.</p>
<p>11. How trustworthy do you believe a large national bank such as this to be?</p> <p>[followed by an 8-point Likert scale, with the endpoints labelled as Extremely Untrustworthy and Extremely Trustworthy]</p> <p>Part of the Trust scale.</p>	<p>This question imitates the above (Q10) and relates it to the reading scenario.</p>	<p>Trustworthiness question reflects a nuanced component of Trust and will serve as a further measure of Trust (Ben-Ner & Halldorsson, 2010). Uses pattern one general Risk/Trust question followed by a specific Risk/Trust question to relate question back to scenario.</p>
<p>12. This bank has a ratio of \$45 billion in cash/securities to deposits of \$141 billion (about 32%). This is actually much more on hand than legally required. With that information, how trustworthy do you believe this bank to be?</p> <p>[followed by an 8-point Likert scale, with the endpoints labelled as Extremely Untrustworthy and Extremely Trustworthy]</p> <p>Part of the Trust scale, measuring trustworthiness of an institution.</p>	<p>Using data from Scenario 2 on the balance sheet. (Horngren et al., 1996, p. 35)</p>	<p>This question bridges from the trust questions back to the reading scenario. It is a further trust question to get a finer measurement and also maintains financial literacy test appearance, RS.</p>
<p>13. What accounts from the above balance sheet would be affected if the bank loaned you money to renovate your house?</p> <p>[two blanks provided for write in response]</p>	<p>“What accounts would be affected if the bank loaned Joan Kessler \$50,000 for home renovation?” (Horngren et al., 1996, p. 35).</p> <p>[open-ended question]</p>	<p>In addition to the RS purpose, this answer requires either knowledge of reading a balance sheet or ability to interpret basic structure of financial data as</p>

		explained. Additionally, a write-in answer creates some interactivity potentially stimulating different medium-related responses (Daher & Kiewra, 2016; Holtz, 2016; Mitchell, 2018)
<p>14. How likely are you to bet a day’s income at the horse races?</p> <p>[8-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely]</p> <p>Part of the Risk scale, measuring smaller scale financial risk.</p>	<p>“[the likelihood of you] engaging in betting a day’s income at the horse races?”</p> <p>[5-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely and Not Sure over the 3 value] (Weber et al., 2002)</p>	<p>Gauge of Risk tolerance and prep for Risk tolerance question to follow. Uses 8 pt. Likert instead of 5 to avoid fence sitting.</p>
<p>15. How likely are you to co-sign on a new car loan for a friend if you have more than that loan amount saved in the bank?</p> <p>[8-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely]</p> <p>Part of the Risk scale, measuring financial and agency risk.</p>	<p>“[the likelihood of you] co-signing for a new car loan for a friend?”</p> <p>[5-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely and Not Sure over the 3 value] (Weber et al., 2002)</p>	<p>Risk question adapted for scenario to gauge risk tolerance and corroborate with other Risk questions. Uses pattern one general Risk/Trust question followed by a specific Risk/Trust question to relate question back to scenario.</p>
<p>16. What accounts from the bank’s balance sheet above would be affected if you withdrew money from your savings account?</p> <p>[two blanks provided for write in response]</p>	<p>“What accounts would be affected if Isabel Garcia withdrew \$4,000 from her savings account?” (Horngren et al., 1996, p. 35)</p> <p>[open-ended question]</p>	<p>In addition to the RS purpose, this answer requires either knowledge of reading a balance sheet or ability to interpret basic structure of financial data as explained. Additionally, a write-in answer creates some interactivity potentially</p>

		stimulating different medium-related responses (Daher & Kiewra, 2016; Holtz, 2016; Mitchell, 2018)
<p>17. Given a history of good returns for shareholders, how likely are you to invest (buy stock or bonds) in a large bank like this?</p> <p>Part of the Risk scale, measuring financial risk in the context of macro institutions.</p>	<p>“[the likelihood of you] investing 10% of your annual income in a blue chip stock?”</p> <p>[5-pt Likert scale with endpoints of Extremely Unlikely and Extremely Likely and Not Sure over the 3 value] (Weber et al., 2002)</p>	<p>Risk question adapted for scenario to gauge risk tolerance and to tie risk questions back to the scenario.</p>
<p><u>Reading Three: Personal Finance and Investing*</u></p> <p>Suppose you are at your first “real” job out of college in your early twenties and have been on the job one week when you are given the enrollment forms for the company’s 401(k) retirement plan. The first question you need to answer is whether or not you wish to participate and if you do participate how much of your salary you want withheld from each paycheck and placed in the plan. The company offers one of the more generous 401(k) match programs in that they match 50% of every dollar you contribute up to 10% of your salary. You wish you could wait a few months to sign up for the 401(k) when you would have a better handle on your spending habits as an independent adult with the rent, food, and all the assorted costs of living; however, the plan adviser who consults with the company encourages everyone to make a selection now to gain the most benefit.</p> <p>* Adapted from Next Gen Personal Finance (NGPF, 2019)</p>	<p>Based on the following scenario: “Janelle found herself staring long and hard at the 401(k) Enrollment form provided on the first week of her employment at Atlas Healthcare. It seemed so long ago that her High School Personal Finance teacher had her complete a similar project. Still it seemed a long way off until she would need to worry about retirement savings... She knew that she wanted to participate (that had been seared into her memory by her high school teacher), but as for how much to set aside, that question puzzled her. She had just started her first job and didn’t have a real handle on her spending habits as an independent adult with the rent, food and other assorted costs that came with it. She wished she could wait a few months to sign up for the 401(k) when she had a better budget planned for every month. However, she feared she would forget and lose the opportunity to have her contribution matched by the company. Her company had one of the more generous 401(k) match programs in that they matched 50% of every dollar she contributed up to 10% of her salary. ...”(NGPF, 2019)</p>	<p>This scenario for further RS applied in a practical scenario and prepares for the investment fund selection scenario. The format of the scenario was condensed to reduce the narrative’s length and put it in relation to S.</p>

<p>18. What would you do regarding signing up for the 401(k) plan?</p> <p>(a) Determine your budget and hope to sign up for the plan later at some contribution level.</p> <p>(b) Choose now to participate in the program with 10% of your salary as your contribution every paycheck.</p> <p>(c) Choose now to participate in the program with 5% of your salary as your contribution every paycheck.</p> <p>(d) Waive your right to participate in the program.</p>	<p>[continuing from the scenario above]:</p> <p>“The first question Janelle needed to answer regarded whether she wished to participate and how much of her salary she wanted to set aside. ...”</p> <p>The first question on the form had the following language:</p> <p>_____ Yes, I request that my company defer my compensation by _____%.</p> <p>_____ No, I waive my right to defer any compensation at this time”</p> <p>(NGPF, 2019)</p>	<p>The question involves a level of general budgeting in deciding whether the wise choice of 10% is tolerable for most persons. Responses would be assigned three levels: a, d = 0, c=1, and b=2</p>																								
<p>[instructions for question 19]</p> <p>Assuming you choose to participate in the program, the next decision involves how you want to have your money invested in the funds the program offers. The available retirements funds offered fall into two simplified buckets: stocks and bonds. In the program offered, you can either invest your money safely in bonds and get a fixed rate of interest or make a riskier stock market investment which stands to make you more money but might lose you money also. How much of your 401(k) would you invest in which bucket? The table below shows the likely outcomes for different stock/bond mixtures. The Mid Case column says what you would be likely to get on average. You are very unlikely to do worse than the Worse Case column and very unlikely to do better than the Best Case column (only 5% of the time). This chart gives a reasonable prediction of the size of your 401(k) after 35 years of typical participation in the program. After reviewing the chart, you must now select the stock and bond percentages for your retirement 401(k) investment plan.</p>	<p>[instructions]</p> <p>“Imagine you are saving for a pension. You can either invest your money safely in bonds and get a fixed rate or interest, or make a riskier stock market investment which stands to make you more money but might loose [sic] you some money too. How much of your pension fund would you invest in the risky stock market (company shares)? The table below shows the likely outcomes for different bond/stock mixtures. The average column says what you can get on average. You are very unlikely to do worse than the minimum and very unlikely to do better than the maximum (only 5% of the time). We’ve made this example realistic by predicting the likely size of a pension from savings of £3000 per year for 35 years”.(Vlaev, Chater, & Stewart, 2009)</p>	<p>The S must choose a simplified investment portfolio indicating rough level of risk via stock/bond ratio; this provides an investment dimensionality of risk (Vlaev et al., 2009).</p>																								
<p>19.</p> <table border="1" data-bbox="207 1669 776 1831"> <thead> <tr> <th rowspan="2">Choose</th> <th colspan="2">Bond/Stock Mix</th> <th rowspan="2">-</th> <th colspan="3">Expected Annual Retirement Income</th> </tr> <tr> <th>Bonds</th> <th>Stocks</th> <th>Worse Case</th> <th>Mid Case</th> <th>Best Case</th> </tr> </thead> <tbody> <tr> <td>One</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>100%</td> <td>0%</td> <td></td> <td>\$22,000</td> <td>\$22,000</td> </tr> </tbody> </table>	Choose	Bond/Stock Mix		-	Expected Annual Retirement Income			Bonds	Stocks	Worse Case	Mid Case	Best Case	One						A	100%	0%		\$22,000	\$22,000	<p>“Which mixture would you choose? Please tick one of the rows of the table below (Vlaev et al., 2009):</p>	<p>The original table was figured in pounds sterling; these amounts were doubled to better approximate US</p>
Choose		Bond/Stock Mix			-	Expected Annual Retirement Income																				
	Bonds	Stocks	Worse Case	Mid Case		Best Case																				
One																										
A	100%	0%		\$22,000	\$22,000																					

	B	90%	10%	\$21,500	0	0	Bond/Stock mixtures	Expected retirement income			Dollar predictions. The selection of a single row element will yield a risk tolerance value from 0 to 10. Although this is a rudimentary portfolio allocation schema, pilot testing indicates it works better in providing a simple risk tolerance metric than the typical choice of dozens of various funds. The portfolio mix is measured on a scale of 0% to 100% converted from letters to 0 to 10, representing the per cent stock.
								Minimum	Average	Maximum	
	C	80%	20%	\$21,000	0	0	100% bonds, 0 % stocks	11,000	11,000	11,000	
	D	70%	30%	\$20,500	0	0	90% bonds, 10 % stocks	10,750	11,500	13,000	
	E	60%	40%	\$20,000	0	0	80% bonds, 20 % stocks	10,500	12,500	15,000	
	F	50%	50%	\$19,500	0	0	70% bonds, 30 % stocks	10,250	14,000	17,500	
	G	40%	60%	\$19,000	0	0	60% bonds, 40 % stocks	10,000	15,000	20,000	
	H	30%	70%	\$18,000	0	0	50% bonds, 50 % stocks	9,750	16,500	23,000	
	I	20%	80%	\$15,000	0	0	40% bonds, 60 % stocks	9,500	18,000	26,500	
	J	10%	90%	\$14,000	0	0	30% bonds, 70 % stocks	9,000	20,000	31,000	
	K	0%	100%	\$7,000	0	0	20% bonds, 80 % stocks	7,500	22,000	36,000	
					\$52,000	\$99,000	10% bonds, 90 % stocks	7,000	24,000	42,000	
							0% bonds, 100 % stocks	3,500	26,000	49,500	
<p>Which mix would you choose? Please select one of the rows of the table above and indicate the letter of the row you prefer in the space below.</p> <p>Letter of row: _____</p> <p>(designed to assess risk behavior in portfolio choice)</p>											
<p>20. Which of the following statements reflects best your view? Please choose one:</p> <p>(a) I will not trust a person until there is clear evidence that he or she can be trusted.</p> <p>(b) I will trust a person until I have clear evidence that he or she cannot be trusted.</p> <p>Part of Trust scale as a measure of general social trust.</p>							<p>Which of the following statements reflects best your view? Please choose one:</p> <p>(a) I will not trust a person until there is clear evidence that he or she can be trusted.</p> <p>(b) I will trust a person until I have clear evidence that he or she cannot be trusted.</p> <p>(Ben-Ner & Halldorsson, 2010)</p>			<p>Final question, not related to a scenario, but overall trust level obvious question saved until the end.</p>	
<p>21. Please indicate your age _____.</p> <p>22. Please indicate your gender _____.</p> <p>23. Please indicate your highest level of formal education.</p> <ul style="list-style-type: none"> • High school diploma or equivalent • College (but did not earn degree) • Trade/technical/vocational training • Associate degree • Bachelors degree • Masters degree 							<p>23. Condensed from US Census categories of educational attainment (<i>US Census</i>, 2020):</p> <ul style="list-style-type: none"> • 12th grade—no diploma • Regular high school diploma • GED or alternative credential • Some college credit, but less than 1 year of college • 1 or more years of college credit, no degree 			<p>21. Needed for age data.</p> <p>22. Needed to check gender balance, especially for risk variable. (Lilleholt, 2019; Martin & Davari, 2018; Vlaev et al., 2009; A. Wang, 2009)</p>	

<ul style="list-style-type: none"> • Doctorate degree • Other (please specify) <p>24. [OSR version only] Indicate how you took this survey:</p> <p>a) This survey was taken on a laptop or computer screen.</p> <p>b) This survey was taken on a tablet device.</p> <p>c) This survey was taken on a smartphone.</p> <p>d) This survey was taken on paper.</p> <p>Other ____ (please specify).</p>	<ul style="list-style-type: none"> • Associates degree (for example: AA, AS) • Bachelor’s degree (for example: BA, BS) • Master’s degree (for example: MA, MS, MEng, MEd, MSW, MBA) • Professional degree beyond bachelor’s degree (for example: MD, DDS, DVM, LLB, JD) • Doctorate degree (for example, PhD, EdD) 	<p>23. Examples of degrees deemed unnecessary, and since high school graduation was a qualification for subjects, categories could be condensed.</p> <p>24. This question needed for data entry into SPSS to have each interface listed and also to triple check for any who printed out from online in the OSR group. There may be data between the OSR devices of interest. (Delgado et al., 2018; Kong et al., 2018)</p>
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IV.6 Design

The variables being tested, besides Age, are not announced to the subjects in order to minimize anticipation and bias (sensitization). The test is presented to the subjects as being a measurement of financial literacy (or reading comprehension of the financial material) according to age. In addition to serving in some ways as a decoy variable, Age also is documented in the literature in relation to Risk and to some extent Trust and may therefore serve to validate the results in terms of Age and Trust (H2) and Age and Risk (H5).

The variable of “financial literacy,” is the major metric which we are declaring to test, but it is only incidental to the experiment. The financial literature passages are seeded consistently throughout and are generic in nature; the financial literacy questions having been taken from existing online or textbook scenarios. In a pilot test of seven persons, none surmised

that the test was about other than financial literacy; the questions about Trust and Risk seemed to “blend into” the flow of the test instrument without undue attention, at least to the subjects in the pilot.

At the beginning of this section, concerns around the internal validity (or causal validity) of testing effects of reading medium (OSR vs. OPR) on a pool drawn from an assumed population of qualified digitally-accustomed subjects were addressed; however there remain other elements to the internal validity in dealing with the testing procedure itself. If there are differences between the OSR and the OPR groups in terms of Risk and Trust measurements, what are the possible rival explanations as the cause?

Timing and/or the complication of the print step might be one uncontrolled variable in that it takes some increased time for subjects to print out a version of the test instrument and take it on paper instead of going straight to an online survey. Interestingly, the literature mentions that time pressure favors OPR instead of OSR (Mead & Drasgow, 1993) such that time lost in the mechanical handling of printing may be somewhat gained back in actual faster performance on a paper test instead of online. To offset this potential effect, the time given (30 minutes) was more than enough time to complete the test instrument (pilot tests indicated well under 20 minutes, and the average online survey time was about 16 minutes).

Other factors such as time of day taken and distractions, which might be more likely with one medium over the other cannot be controlled for completely. One precaution taken is the stated requirement that all the MTurk subjects taking the test have access to a printer/scanner, but actually only half had to use the printer/scanner (the OSR group). This access to printer qualification should help control for a consistency of environment. In this manner, one would

presumably not take the test “on the go” (e.g., with a smartphone while commuting on the train). Indeed, only one subject in the OSR group indicated taking the test on other than a laptop/desktop computer. Nevertheless, we cannot know for certain the effect of the actual test taking environs except to assume that there is at least a general consistency in a “natural” environment, making this to some degree a field experiment. The environs may partially be controlled for in the MTurk 90% quality prerequisite, meaning the test takers have a history of diligence in completing assignments. This requirement encourages a group of subjects not disposed to some robotic or flippant participation in surveys.

Additional considerations were taken to keep in balance aspects of the timing: number of days the MTurk HIT is posted, and the approximate timing of the post is staggered among the HITs but is similar in interval. Thus, the groups were posted in separate batches (an OPR group, then an OSR group within the same age group) such that the postings did not have weeks of lag times in between. All subjects were filtered so that no one Worker ID could participate in the experiment more than once. Worker IDs are registered through MTurk with Social Security Numbers, so duplicate identities for a given Worker would be very difficult. In this manner, the anonymity of subjects is superior to that normally achievable by in-person subjects who receive simple cash reward for participation perhaps without firm identification requirements.

Furthermore, the independent variable of Reading Medium is not publicly announced nor would it be easily deduced by the Workers since the implicit rationale for having several HITs for this one study is to breakdown the Age variable by batches. This is not explicitly spelled out to the Workers though it could be inferred from the instructions which warn against repeating the test if one has already taken it via a previous HIT in another age group (Worker IDs are screened

for previous participation, but just in case someone did not get excluded who has already participated).

IV.7 Procedure

IV.7.1 IT Set-up.

The major elements of the set-up for a data gathering platform are described here:

1. MTurk registration of a new researcher (Requester) and new project. A “new project” is terminology in MTurk, and new projects can involve multiple discrete launches for data gathering.
2. Further registration on AWS (Amazon Web Services) system to establish a payment account for Worker payroll and more importantly to allow a platform for the anonymous uploading of completed test instruments (it is possible to pay Workers without setting up AWS, but not possible to gather uploaded documents since Workers are not supposed to contact the experimenter by private email).
3. Construction of specific website to provide for Workers’ ability to download a printed test instrument and to provide a link to the AWS Bucket system to upload a pdf of the completed test instrument (this is for the OPR group).
4. Conversion of the test instrument Word document to SurveyMonkey format and establish a URL to distribute to the OSR group for Worker completion of the OSR test instrument.
5. Creation of SPSS file for import of all SurveyMonkey data into statistics software.
6. Tracking system spreadsheet set-up for the tracking (manual) of completed test instruments by Worker ID number; this is for the approval of their payment. These Worker ID numbers are also needed to cumulatively disallow participation in subsequent batches.
7. SurveyMonkey survey file set up to receive all test instrument responses. OPR results are transferred via manual entry by the researcher. Those from OSR test instrument are entered directly by the Workers. All sources of entry (Collectors) are unique for each of the four HITs and combined form the one data file exportable to SPSS statistics file (an extra question was added as a double check for the source—see Question 24).

The MTurk system allows for batches to be published as separate HITs (i.e., posted openly for Workers who meet all the qualifications to accept as a HIT). Each HIT has different attributes to coincide with the independent variables of Age and Reading Medium.

Table 4. HIT (Batch) Launch Plan

HIT (batch)	Age Range ⁶	Parameters	Completed	Worker IDs	Approval
1. OPR1 55 Jan 8, 2021 [abandoned in early trial]	55+	1. Quality-95 2. USA 3. Printer/scan 4. Age-55+	Was the survey completed and able to be entered in survey software?	ID nos. [0 lines]	Payment approved if complete
2. OPR2 45 Jan 11, 2021	45-55	1. Quality-90 2. USA 3. Age 45-55 Printer/scan by limited URL access	Was the survey completed and able to be entered in survey software?	ID nos. [21 lines]	Payment approved if complete
3. OSR3 45 Jan 16, 2021	45-55	1. Quality-90 2. USA 3. Age 45-55 4. Exclude IDs from HIT 2 by warning and manual checking	Was the survey completed and able to be entered in survey software?	ID nos. [30 lines]	Payment approved if complete
4. OPR4 18-45 Jan 16, 2021	18-45 or Over 55	1. Quality-90 2. USA 3. Not Age 45-55 5. Exclude IDs from HITs 2-3 by warning and manual checking Printer/scan by limited URL access	Was the survey completed and able to be entered in survey software?	ID nos. [86 lines]	Payment approved if complete
5. OSR5 18-45 Jan 26, 2021	18-45 or Over 55	1. Quality-90 2. USA 3. Not Age 45-55 5. Exclude IDs from HITs 2-4 by warning and manual checking	Was the survey completed and able to be entered in survey software?	ID nos. [77 lines]	Payment approved if complete

⁶ The MTurk default settings for age groups overlap (e.g., 18-25, 25-30...45-55, 55+); however, our test instrument asks for exact age. We can also eliminate by Worker ID any who are the overlapping age (55 exactly) and prevent duplicate entries.

IV.8 Data Collection Description

On 8 Jan 2021 at 1430h, HIT 1 (OPR 55) was published to gather data and also to serve as a further test for the OPR test instrument retrieval system itself. The desired number of Workers for this HIT was 25. After three days of publication, no Workers accepted the assignment, and correspondence with MTurk suggested that either there was a dearth of the Age 55+ population interested or there was some other problem with displaying Printer/scanner qualification—an unusual use of MTurk, to be sure. It appeared that the custom qualification mechanism was not properly functioning. Thus, HIT 1 (OPR 55) was abandoned as a failed test of the system.

Reconceptualizing the process showed that the first attraction for Workers is the payment and the time required and then the nature and difficulty of the task (Sheehan, 2015). The payment was raised to \$5.80 (this payment amount was held consistent through all HITs), the task relabeled to be a survey involving *basic* financial literacy, and the printer/scanner requirement mentioned in the description and boldly in the instructions instead of being listed as an equipment pre-qualifier (this saves a separate custom qualification pathway in MTurk). The URL link for this HIT (an OPR one) was the custom print-only one designed in Step 3, so there is no possibility to complete the test for this batch except by using it on paper. Any rate of acceptance and withdrawals by the Workers would indicate that some Workers initially accepted the assignment believing it to be the usual completely online task and then abandoned the task once they realized it could only be completed successfully by using a print-out. Having excess

“drops” after acceptances would be an administrative inconvenience to untangle but would not affect the experiment’s result.⁷

Once the Workers took the test and uploaded their completed documents to the AWS Bucket (see step 3 in the IT Set-up), the researcher downloaded and printed out the completed survey and manually entered the data into the SurveyMonkey file (see step 7 in the IT Set-up) for eventual export to SPSS.

On January 11, 2021, at 11:25h (ET) HIT 2 (OPR 45) was published using the print-only survey link (Time 1 in Figure 2). The responses began to be posted within 30 minutes of the start time and continued until the day the HIT expired, January 16 at 20:29h. The results of the HIT (summarized in the Batch Results Spreadsheet in the Appendix) show 21 respondents successfully completing the assignment by printing out, completing, and uploading the test instrument to the AWS bucket (from step 3 above) within the 30 minutes. The MTurk data showed 20 acceptances and four rejections; however, one of the rejections by MTurk had uploaded the test instrument successfully. One aspect not anticipated was that some Workers had scanners that could only feed one page at a time, thus taking slightly longer time than expected.

The results of this HIT made advisable some changes. First, the diligence of the Workers in observing instructions indicated that complicated programming to prevent duplicate respondents seemed unnecessary. It was decided to proceed with HIT 3, the first OSR respondents, without additional programming of the MTurk system to disqualify previous

⁷ The drop level was only 2 per the first HIT, which did not seem unusual. Follow-up with two of the Workers indicated that their scanners had no feeders and thus had to be scanned one at a time, meaning the timing was too tight.

participants. Stern warnings about repeating the survey, if taken in a previous HIT, and the ability to easily eliminate duplicate respondents by Worker ID number made this extra programming superfluous. Additionally, the pre-disqualification programming would require Workers to enter into a second phase of approvals that might deter their participation. Secondly, the vast majority of Workers responding to the HIT did so the first day of publication. It appeared wasteful to keep the extension of the timing of HIT 3 open for several days with no appreciable incremental activity and no foreseeable effect on the results. HIT 3's open time was set at three days (vs. five for HIT 2), and with all HITs there is an option to extend time of the needed number of Workers do not respond.

On January 16 at 17:06h ET, HIT 3 (OSR 45) was published for the ages 45-55 (Time 2 in Figure 2). The HIT published the SurveyMonkey URL for direct online responses to the test instrument. In addition to the warnings in the instructions about elimination of any results from duplicate Worker IDs, frequent monitoring of the results as they came in also served as a failsafe. A further deterrent to not following instructions strictly is that rejection rates are a point of pride and future qualification with MTurk Workers; for this presumed penalty, taking the survey twice just to test the system and get paid twice is unlikely. Nonetheless, the data were inspected and evaluated for completeness and uniqueness of Worker IDs at frequent intervals while the HIT was open. It was set to expire three days later on January 19; however, being completely online, it was completed at 29 respondents in about two hours. The researcher compared the surveys coming in to SurveyMonkey with the corresponding MTurk HIT data, and any incomplete surveys were rejected at both destinations. If, when a HIT has filled its quota of Workers, the researcher rejects a Worker's submitted work, then there is the option of replacing that Worker

with an extended publication of the HIT. This option was taken in OSR3 to replace those rejected for incomplete surveys.

Following on January 16 at 20:56h, HIT 4 (OPR 18-45) was published (Time 3 in Figure 2) similarly to HIT 2, and on January 26 at 08:24h, the remaining HIT 5 (OSR 18-45) was published (Time 4 in Figure 2) similar to HIT 3. Both HITs deterred any repeat Worker IDs who may have accepted previous HITs by the methods outlined for HIT 2. The time limit for HIT 4 was extended by five minutes to accommodate the time required for submission by single page feed scanner (viz., from Worker suggestion). Each of these last two HITs had a desired quantity of 75 Workers.

Given that HIT 4's target age group is all ages *except* the age groups of HITs 2 and 3 (i.e., NOT age 45-55), it could run concurrently with HIT 3 with no interference. That is, a HIT is not visible (published) to those outside its publication parameters. But HITs launched simultaneously targeting the same age group might compete with each other. Therefore, HITs 2 and 3 did not presumably interfere with HITs 4 and 5. HITs 2 and 3, being of the same age group, might have interfered with each other should a Worker compare the two and decide the OSR version would be easier. Since HIT 5 covered the same age parameters, it should be launched after HIT 4 has reached its target number.

IV.8.1 *Disqualified Subjects*

It became obvious with the larger target OPR HIT (HIT 4) that some in the younger age groups were not appropriately set up to perform a timed task in print/scan. Some accepted the HIT and were not able to complete it in time for several reasons: 1) inadequate printing or scanning equipment (one page at a time scanner), 2) attempting an end around, e.g., save the

document intended for printing as a pdf instead, then convert the pdf to Word, then fill out the form in Word, convert back to a pdf, then upload (or alternately write with a stylus or cursor on the pdf), 3) participating in “queuing” such that the HIT is accepted and put in a queue and the Worker gets to it later (without realizing the time limitation), or 4) other unknown actions resulting in a print/upload failure. These workarounds became a suspicion from the questioning emails sent to the researcher directly from the Workers as they were rejected. Both the relatively high numbers of respondents and the relatively high-paying HIT were probably at play. There were two rejections in HIT 5 of those who had previously participated in HIT 4 and tried to take HIT 5 (thus an intended “cheat” rate of 2%); this was discovered by running a spreadsheet comparison of all earlier Worker IDs (accepted or rejected) with the HIT 5 submitted IDs. One of the two rejected Workers wrote to the researcher in apology (thus a “penitence” rate of 50%).

IV.8.2 OPR Data Verification

Because the OPR batches (HITs 2 and 4) were generated by printing out the forms submitted to the AWS Bucket and entered by the researcher’s own hand into SurveyMonkey, these data had been inspected in process. The SurveyMonkey data which were entered directly by the Workers into the SurveyMonkey URL (HITs 3 and 5) were also inspected closely for completion, and then the combined results of all HITs exported in similar fashion. Hard copy printouts were made of each OPR Worker’s submitted pdf, and the responses entered manually by the researcher into SurveyMonkey. A double checking of each entered batch to match the final entries made in SurveyMonkey was conducted at the end of each batch. Furthermore, an audit using 5% of the final batch count was conducted under third party observation. No discrepancies were found in either the *in process* batch doublechecking or in the audit under observation. There were a few cases of variation in the use of upper and lower case initial letters

in the fill-in responses (e.g., whether the respondent put “Cash” or “cash”), and there was no attempt to make a standard of all minor word variations. Likewise, some respondents used commas in numbers and some did not (e.g., 40,000 or 40000), and no attempt was made to make this consistent—it being of no material consequence.

The data, once all verified in SurveyMonkey, were compared again in the batch tracking worksheet to make sure all responses were counted for. The SurveyMonkey data (212 responses total) were exported in one batch as “all individual responses” to the statistical software SPSS for analysis.

V RESULTS

Descriptive statistics were run on all of the responses to the questions used in the analysis as well as the demographic questions. The continuous variables of interest:

Table 5 Descriptive Statistics of Continuous Variables

Variable	N	Min	Max	Mean	SD	Skewness	Kurtosis
Age	211	18	69	40.7	11.4	.46	-.57
Education	211	1.0 (HS)	7.0	4.3 (5=BS/BA)	1.64	-.73	-.54
Trust	211	5.0	28.0	19.2	4.7	-.40	-.15
Risk	210	5.0	39.0	14.9	5.7	1.0	1.1
Fin Lit	212	.00	3.0	1.9	.7	-.27	-.22
RM * Age	211	19.0	19.0	61.2	27.0	.75	-.05

There were two cases of category reassignment: one subject reported having been to high school, but not technically a high school graduate; this introduced an extra category of “other” into the data fields. Since this subject was the only one in the “other” category—making his results unwieldy—he was placed in the high school graduate category. Similarly, one subject in the OSR category indicated taking the test on a tablet instead of computer (the only one) and was moved into the general OSR desktop/laptop category to avoid an unmeaningful subcategory of one.

Table 6. Means of Categorical Variable Reading Medium vs. Trust and Risk

Variable	Trust			Risk		
	N	Mean	SD	N	Mean	SD
OSR	105	19.17	4.81	104	16.54	8.22
OPR	106	19.25	4.54	106	13.22	4.32

V.1. Trust Scale from the five questions on Trust from the Total Trust Scale (Q7, Q10, Q11, Q12, and Q20). The explanation and rationale of including these questions in the scale are in Table 3.

Table 7. Trust Scale Composition

Item	Mean	Standard Deviation	N	Inter-item Q7	Inter-item Q10	Inter-item Q11	Inter-item Q12	Inter-item Q20
7. How would you described interactions?	4.81	1.99	211	1.000	.358	.263	.527	.444
10. Cannot be too careful or most people trusted?	.46	.50	211	.527	1.000	.261	.216	.568
11. How trustworthy a large national bank?	5.51	1.69	211	.358	.261	1.000	.712	.193
12. How trustworthy if good cash reserves?	5.82	1.65	211	.263	.216	.712	1.000	.182
20. Trust or not trust until evidence?	.61	.49	211	.444	.568	.193	.182	1.000

Cronbach's Alpha	.673
Cronbach's Alpha standardized	.748

V.2. Risk Scale from the five imbedded questions on Risk (Q3, Q5, Q14, Q15, and Q17); explanation of the nature and rationale for these questions in forming the scale are in Table 3. Scale inter-item correlations for Risk are in Table 8 below.

Table 8. Risk Scale Composition

Item	Mean	Standard Deviation	N	Inter-item Q3	Inter-item Q5	Inter-item Q14	Inter-item Q15	Inter-item Q17
3. How likely to invest in Marcus?	2.68	1.94	210	1.000	.646	.434	.500	.353
5. How likely to lend friend one month income?	2.75	1.97	210	.646	1.000	.367	.590	.356
14. Day's income at horse races?	1.91	1.75	210	.434	.367	1.000	.428	.242
15. Co-sign on car loan?	2.52	1.83	210	.500	.590	.428	1.000	.147
17. How likely to invest in bank	5.00	1.74	210	.353	.356	.242	.147	1.000

Cronbach's Alpha	.778
Cronbach's Alpha standardized	.774

V.1 Mathematical models

To investigate the effect of the independent variables on the dependent variables of Trust (using the Trust scale) and then of Risk (using the Risk scale), hierarchical regression modeling is applied. The mathematical basis for each model takes the form of the simple regression developed for each model:

Equation: 1. Regression Model Equations

Model 0: $Y = \beta_0 + \beta_1 C$; this model indicates the effect of the control variable on the DV.

Model 1: $Y = \beta_0 + \beta_1 C + \beta_2 X_1$; this model indicates the effect of the control variable plus the main effect of the IV, Reading Medium, on the DV.

Model 2 : $Y = \beta_0 + \beta_1 C + \beta_2 X_2$; this model indicates the effect of the control variable plus the main effect of the IV, Age, on the DV.

Model 3: $Y = \beta_0 + \beta_1 C + \beta_2 X_1 + \beta_3 X_2$; this model indicates the effect of the control variable plus the main effect of the IV, Reading Medium, plus the main effect of the IV, Age, on the DV.

Model 4: $Y = \beta_0 + \beta_1 C + \beta_2 X_1 + \beta_3 X_2 + \beta_4 X_1 X_2$; this model indicates the effect of the control variable plus the main effect of the IV, Reading Medium, plus the main effect of the IV, Age, plus the mixed variable Reading Medium x Age, on the DV, where:

- Y = dependent variable (either Trust or Risk)
- β_i = regression coefficient associated with each regression i .
- C = control variable (Education)
- X_1 = independent variable (Reading Medium)
- X_2 = independent variable (Age)

V.1.1 Trust Results

This modelling was used to assess the ability of two measures, Reading Medium and Age on Trust. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity (see Appendix). The results of the sequential regression:

Table 9. Hierarchical Regression Result DV = Trust Level, β and (t)

Variable/Parameters	Model 0 N=210	Model 1 N=210	Model 2 N=209	Model 3 N=209	Model 4 N=209
Control Education level	.127 (1.847)	.130 (1.872)	.132 (1.938)	.136* (1.974)	.129 (1.880)
IV Reading Medium		-.025 (-.359)		-.032 (-.460)	-.335 (-1.321)
Age			.155* (2.278)	.155* (2.270)	-.099 (-.460)
Interaction RM * Age					.404 (1.243)
R ²	.016	.017	.041	.042	.049
ΔR^2		.001	.025†	(i).025, (ii).001	.007
F	3.412	1.763	4.431*	3.014*	2.652*
ΔF	NA	.210	5.37*†	(i)5.35*, (ii).214	1.51

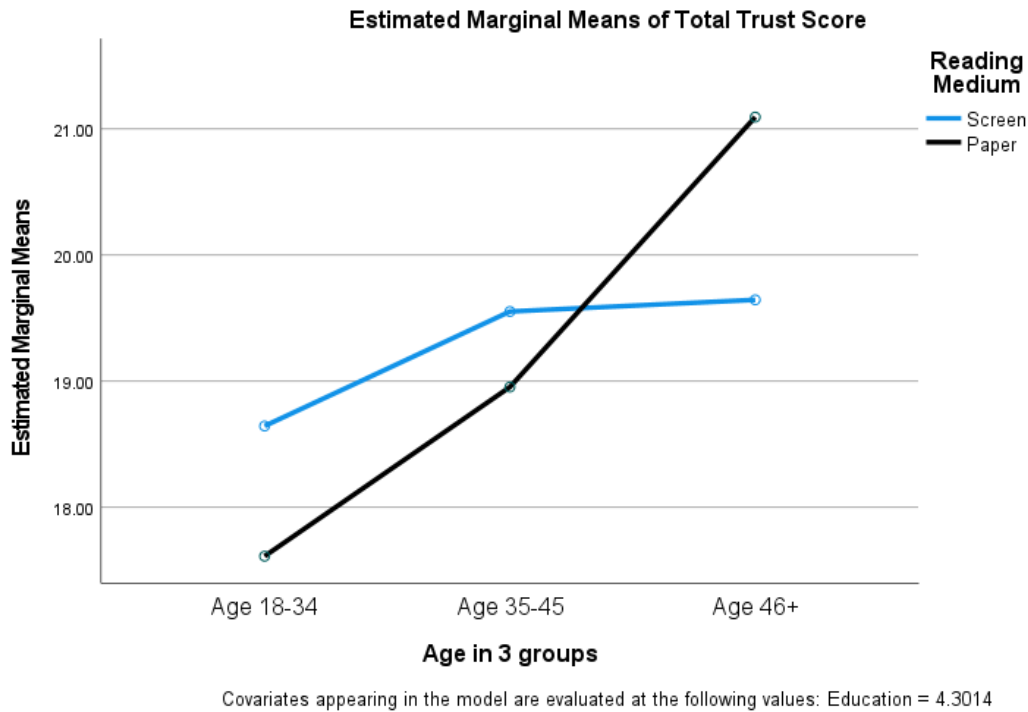
Legend *p <.05; † = Δ with Model 0, (i) = Δ with Model 1, (ii) Δ = with Model 2

The change in the F ratio is calculated in the following manner:

Equation 2. ΔF Calculation

$\Delta F = [(R_2^2 - R_1^2) / k_2 - k_1] / [(1 - R_2^2) / (N - k_2 - 1)]$, where k is the number of independent variables in the regression step of the model.

Figure 3. Profile Plot of Trust (from Appendix H)



H1: Reading Medium influences Trust, with OPR positively affecting Trust more than with OSR.

- As shown in Table 9, for Model 1, Model 3, and Model 4, there was no statistically significant effect of Reading Medium on Trust Level. H1 is not supported, and the null hypothesis cannot be rejected for Reading Medium and Trust.

H2: Age influences Trust in reading financial material, with increased Age showing increasing Trust.

- As shown using Age as a continuous variable in Model 2 and Model 3, but not in Model 4; therefore, H2 was not supported, and the null hypothesis cannot be rejected.

H3 (interaction): Age and the Reading Medium, taken together, influence Trust.

- As illustrated in Model 4, there was no statistically significant effect of Age as a continuous variable with Reading Medium on Trust, and the null hypothesis cannot be rejected for H3.

V.1.2 Risk Results

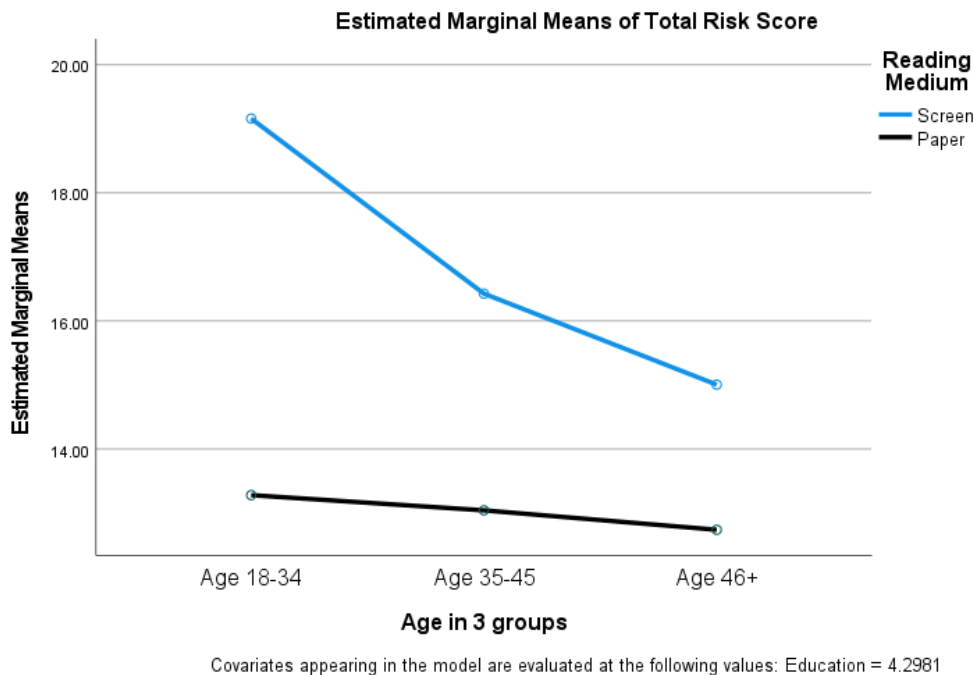
This same linear regression modelling was again used to assess the ability of two measures, Reading Medium and Age on Risk. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity (See Appendix). The results of the sequential regression are as follows:

Table 10. Hierarchical Regression Result DV = Risk Level, β and (t)

Variable/Parameters	Model 0 N=208	Model 1 N=208	Model 2 N=207	Model 3 N=207	Model 4 N=208
Control					
Education level	.185** (2.709)	.219** (3.307)	.186* (2.747)	.222** (3.387)	.211** (3.234)
IV					
Reading Medium		-.274** (-4.127)		-.281** (-4.295)	-.692** (-2.879)
Age			-.164* (-2.424)	-.166* (2.555)	-.511* (-2.496)
Interaction					
RM * Age					.547 (1.776)
R ²	.034	.108	.062	.140	.153
ΔR^2		.074	.028†	(i).032, (ii).078	.013
F	7.339**	12.47*	6.770*	11.045**	9.159*
ΔF	NA	17.09*	6.09*†	(i)7.55*,(ii)23.68**	3.116

Legend * $p < .05$, ** $p < .01$; † = Δ with Model 0, (i) = Δ with Model 1, (ii) Δ = with Model 2

Figure 4. Profile Plot of Risk (from Appendix H)



H4: Reading Medium influences Risk, with OSR positively related to Risk more than with OPR.

- As shown in Table 10, Model 1, Model 3, and Model 4, H4 is supported at $p < .01$.
- There was a high statistical power indicated at 99%. Further tests were run to verify that this high power did not adversely influence the results, and the support for H4 was sustained. (see Results Summary, Table 11).

H5: Age influences Risk in reading financial material, with increased Age showing decreased Risk.

- As shown in Table 10, Model 2, Model 3, and Model 4, H5 was supported at $p < .05$, with the relationship between Age and Risk being negative.

H6: (interaction): Age and the Reading Medium, taken together, influence Risk.

- As illustrated in Table 10, Model 4, H6 was not supported at the $p < .05$ level. The effect size of age as a continuous variable with Reading Medium on Risk is not adequately supported, and the null hypothesis cannot be rejected for H6.

V.1.3 Further Power Analysis

There was further power analysis in accordance with the guidelines established by Cohen (1992). This seemed of particular importance since the results for Risk vs. Reading Medium (H4) were highly powerful (99%) with the original sample size of 208. This further analysis was run on all the hypotheses and is particularly meant to minimize Type II error where the null hypothesis was rejected, H4 and H5. We know a large sample size can make an effect easier to detect and thus increases potential for Type II error. Consequently, we reduced sample size by about half (to $N = 100$) in random method (but preserving the balance of the age and reading medium groups) to test the results that had rejected the null. The results are contained in Table 11.

V.2 Results Summary

Table 11 Results Summary Chart

Hypothesis	Description	Result	N=207~209 Effect (β), Observed Power $\hat{\alpha} = .01, \hat{\alpha} =$.05	N=100 Effect (β), Observed Power $\hat{\alpha} = .01, \hat{\alpha} = .05$
H1	RM (OPR) influences Trust more than RM (OSR)	The null hypothesis cannot be rejected at $p < .05$	-.335, .516, .746	-.365, .151, .356
H2	Age positively influences Trust	The null hypothesis cannot be rejected at $p < .05$	-.099 .516, .746	-.365, .151, .356
H3	Interaction of RM and Age on Trust	The null hypothesis cannot be rejected at $p < .05$.404 .516, .746	-.365, .151, .356
H4	RM (OSR) influences Risk more than RM (OPR)	The null hypothesis is rejected at $p < .01$	-.692 .996, .999	-.864 .888, .967
H5	Age negatively influences Risk	The null hypothesis is rejected at $p < .05$.024 .996, .999	-.720 .888, .967
H6	Interaction of RM and Age on Risk	The null hypothesis cannot be rejected at $p < .05$.014 .996, .999	.677 .888, .967

VI DISCUSSION

VI.1 Discussion of Hypotheses

Key explorations of this experiment provided significant results. We examine the hypotheses developed in Section III and their results.

VI.1.1 *H1—RM influences Trust, OPR positively affecting more than OSR*

The postulation seemed reasonable that OPR would demonstrate more Trust than OSR from trends in the research literature showing the ever-increasing use of OSR and additional trends in the popular press around the superior “trustworthiness” of print sources vs. online sources (Gibbs, 2017); however, there was no support for H1 in the results. In other words, OPR does not lead to a more trustworthy view than does OSR.

Indeed, it could well be that readers do not trust reading financial content on paper more than on screen. If this be the case, then the commodity-like characteristics such as plenty and lower cost reality (or perception), which were earlier argued to be an influencing factor did not lead to an increased standing of OPR relative to OSR in terms of Trust. It could be that the widespread and growing encounter of OSR does not diminish trust because with increased presence comes increased reliance such that trustworthy material is also present along with any dross. It is very possible that over time, as the familiarity of OSR increases in modern society, it gains in trustworthiness, and is showing in the data of this study and reflects the suppositions of Gibbs (2017) that familiarity of information on screen leads to growing acceptance.

Another factor that could have come into play was the nature of the trust scale itself. From a numerical perspective, its Cronbach alpha was at the low end of acceptability with $\alpha =$

.673 and with standardized $\alpha = .748$ ⁸. Furthermore, the questions themselves, though drawn from established literature, were broad: two were from the general usage General Social Survey (NORC, 2018), and two were specific to finance, with the fifth being also a general trust question at the very end of the test instrument. It could well be that the scale for Trust was too general an assessment for the finance domain. One remedy would be to replace any general trust questions with strictly financial trust ones.

VI.1.2 H2 Age influences Trust in reading financial material with increased Age showing increased Trust

Even though this hypothesis was not fully supported, its mixed results reflect well the current reality in the literature. The results showed that trust level shows some relation to age, and this has been previously shown in the literature to some extent. The “some extent” is that there are mixed results across studies, especially where financial trust is involved. Bailey and Leon (2019) examined the state of age-related trust research in their meta-analysis and reported mixed findings around financial trust and age, whereas non-financial trust showed a clear significant positive relationship. The findings here in H2, Age influences Trust, were mixed as well: two models (Model 2, Age; and Model 3, RM and Age) showing Age significantly related to Trust in a positive direction. However, the combined Model 4 (RM, Age, and RM*Age) did not show this result, and the null cannot be rejected. Thus, the mixed results of Age and Trust shown here reinforce the Bailey and Leon (2019) study which noted similar issues with the measurement of age’s effect on trust. A note here is that although the age range of this study reached to 69 years, the Bailey and Leon study sought to measure a large number of subjects over age 60. This study had approximately one third of the subjects in the range of ages 46-69,

⁸ Often, the preferred starting point is considered as 0.7 (Pallant, 2001, p. 6).

and there was the largest difference in Trust with OPR over OSR in that eldest age group. This, however, did not counteract the higher OSR over OPR scores in the younger ages (see Figure 3).

It appears that the change in the Reading Medium's effect on Trust in the younger ages (OSR over OPR) was in opposition to the Reading Medium's effect on Trust in the higher ages, and that even though the Trust scores increased in a linear fashion with age (significantly at the younger ages), the data when regressed in Model 4 in the aggregate did not reach significance.

VI.1.3 H3 Age and the Reading Medium, taken together, influence Trust

Without the addition of the interaction variable (RM*Age), the hierarchical regression model (Model 3) was statistically significant ($p < .05$). The addition of this interaction variable rendered the model (Model 4) unable to reject the null hypothesis overall. The chart in Figure 3 shows the pattern of Reading Medium and age (divided into three groups of equivalent frequency), and the interaction of the low to high level of Trust in the OPR group with the medium to slightly higher level of the OSR group most likely shifted the model toward statistical insignificance.

Given that the first two models with Age showed a positive relationship with Trust and the addition of another variable disturbed this positive relationship, we can only report a sensitivity either caused by the nature of the interaction variable itself or simply by the addition of a fourth variable.

The addition of other fourth variables was apparently not the issue since Age was statistically significant on Trust if we substituted different variables for the interaction variable: when FinLit was used in place of RM*Age, Age was significant; when Gender was used in lieu of RM*Age, Age was also significant. One of the substitute variables was itself significant

(FinLit) and the other was not (Gender). Thus, the data points of the interaction variable were a probable cause of model's sensitivity.

VI.1.4 H4 *Reading Medium influences Risk, with OSR positively related to Risk more than OPR*

This study found that in this experimental setting Risk (i.e., risk self-report) is increased by reading the financial information on screen as compared to reading on paper. Even more remarkable is that this result was shown using an “on-screen reading” crowd. Indeed the profile of the average MTurk Worker is that of a digitally-immersed person, no matter their age (Sheehan, 2015). As far as this researcher can ascertain, this is also the first academic testing of OPR vs. OSR with any experiment or measure using the MTurk subject pool. As indicated in the results charts (Tables 10 and 11) the effect was clearly significant ($p < .01$).

In some ways this result can be seen as a bridge between two previously demonstrated, separate phenomena mentioned in the Literature Review: that OSR tends to boost self-confidence in one's cognition (Ackerman & Lauterman, 2012; Lauterman & Ackerman, 2014), and that self-confidence boosts risk tolerance (A. Wang, 2009). It is logical to connect the studies' conclusions: even though the step from OSR to self-confidence to increased risk tolerance is not necessarily shown in this research, it can arguably be assumed to be a transitive pathway of OSR to increased Risk.

Factors mentioned earlier in the research literature such as quick “shallow” reading leading to decreased comprehension (Clinton, 2019) are possible areas of explanation for OSR's demonstrated effect on Risk as well as popular ideas that time spent playing games on computers tends to create the concept of the computer as a place to play games (which involve risk),

however recent research indicates that this increased videogame screen time is not the detrimental influence many might think (Ferguson, 2021).

No matter the pathway, the experiment clearly demonstrated that OSR increases Risk over OPR, and did so in the “home turf” of subjects recruited through OSR. It is fair to ask if the experiment had recruited subjects solely via printed paper ads (such as was once the case when OPR was the “default”) and then tested those subjects, would it have more remarkable if the results showed OPR as more risky? That an OSR-recruited crowd shows more Risk with OSR over OPR is perhaps better framed as a question of those accustomed to a certain default medium displaying more risk on that same default medium than on a different medium. It is an interesting result of the experiment, and one which does show that OSR indeed led to differing risk preference for those both presumably use to reading on paper (given the presence of the older group) as well as those use to computer screens.

VI.1.5 H5 Age influences Risk in reading financial material with increased Age showing decreased Risk

The experiment’s results support H5 in that increasing Age led to decreasing Risk, and this joins the well-established literature presented earlier ((Faff et al., 2008; Grable, 2000; Martin & Davari, 2018). Indeed, this was one of the reasons for including this hypothesis was to anchor the experiment by replicating some previously established results. Given this study’s deviation from the lab into the world of MTurk, the result of this hypothesis served as a confirmation (H5 was the only hypothesis clearly demonstrated in previous literature).

Age performed consistently, significantly, and negatively across all the models. As seen in Figure 4, the Risk difference was highest in the younger ages—markedly so in OSR—and declined steadily as age increased. The rationale of conserving one’s resources in the face of

probable decline of occupational earning ability and all that ensues with that movement to life's final phases is given as reason enough.

VI.1.6 H6 Age and the Reading Medium, taken together, influence Risk

Since both the variables of Age and Reading Medium were significantly related to Risk at $p < .05$ and $p < .01$ respectively, it would be fair to assume there might be a significant interaction variable of RM*Age. The significance of the interaction variable was .077, which meant the null hypothesis could not be rejected at the needed $p < .05$ level. Obviously, if the interaction variable were significant, then the level of effect of RM or of Age would depend on the level of the other, and that interaction was present to some extent; however, not to a statistically significant one.

Even though both of these independent variables influenced Risk with significance, apparently each of their effects does not depend on an interaction one with the other. Age and Reading Medium influence singly and combined, but their outcomes on Risk do not depend on an interaction with each other.

VI.1.7 Other Study in OSR vs. OPR in Finance Material

The one other known study on reading medium differences involving financial literature, Hurwitz et al. (2019), tested the reading of printed prospectuses vs. online prospectuses on the Israeli public in research to prepare for regulatory changes on pension reporting. The context for the Hurwitz et al. (2019) study was to help determine advisability of shortening required financial reporting information given the abundance of information investor/citizens typically receive. The researchers' findings of interest showed that for reading short financial reports OPR was superior, but on reading financial material of length OSR was slightly superior—in terms of comprehension. These tests were of retrieving information from the reports and

understanding in a basic way what the reports were about more than on financial literacy itself. They surmised that there was a difference in OPR vs. OSR with length of the document because of the reader's ability to quickly scan the material, absorbing enough occasional information to suffice. In other words, "more" but lighter reading ability would be adequate. This might align with the observation that the reader acts more "confident" on screen than on paper, particularly if the task is light (Lauterman & Ackerman, 2014). That such an increase in OSR confidence would result in higher self-assessed risk (shown here) also seems reasonable.

This current study seems to complement the Hurwitz et al. (2019) study; however, the approach is entirely different. Given that the financial scenarios here would be considered short by the Hurwitz et al study standards, then the OPR advantages shown would be congruent. However, their study tested mostly find-and-recall of basic financial data scattered in material of varying lengths, whereas this study tested self-reported opinions about trust and risk while reading financial material and mentally processing financial questions. Hence, the two studies do not conflict and have a common purpose of discovering more about reading medium's effect in the financial domain.

VI.1.8 Portfolio Allocation Question

Since this propensity for OSR overconfidence and ensuing risk was a possible—but heretofore unshown—outcome, there was also included in the test instrument a risk behavior question regarding choosing simple portfolio allocations for a hypothetical personal retirement fund. Unfortunately, the results of this question were most likely confounded. First the variance was not spread among the allocation choices for there to be a reading medium difference of note in that most subjects chose close to the center; however, there was a design element which was probably confusing to the bulk of the test takers: the usual stock/bond shift was reversed to be

bond/stock. The set-up of the question was taken from a British study (Vlaev et al., 2009), and the sample data were appropriately converted from the original Pounds Sterling to US Dollars. But the usual US display of stocks/bond percentages (i.e., 60/40) was left as the original bonds/stocks (i.e., 40/60, etc.). Thus, the results of this question (Q19), which were slightly in favor of OPR over OSR in risk tolerance were inconclusive and could not corroborate the (self-reported) Risk measure. Normally, either increased financial knowledge or higher education leads to increased risk (Marinelli et al., 2017), but in this case it could have been that increased test-taking ability (as a result of education) advantaged only those who read closely enough to avoid being confused by the unusual display of the heuristic. Furthermore, Marinelli et al. (2017) also found that self-reported risk tolerance does not necessarily coincide with actual risk taking behavior in portfolio construction questions. The results of the portfolio question were judged to neither conflict with nor corroborate the Risk result and were not used in the analysis.

VI.2 Other Variables

VI.2.1 Education

Education level served as the control variable and performed well—mildly but consistently—in the background of Trust and also consistently but stronger with Risk. It did not rise to the level of significance overall in measuring Trust (although it was borderline in Model 3, see Appendix G).

With Risk, Education was significant at roughly a constant level throughout the experiment. This is no surprise given the literature on Education increasing both risk behavior and risk self-assessment (Risk). The rationale is that higher education leads to a more unemotional and quantitative approach to risk calculation in risk behavior and also increased confidence regarding risk self-assessment.

VI.2.2 Gender

Gender does not seem to have played a role in the results of this experiment. There were 117 males and 90 females, and five did not declare (the question was open-ended and not mandatory). This ratio of about 56% to 44% reflects a standard mix of MTurk Workers (Sheehan, 2015). There was little difference in the mean scores of males vs. females in Trust (19.4 and 19.0 respectively), and there was a larger but still statistically insignificant difference in the Risk measurement (15.6 and 13.9 respectively).

VI.2.3 Financial Literacy

Even though this study declares itself as a Financial Literacy vs. Age in the material to recruit subjects, financial literacy was not an important metric in this experiment. The questions around financial literacy were for the purpose of reading immersion, but a three-question scale of financial literacy (FinLit = a combined measure of Q4, Q6, and Q9) was created as a concise metric. None of the independent variables Reading Medium, Gender, Age, nor even Education had a statistically significant effect on the FinLit measurement. From this we might surmise that most likely the higher education levels of many of the MTurk Workers were not primarily in the financial domain. Another explanation is that the FinLit metric used is not an accurate measure; the purpose of the test was never to assess financial literacy, such a purpose would have called for a more refined measurement.

VI.3 MTurk

An unusual and perhaps interesting feature of this study has been the use of online subjects for an experiment featuring OPR vs. OSR through the online crowd source Amazon MTurk. That these online-immersed subjects showed decreased risk tolerance on paper relative

to screen may be indicative of the phenomenon of the increasing difference displayed in reading between the two media in the current literature as we move through historical time (Clinton, 2019; Delgado et al., 2018).

The researcher of this study was impressed by the conscientiousness of the MTurk Workers in general—especially the older age group—and their desire to get complete responses accomplished for the study (of course, their pay depended on it, but a strong work ethic overall was observed). There was some difficulty with the younger ages of OPR group in handling the paperwork (see IV.8.1), but for any who were rejected additional subjects who could complete the task were always at the ready (see also Appendix F). It is hoped that the process developed for MTurk experimentation for this study may also be of use to other researchers needing print tasks.

VII CONCLUSION

To know that reading financial material on a screen instead of on paper is likely to make a difference in how the reader views risk is important. This study has shown a significant effect in risk self-assessment for on-screen reading over on-paper reading in financial material—a factor that investors and finance industry professionals should keep in mind, especially as it regards the design and implementation of computer-driven interactions.

Regarding the other dependent variable, trust level, we did not find that reading medium made a difference; however, we did find that the currently mixed results in the literature on trust were also shown here. Overall, this study should be added as one more to the no significant relationship score of age and financial trust.

What some might regard as an inherent limitation to the study, that is, having a test about OSR vs. OPR accessed via OSR, seemed to instead add to the study's applicability by being placed in the “natural” setting of the end user's office or domicile (similar to a field study in that regard). There were other limitations though: just as in using university students, one cannot control “offline” discussion which may have occurred among Workers, given the test was delivered over a fortnight. Other explanations such as the uncontrolled environs of testing in that OPR demands a more deliberative (and perhaps quieter) setting cannot be ruled out.

Future research along this line may concentrate more on an effect on risk behavior instead of risk self-assessment to look for differences (i.e., more around risk games as they can be adapted for an OSR vs. OPR setting). Society's continuous struggle to settle—at least momentarily—on the appropriate level of technology for certain tasks must also include how reading different subject areas may be done best on a specific medium proven for the task.

APPENDICES

Appendix A Instructions to MTurk for OPR HITs

Instructions on OPR 45 (rev. 11 Jan 2021)

[Survey Link Instructions](#) (Click to expand)

We are conducting an academic survey about financial literacy and age. The survey is a test which asks you to read three short financial scenarios and then to answer a few questions about the text you read and some general opinions. This survey is in several HITS for various age groups. You may take this survey ONLY ONCE. If you have taken it in another HIT, do not repeat. Any repeat Worker IDs will NOT receive credit.

This version is a paper and pencil test, so you MUST print out the survey and complete it by hand. Then scan and upload the survey back to an AWS S3 bucket. The print out is 7 pages total, 20 questions based on the three readings and your opinions, and 4 demographic questions.

1. Select the link below to access the survey's landing page (if asked for password, use: **finlit**).
2. Click on the Print Form button to print out the survey (it is 7 single sided pages),
3. Complete the survey with pen or pencil. The survey will ask for your Worker ID twice: at the beginning on the consent page and as a question in the survey itself. You must write your Worker ID in both places and fill out the survey completely to get credit for taking the survey.
4. Scan your completed survey as a pdf document
5. Using the same survey landing page as step 1, click on the Choose File button to select the pdf of your scanned test instrument.
6. Then upload the file of the completed survey using the Upload Completed Form button (this will send the survey pdf to the destination AWS bucket).
6. If the survey is complete and uploaded, and you included your Worker ID you will be paid within 7 days.
7. The code of the survey is GSU-OPR 45, if you are asked to enter it.

We appreciate your participation in this study.

Appendix B. Instructions on MTurk for OSR HITs

MTurk Instructions for HIT 3 OSR

[Survey Link Instructions](#) (Click to expand)

We are conducting an academic survey about financial literacy and age. The survey is a test which asks you to read three short financial scenarios and then to answer a few questions about the text you read and some general opinions. This survey is in several HITS for various age groups and other qualifications. You may take this survey ONLY ONCE. If you have taken it in another HIT, do not repeat. Any repeat Worker IDs will NOT receive credit, and your work will be rejected.

This version is for an online test instrument delivered with a SurveyMonkey link. Some earlier HITS required access to a printer, but you may ignore that requirement in this version. The survey is 7 pages total, 20 questions based on the three readings and your opinions, and 4 demographic questions.

1. Use the link below to access the survey.
2. Complete the survey. The survey will ask for your Worker ID twice: at the beginning on the consent page and as a question in the survey itself. You must enter your Worker ID in both places and fill out the survey completely to get credit for taking the survey.
3. If the survey is complete and you included your Worker ID, and you are not a repeat Worker to this survey, you will be paid within 7 days.
4. The code of the survey is GSU-OSR 45, if you are asked to enter it.

We appreciate your participation in this study.

Appendix C. Web Landing Page for OPR

TEST INSTRUMENT ACCESS
Financial Literacy vs. Age Study
Georgia State University, Research Project 360875
TEST MUST BE PRINTED OUT AND COMPLETED ON PAPER, THEN RETURNED BY UPLOAD
The test is 7 pages (one-sided)

Print Form

Choose File No file chosen

Upload Completed Form

Appendix D. Instruments and Consent Forms for OPR and OSR

Georgia State University

Informed Consent

Title: Financial Literacy for Different Age Groups

Principal Investigator: Subhashish Samaddar, PhD

Student Principal Investigator: John Harrison (DBA Candidate)

Introduction and Key Information

The purpose of this study is to determine the validity of certain approaches to explaining financial material and how the reading material informs potential investors. You will be asked to do the following: read financial scenarios and answer questions about the text and about your attitudes in general regarding financial matters. You **MUST** print out the survey and complete it on paper and then scan and upload it back to MTurk.

Procedures

If you decide to take part, you will do the following:

Print out the test.

Read three short scenarios on different aspects of finance.

Answer the written questions about the scenarios and your attitudes related to the material. The questions will come immediately after each scenario.

Scan and upload the completed survey back to MTurk.

Your total time commitment should be about 20-30 minutes.

NOTE: If you have taken this survey before in another MTurk HIT, do NOT take it again –your Worker ID will not get credit more than once.

Benefits

You will be paid by MTurk according to the terms posted as quickly as we are able once your completed survey is received, but in no more than 7 days.

Confidentiality

We will keep your records private to the extent allowed by law. We will use your Worker ID on any internal study records. Work performed on MTurk can be linked to the public profile page and MTurk workers IDs will not be shared with anyone outside of the study. When we present or

publish the results of this study, we will not use your name or other information that may identify you.

Contact Information

Contact JP Harrison at jharrison42@student.gsu.edu; or Dr. S. Samaddar at s-samaddar@gsu.edu.

The IRB at Georgia State University reviews all research that involves human participants. You can contact the IRB for questions, concerns, problems, information, input, or questions about your rights as a research participant. Contact the IRB at irb@gsu.edu.

Consent

If you are willing to participate in this research, please place a check (tick) mark on the line below.

_____ **I consent to participate.**

MTurk Worker ID_____

Reading Two: Company financial performance

- Please read the following description and scenario and then answer questions 8-17.

The balance sheet (also known as a statement of financial position) is a summary of an individual's or organization's finances at a specific point in time—a snapshot of what they have and how they got it. On the left side of the balance sheet are listed all of the tangible assets, that is items with some dollar value. Then, the right side of the balance sheet lists the sources of those assets, that is, whether they are liabilities (owed to another party) or if they are owned outright as equity. The two sides must equal, and this gives us the equation $A = L + E$ or Assets equal Liabilities plus Equity.

Consider the following bank's balance sheet presentation⁹, shown in millions of dollars. This balance sheet illustrates how banks gather and use money. Nearly 75% of the total assets are in the form of investments in loans, and over 80% of the total liabilities and stockholders' equity are in the form of deposits, the major liability. That is, a bank is in the business of raising funds from depositors and, in turn, lends those funds to business, homeowners, home purchasers, and others.

<u>Assets</u>		<u>Liabilities and Stockholders' Equity</u>	
Cash	\$13,470	Deposits	\$141,618
US govt securities	32,162	Other liabilities	<u>28,171</u>
Loans receivable	122,871	Total liabilities (L)	169,789
Buildings	3,631		
Other assets	<u>14,799</u>	Stockholders' equity (E)	<u>17,144</u>
		Total liabilities and equity (L + E)	
Total assets (A)	\$186,933		\$186,933

8. What two items (accounts) in the balance sheet above would be affected if you were an account holder and deposited money?

1. _____ 2. _____

9. Why are deposits listed in the liability section?

- (e) Because you are liable to your creditors for that money.
- (f) Because the money you deposited is owed back to you by the bank.
- (g) Because the bank does not normally carry enough cash to equal all the deposits.
- (h) I don't know.

⁹Adapted from a textbook example by Horngren et al. (1996, p. 35) using a national bank in the US.

10. Generally speaking, would you say that most people can be trusted or that you cannot be too careful when dealing with people? Choose one:

(c) You cannot be too careful in dealing with people.

(d) Most people can be trusted.

11. How trustworthy do you believe a large national bank such as this to be?

1	2	3	4	5	6	7	8
Extremely							Extremely
Untrustworthy							Trustworthy

12. This bank has a ratio of \$45 billion in cash/securities to deposits of \$141 billion (about 32%). This is actually much more on hand than legally required. With that information, how trustworthy do you believe this bank to be?

1	2	3	4	5	6	7	8
Extremely							Extremely
Untrustworthy							Trustworthy

13. What two items (accounts) from the above balance sheet would be affected if the bank loaned you money to renovate your house?

1. _____ 2. _____

14. How likely are you to bet a day's income at the horse races?

1	2	3	4	5	6	7	8
Extremely							Extremely
Unlikely							Likely

15. How likely are you to co-sign on a new car loan for a friend if you have more than that loan's amount saved in the bank?

1	2	3	4	5	6	7	8
Extremely							Extremely
Unlikely							Likely

16. What accounts from the bank's balance sheet above would be affected if you withdrew money from your savings account?

1. _____ 2. _____

17. Given a history of good returns for shareholders, how likely are you to invest (buy stock or bonds) in a large bank like this?

1	2	3	4	5	6	7	8
Extremely Unlikely							Extremely Likely

Instrument from OSR

Reading Three: Personal Finance and Investing

- Please read the following scenario and then answer questions 18-22.

Suppose you are at your first “real” job out of college in your early twenties and have been on the job one week when you are given the enrollment forms for the company’s 401(k) retirement plan. The first question you need to answer is whether or not you wish to participate and if you do participate how much of your salary you want withheld from each paycheck and placed in the plan. The company offers one of the more generous 401(k) match programs in that they match 50% of every dollar you contribute up to 10% of your salary. You wish you could wait a few months to sign up for the 401(k) when you would have a better handle on your spending habits as an independent adult with the rent, food, and all the assorted costs of living; however, the plan adviser who consults with the company encourages everyone to make a selection now to gain the most benefit.

18. What would you do regarding signing up for the 401(k) plan?

- (e) Determine your budget and hope to sign up for the plan much later at some contribution level.
- (f) Choose now to participate in the program with 10% of your salary as your contribution every paycheck.
- (g) Choose now to participate in the program with 5% of your salary as your contribution every paycheck.
- (h) Waive your right to participate in the program.

Assuming you choose to participate in the program, the next decision involves how you want to have your money invested in the funds the program offers. The available retirements funds offered fall into two simplified buckets: stocks and bonds. In the program offered, you can either invest your money safely in bonds and get a fixed rate of interest or make a riskier stock market investment which stands to make you more money but might lose you money also. How much of your 401(k) would you invest in which bucket? The table below shows the likely outcomes for different stock/bond mixtures. The Mid Case column says what you would be likely to get on average. You are very unlikely to do worse than the Worse Case column and very unlikely to do better than the Best Case column (only 5% of the time). This chart gives a reasonable prediction of the size of your 401(k) after 35 years of typical participation in the program. After reviewing the chart, you must now select the stock and bond percentages for your retirement 401(k) investment plan.

Choose One	Bond/Stock Mix		Expected Annual Retirement Income		
	Bonds	Stocks	Worse Case	Mid Case	Best Case
A	100%	0%	\$22,000	\$22,000	\$22,000
B	90%	10%	\$21,500	\$23,000	\$26,000
C	80%	20%	\$21,000	\$25,000	\$30,000
D	70%	30%	\$20,500	\$28,000	\$35,000
E	60%	40%	\$20,000	\$30,000	\$40,000
F	50%	50%	\$19,500	\$33,000	\$46,000
G	40%	60%	\$19,000	\$36,000	\$53,000
H	30%	70%	\$18,000	\$40,000	\$62,000
I	20%	80%	\$15,000	\$44,000	\$72,000
J	10%	90%	\$14,000	\$48,000	\$84,000
K	0%	100%	\$7,000	\$52,000	\$99,000

19. Which mix would you choose? Please select one of the rows of the table above and indicate the letter of the row you prefer in the space below.

Letter of row: _____

20. Which of the following statements reflects best your view? Please choose one:

(c) I will not trust a person until there is clear evidence that he or she can be trusted.

(d) I will trust a person until I have clear evidence that he or she cannot be trusted.

21. Please indicate your age: _____

22. Please indicate your gender: _____

23. Please circle your highest level of formal education:

- High school diploma or equivalent
- College (but did not earn degree)
- Trade/technical/vocational training
- Associate degree
- Bachelors degree
- Masters degree
- Doctorate degree
- Other (please specify) _____

GSU financial literacy Combined

Informed Consent -- Georgia State University

Title: Financial Literacy for Different Age Groups

Principal Investigator: Subhashish Samaddar, PhD

Student Principal Investigator: John Harrison (DBA Candidate)

Introduction and Key Information

The purpose of this study is to determine the validity of certain approaches to explaining financial material and how the reading material informs potential investors. You will be asked to do the following: read financial scenarios and answer questions about the text and about your attitudes in general regarding financial matters.

Procedures

If you decide to take part, you will do the following:

- Read three short scenarios on different aspects of finance.
- Answer the written questions about the scenarios and your attitudes related to the material. The questions will come immediately after each scenario.
- Your total time commitment should be about 20-30 minutes.

Benefits

This study is not designed to benefit you personally. Overall, we hope to gain information about how receive financial literature is best received. This may help in making better financial decisions.

Compensation

You will be compensated \$5.80 for completing the HIT within 7 days of submitting the assignment; you may not take this survey more than once (or repeat it, if you took it in another HIT) or your work will be rejected.

Confidentiality

We will keep your records private to the extent allowed by law. We will use your Worker ID on any internal study records. Work performed on MTurk can be linked to the public profile page and MTurk workers' IDs will not be shared with anyone outside of the study. When we present or publish the results of this study, we will not use your name or other information that may identify you.

Contact JP Harrison at jharrison42@student.gsu.edu; or Dr. S. Samaddar at s-samaddar@gsu.edu.

The IRB at Georgia State University reviews all research that involves human participants. You can contact the IRB for questions, concerns, problems, information, input, or questions about your rights as a research participant. Contact the IRB at irb@gsu.edu.

* If you are willing to participate in this research, please indicate below.

I consent to participate

MTurk Worker ID

GSU financial literacy Combined

Reading One: Lending and Small Business

This a test of applied financial knowledge which explores several approaches to financial topics to see how you absorb and use financial information.

- Please answer as you best understand the situation as explained.
- There are not necessarily right or wrong answers to all questions. Many questions are just personal preferences.
- There is no passing grade or overall score, and your answers are simply indicators of the way you view the problems.
- Your answers will help us understand better how to teach and frame similar material for students in the future.

Reading One: Lending and Small Business

- Please read the following scenario and then answer questions 1-6.

Marcus, a young IT professional is ready to strike out on his own with plans for several new apps. He has some technical expertise but does not know the business side of getting such products to the market. At his own expense, he has met with a consultant who helped him develop a business plan including a budget. The budget estimate is that it will cost about \$50,000 to get his business up and running and his products to market—in the hope that one of the several app ideas he has will be profitable. Given that Marcus' available savings to put into the new business are only about 10% of that amount needed, he will need to find additional money to start his business.

* 1. How much money will Marcus need to raise if in addition to his available savings, his parents also match the money he puts in initially?

* 2. Now that Marcus has his "seed" money of 20% of the amount needed to fund the startup company, he decides to seek a loan for the remaining 80%. How much will he need to borrow?

* 3. How likely are you to invest a week of your income in Marcus' startup?

Extremely Unlikely-1	2	3	4	5	6	7	Extremely Likely-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 4. One bank agrees to loan Marcus the needed funds at 10% interest, compounded annually. If Marcus takes the loan and makes all the payments on time for the life of the loan, about how much will he have paid the bank as a fee (interest) for borrowing the money?

- a) About \$7,000
- b) About \$4,000
- c) Don't know

* 5. How likely are you to lend a friend an amount of money equivalent to one month's income?

Extremely Unlikely-1	2	3	4	5	6	7	Extremely Likely-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 6. If Marcus pays a higher amount per month on the principal of the loan than required and pays off the loan sooner than expected, he will end up paying the same amount in principal and less in total interest in a typical loan.

- a) True
- b) False
- c) Don't know

* 7. How would you describe your interactions with other people?

Relatively Cautious-1	2	3	4	5	6	7	Relatively Trusting-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reading Two: Company financial performance

- Please read the following description and scenario and then answer questions 8-17.

The balance sheet (also known as a statement of financial position) is a summary of an individual's or organization's finances at a specific point in time—a snapshot of what they have and how they got it. On the left side of the balance sheet are listed all of the tangible assets, that is items with some dollar value. Then, the right side of the balance sheet lists the sources of those assets, that is, whether they are liabilities (owed to another party) or if they are owned outright as equity. The two sides must equal, and this gives us the equation $A = L + E$ or Assets equal Liabilities plus Equity.

Consider the following bank's balance sheet presentation^[1], shown in millions of dollars. This balance sheet illustrates how banks gather and use money. Nearly 75% of the total assets are in the form of investments in loans, and over 80% of the total liabilities and stockholders' equity are in the form of deposits, the major liability. That is, a bank is in the business of raising funds from depositors and, in turn, lends those funds to business, homeowners, home purchasers, and others.

[1]Adapted from a textbook example by Horngren, Gary, and Elliot (1996, p. 35) using a national bank in the US.

<u>Assets</u>		<u>Liabilities and Stockholders' Equity</u>	
Cash	\$13,470	Deposits	\$141,618
US govt securities	32,162	Other liabilities	<u>28,171</u>
Loans receivable	122,871	Total liabilities (L)	169,789
Buildings	3,631	Stockholders' equity (E)	<u>17,144</u>
Other assets	<u>14,799</u>	Total liabilities and equity (L + E)	\$186,933
Total assets (A)	\$186,933		

* 8. What two items (accounts) in the balance sheet above would be affected if you were an account holder and deposited money?

1.

2.

* 9. Why are deposits listed in the liability section?

- a) Because you are liable to your creditors for that money.
- b) Because the money you deposited is owed back to you by the bank.
- c) Because the bank does not normally carry enough cash to equal all the deposits.
- d) I don't know.

* 10. Generally speaking, would you say that most people can be trusted or that you cannot be too careful when dealing with people? Choose one:

- a) You cannot be too careful in dealing with people.
- b) Most people can be trusted.

* 11. How trustworthy do you believe a large national bank such as this to be?

Extremely Untrustworthy-1	2	3	4	5	6	7	Extremely Trustworthy-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 12. This bank has a ratio of \$45 billion in cash/securities to deposits of \$141 billion (about 32%). This is actually much more on hand than legally required. With that information, how trustworthy do you believe this bank to be?

Extremely Untrustworthy-1	2	3	4	5	6	7	Extremely Trustworthy-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 13. What two items (accounts) in the balance sheet above would be affected if the bank loaned you money to renovate your house?

1.

2.

* 14. How likely are you to bet a day's income at the horse races?

Extremely Unlikely-1	2	3	4	5	6	7	Extremely Likely-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 15. How likely are you to co-sign on a new car loan for a friend if you have more than that loan's amount saved in the bank?

Extremely Unlikely-1	2	3	4	5	6	7	Extremely Likely-8
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 16. What two items (accounts) in the balance sheet above would be affected if you withdrew money from your savings account?

1.

2.

* 17. Given a history of good returns for shareholders, how likely are you to invest (buy stock or bonds) in a large bank like this?

Extremely
Unlikely-1

2

3

4

5

6

7

Extremely
Likely-8

Reading Three: Personal Finance and Investing

Suppose you are at your first “real” job out of college in your early twenties and have been on the job one week when you are given the enrollment forms for the company’s 401(k) retirement plan. The first question you need to answer is whether or not you wish to participate and if you do participate how much of your salary you want withheld from each paycheck and placed in the plan. The company offers one of the more generous 401(k) match programs in that they match 50% of every dollar you contribute up to 10% of your salary. You wish you could wait a few months to sign up for the 401(k) when you would have a better handle on your spending habits as an independent adult with the rent, food, and all the assorted costs of living; however, the plan adviser who consults with the company encourages everyone to make a selection now to gain the most benefit.

* 18. What would you do regarding signing up for the 401(k) plan?

- a) Determine your budget and hope to sign up for the plan much later at some contribution level.
- b) Choose now to participate in the program with 10% of your salary as your contribution every paycheck.
- c) Choose now to participate in the program with 5% of your salary as your contribution every paycheck.
- d) Waive your right to participate in the program.

Assuming you choose to participate in the program, the next decision involves how you want to have your money invested in the funds the program offers. The available retirement funds offered fall into two simplified buckets: stocks and bonds. In the program offered, you can either invest your money safely in bonds and get a fixed rate of interest or make a riskier stock market investment which stands to make you more money but might lose you money also. How much of your 401(k) would you invest in which bucket? The table below shows the likely outcomes for different stock/bond mixtures. The Mid Case column says what you would be likely to get on average. You are very unlikely to do worse than the Worst Case column and very unlikely to do better than the Best Case column (only 5% of the time). This chart gives a reasonable prediction of the size of your 401(k) after 35 years of typical participation in the program. After reviewing the chart, you must now select the stock and bond percentages for your retirement 401(k) investment plan.

Choose One	Bond/Stock Mix		Expected Annual Retirement Income		
	Bonds	Stocks	Worse Case	Mid Case	Best Case
A	100%	0%	\$22,000	\$22,000	\$22,000
B	90%	10%	\$21,500	\$23,000	\$26,000
C	80%	20%	\$21,000	\$25,000	\$30,000
D	70%	30%	\$20,500	\$28,000	\$35,000
E	60%	40%	\$20,000	\$30,000	\$40,000
F	50%	50%	\$19,500	\$33,000	\$46,000
G	40%	60%	\$19,000	\$36,000	\$53,000
H	30%	70%	\$18,000	\$40,000	\$62,000
I	20%	80%	\$15,000	\$44,000	\$72,000
J	10%	90%	\$14,000	\$48,000	\$84,000
K	0%	100%	\$7,000	\$52,000	\$99,000

* 19. Which mix would you choose? Please select one of the rows of the table above and indicate the letter of the row you prefer in the space below.

Letter of row:

* 20. Which of the following statements reflects best your view? Please choose one:

- a) I will not trust a person until there is clear evidence that he or she can be trusted.
- b) I will trust a person until I have clear evidence that he or she cannot be trusted.

* 21. Please indicate your age:

* 22. Please indicate your gender:

* 23. Please indicate your highest level of education.

- High School diploma or equivalent
- Bachelors degree
- College (but did not earn degree)
- Masters degree
- Trade/technical/vocational training
- Doctorate degree
- Associate degree
- Other (please specify)

* 24. Indicate how this survey was taken:

- a) This survey was taken on a laptop or desktop computer screen.
- b) This survey was taken on a smartphone.
- c) This survey was taken on a tablet device.
- d) This survey was taken on paper.
- Other (please specify)

* Please enter your MTurk Worker ID.

This is the end of the test. We appreciate very much your participation in this study. The survey code is
GSU-OSR 18

Reading Three: Personal Finance and Investing

- *Please read the following scenario and then answer questions 18-22.*

Suppose you are at your first “real” job out of college in your early twenties and have been on the job one week when you are given the enrollment forms for the company’s 401(k) retirement plan. The first question you need to answer is whether or not you wish to participate and if you do participate how much of your salary you want withheld from each paycheck and placed in the plan. The company offers one of the more generous 401(k) match programs in that they match 50% of every dollar you contribute up to 10% of your salary. You wish you could wait a few months to sign up for the 401(k) when you would have a better handle on your spending habits as an independent adult with the rent, food, and all the assorted costs of living; however, the plan adviser who consults with the company encourages everyone to make a selection now to gain the most benefit.

19. What would you do regarding signing up for the 401(k) plan?

- Determine your budget and hope to sign up for the plan much later at some contribution level.
- Choose now to participate in the program with 10% of your salary as your contribution every paycheck.
- Choose now to participate in the program with 5% of your salary as your contribution every paycheck.
- Waive your right to participate in the program.

Assuming you choose to participate in the program, the next decision involves how you want to have your money invested in the funds the program offers. The available retirement funds offered fall into two simplified buckets: stocks and bonds. In the program offered, you can either invest your money safely in bonds and get a fixed rate of interest or make a riskier stock market investment which stands to make you more money but might lose you money also. How much of your 401(k) would you invest in which bucket? The table below shows the likely outcomes for different stock/bond mixtures. The Mid Case column says what you would be likely to get on average. You are very unlikely to do worse than the Worse Case column and very unlikely to do better than the Best Case column (only 5% of the time). This chart gives a reasonable prediction of the size of your 401(k) after 35 years of typical participation in the program. After

reviewing the chart, you must now select the stock and bond percentages for your retirement 401(k) investment plan.

Choose One	Bond/Stock Mix		Expected Annual Retirement Income		
	Bonds	Stocks	Worse Case	Mid Case	Best Case
A	100%	0%	\$22,000	\$22,000	\$22,000
B	90%	10%	\$21,500	\$23,000	\$26,000
C	80%	20%	\$21,000	\$25,000	\$30,000
D	70%	30%	\$20,500	\$28,000	\$35,000
E	60%	40%	\$20,000	\$30,000	\$40,000
F	50%	50%	\$19,500	\$33,000	\$46,000
G	40%	60%	\$19,000	\$36,000	\$53,000
H	30%	70%	\$18,000	\$40,000	\$62,000
I	20%	80%	\$15,000	\$44,000	\$72,000
J	10%	90%	\$14,000	\$48,000	\$84,000
K	0%	100%	\$7,000	\$52,000	\$99,000

19. Which mix would you choose? Please select one of the rows of the table above and indicate the letter of the row you prefer in the space below.

Letter of row: _____

20. Which of the following statements reflects best your view? Please choose one:

(e) I will not trust a person until there is clear evidence that he or she can be trusted.

(f) I will trust a person until I have clear evidence that he or she cannot be trusted.

21. Please indicate your age: _____

22. Please indicate your gender: _____

23. Please circle your highest level of formal education:

- High school diploma or equivalent
- College (but did not earn degree)
- Trade/technical/vocational training
- Associate degree
- Bachelors degree
- Masters degree
- Doctorate degree
- Other (please specify)_____

Please enter your MTurk Worker ID _____

Appendix E. Batch Tracking for Subject Participation

The below spreadsheet lists the basic recording data for all of the subjects:

Column A –HIT Name

Column B – Age Range for the HIT

Column C – Time of the Subject’s entry: if OSR = time of survey finishing by S in Survey Monkey; if OPR, time of RSR entry of data from the upload of the printed test into SurveyMonkey.

Column D – Mturk Worker ID (not identifiable except by Amazon)

Column E—Complete entry after inspection

Column F – Approved for payment by RSR

Column G—The uploaded document name (given by S) which appears in AWS Bucket – OPR only

Column H – Any notes

Column I – Countable entry number for the HIT

Column K and L – checking of Worker ID numbers to exclude for any repeating from another HIT

HIT	Age Range	Submitted	Mturk Worker ID	Complete	Approved	AWS Doc OPR	Notes
OPR 1	55+	Deleted					HIT deleted
OPR 2	45-55	January 11, 11:51	A16G6PPH1JNQL8	yes	yes	jpg	7 separate jpg
OPR 2	45-55	January 11, 12:10	A16Z9FSSF1X740	yes	yes	finlit	
OPR 2	45-55	January 11, 12:14	A1EH9BPKYXFBS5	yes	yes	Scan Jan 11...	
OPR 2	45-55	January 11, 12:17	A132GRVDGXPIJGY	yes	yes	finlit survey	sent emailmissing page 4
OPR 2	45-55	January 11, 12:47	A30PRR8AXT6OSJ	yes		A30...	Manul HIT report
OPR 2	45-55	January 11, 13:26	A1PBFDQR599N3K	yes	yes	01112021202...	
OPR 2	45-55	January 11, 13:30	A10Z5BB2L44KG	yes	yes	A10Z...	
OPR 2	45-55	January 11, 13:32	A3MELYYGRJ61SX	yes	yes	A3ME...	
OPR 2	45-55	January 11, 14:14	A1P1X1Q43NONK7	yes		ScanPro Jan...	Manul HIT report
OPR 2	45-55	January 11, 14:45	A315ZG72CPNAHV	No	yes	2pdf-7pdf	missing page 5 missing page 1- sent email
OPR 2	45-55	January 11, 15:08	A1ESYH06VN3H8U	yes	rejected	Scan 1...6	
OPR 2	45-55	January 11,15:51	APBHQBDV6WMGZ	yes	yes	Scan	
OPR 2	45-55	January 11, 16:35	A2N93IVSZXS73	yes	yes	Image (7)	missing pg 4 sent via email
OPR 2	45-55	January 11, 16:46	A1GRLZL4F72RBJ	yes	yes	Survey.pdf	
OPR 2	45-55	January 11, 18:27	ABJEQJY0SSXX6	yes	yes	Georgia State...	
OPR 2	45-55	January 11, 19:52	A94F3WRO5J6SF	yes	yes	mturk0111...	
OPR 2	45-55	January 11, 21:54	A1JL64ZLU7D1P4	yes	yes - fixed	amazonIMG...	no Q18 -supplied by email
OPR 2	45-55	January 12, 08:52	A16A4FSPB1JC9CA	yes	yes	202101...	
OPR 2	45-55	January 12, 10:50	ACKTWNQ5U1UP4	yes	yes	20210112...	
OPR 2	45-55	January 15, 12:21	A24RM4VZDJVZLO	yes	yes	instrument...	
OPR 2	45-55	January 15, 15:09	A2SYE8HZFVGBX	yes	yes	mt1..mt7	
OPR 2	45-55	January 16, 09:58	A1BGR7HG0ZKTBP	yes	yes	a1b...	
OSR3	45-55	January 16, 17:18	A26UIS59SY4NM6	Yes	yes		
OSR3	45-55	January 16, 17:18	A3GPYCHKB2KDLG	Yes	yes		
OSR3	45-55	January 16, 17:19	A1JEYN20PFZCMS	Yes	yes		
OSR3	45-55	January 16, 17:20	A38DXFI1TZA295	Yes	yes		
OSR3	45-55	January 16, 17:22	AEZ8HFKNK24Q3	Yes	yes		
OSR3	45-55	January 16, 17:23	A19L8SNH73AX1Z	Yes	yes		
OSR3	45-55	January 16, 17:23	A1FVXS8IM5QYO8	Yes	yes		
OSR3	45-55	January 16, 17:23	A3EGXFT5MXGKKO	Yes	yes		
OSR3	45-55	January 16, 17:23	A3SFMX0BWXI36J	Yes	yes		
OSR3	45-55	January 16, 17:24	A1W8PU7Z3JLV5B	Yes	yes		
OSR3	45-55	January 16, 17:24	A207MWA5U0GWA5	Yes	yes		
OSR3	45-55	January 16, 17:24	A3U7XME8B3M7NI	Yes	yes		
OSR3	45-55	January 16, 17:25	A1LZWU72K42V92	Yes	yes		
OSR3	45-55	January 16, 17:25	A2S96ZZ70YFPSK	Yes	yes		
OSR3	45-55	January 16, 17:26	A25FH7PXC446RG	Yes	yes		

OSR3	45-55	January 16, 17:26	AGDFBU9CK6Z9R	Yes	yes		
OSR3	45-55	January 16, 17:34	AAXX5LDVJ32F8	Yes	yes		
OSR3	45-55	January 16, 17:37	A2YHF0DPCO832L	Yes	yes		
OSR3	45-55	January 16, 17:38	A20ASMCEA51U4	yes	yes		
OSR3	45-55	January 16, 17:38	A2OX8TSRCU6NKD	yes	yes		
OSR3	45-55	January 16, 17:38	A3F51C49T9A34D	Yes	yes		
OSR3	45-55	January 16, 17:39	A2DC6TG86OSCRK	Yes	yes		
OSR3	45-55	January 16, 18:42	A2U2HE45MFHDIZ	yes	yes		
OSR3	45-55	January 16, 18:46	A2C2R1Z4VUOCUK	No			
OSR3	45-55	January 16, 18:48	A364KJDYEBAWC9	yes	yes		
OSR3	45-55	January 16, 18:49	AH11KAGW5PNN8	yes	yes		
OSR3	45-55	January 16, 19:08	A397HP5TSIF2LO	yes	yes		
OSR3	45-55	January 16, 20:12	A20DJRAE8TZUH5	Yes	yes		
OSR3	45-55	extra	A3OYUJ6E6BJS4H	yes	yes		
OSR3	45-55	extra	A2TZAXWOB3JMNv	yes	yes		
OSR3	45-55	extra	A3SKEW89V5S0DI	yes	yes		
OPR4	18-45	January 17, 08:04	A14E0Y5HPALKZN	yes	yes	page 1	
OPR4	18-45	January 21, 17:29	A1LB8HVSXK66U0	yes	yes	finlit...	
OPR4	18-45	January 18, 14:40	A1QHMJ1QOJAYPE	yes	yes	survey..	
OPR4	18-45	January 17, 11:22	A1R5W4RQZTROD8	yes	yes	A1R5	
OPR4	18-45	January 17, 09:39	A1UOIJQTPB7M5	yes	yes	financial..	
OPR4	18-45	January 21, 16:52	A1YHIQHLLQIIQ	no	yes	2021...	invalid no page 4
OPR4	18-45	January 16, 21:45	A2808I1SYFZO7A	yes	yes	scan	
OPR4	18-45	January 17,20:15	A2F2CO1UAKGBHW	yes	yes	AsF2...	
OPR4	18-45	January 17, 12:29	A2NZAL7KHOR6VF	yes	yes	6jV...	
OPR4	18-45	January 17,17:55	A2R9OK4M877ZCC	yes	yes	A2R...	reversed
OPR4	18-45	January 17, 11:31	A36PRTZFECB76C	yes	yes	finan..	
OPR4	18-45	January 18, 09:50	A3P6CVPYACUX43	yes	yes	2021...	need pg 3 - answered
OPR4	18-45	January 16, 22:37	A3P7AXWF57BHNX	yes	yes	worker...	
OPR4	18-45	January 17, 11:06	A4CHLWPHZIP7Y	yes	yes	Mturk	
OPR4	18-45	January 18, 15:33	A4LIJVRU6DG61	yes	yes	2021...	Q18 -b
OPR4	18-45	January 17,18:24	AXI6SO2CBL9J	yes	yes	Mtruk...	
OPR4	18-45	January 17,19:59	A10LHWALI4BZPC	yes	yes	scan	
OPR4	18-45	January 17,16:47	A1ADAWW4IHPCQ7	yes	yes	scan	
OPR4	18-45	January 16, 21:55	A1BW76PDMXR58I	no	reject		typed thn pdf
OPR4	18-45	January 17, 14:54	A1CC9FGFOGRBUY	yes	yes	AICC...	
OPR4	18-45	January 18, 10:34	A1QQJDRYDUQ67F	yes	yes	financial..	
OPR4	18-45	January 17, 14:22	A1XUZFDVKP95VC	yes	yes	Georgia..	
OPR4	18-45	January 18, 06:11	A2ADR0E5U1EVXA	yes	yes	study..	
OPR4	18-45	january 18, 17:56	A2H8HVANGF4A58	no		1611...	pg 1 only, sent note
OPR4	18-45	January 16, 22:00	A2IMAGGCST8170	yes	yes	A21...	
OPR4	18-45	January 16, 23:35	A2PB7NREC1A0ED	yes	yes		

OPR4	18-45	January 16, 22:18	A3169N2SCN3ENK	yes	yes	a31...	
OPR4	18-45	January 17,10:29	A33FA1VLSTBM74	yes	yes	finlit...	
OPR4	18-45	January 16, 21:28	A3JC9VPPTHNKVL	yes	yes	aix..	
OPR4	18-45	January 17, 08:34	A3OVS29S2TYBQR	yes	yes	A30...	
OPR4	18-45	January 18, 11:42	A3P3446JDIIKQY	yes		0606...	
OPR4	18-45	January 18, 11:36	A8KQ2KEWERV6F	yes	yes	fin lit...	
OPR4	18-45	January 16, 22:24	AGRKG3YT3KMD8	yes	yes	epson...	
OPR4	18-45	January 18, 15:29	AR4XFM7G1W0VQ	yes	yes	AR4....	
OPR4	18-45	January 18, 14:43	AROZ6EDDUGTLP	yes	yes	gt study	
OPR4	18-45	January 17, 21:15	A10Q4Y3BRHXXPP	yes	yes	pdf	entered from email
OPR4	18-45	January 17, 00:18	A11DLGQTOOSIWR	yes	yes	CCF...	
OPR4	18-45	January 16, 22:32	A13446UUUT50Y9	no	reject		typed s Word doc
OPR4	18-45	January 17, 21:11	A17EYA41O9YR16	yes	yes	Instrument...	chck 20
OPR4	18-45	January 18, 15:19	<u>A1D4RC6K6Y5KAV</u>	yes		finlit...	Manul HIT report
OPR4	18-45	January 17, 03:33	A1EN3FW93BSXQQ	yes	yes	financial...	
OPR4	18-45	January 17,18:04	<u>A1FUWARMP40UX0</u>	yes		Financial...	missing pg 1
OPR4	18-45	January 16, 21:32	A1G4DA6IN4XPLL	no	reject		No HIT, incomplete
OPR4	18-45	january 18, 18:21	A1HTGIBTNF2LI	no	reject	instrument...	not by hand
OPR4	18-45	January 17,18:13	A1N532GWA702NY	yes	yes	Scan...	
OPR4	18-45	January 17, 04:26	A1O67YS3DU0ZHX	yes		1png	Manul HIT report
OPR4	18-45	January 16, 22:00	A1O6WOWN2X9R9C	yes	yes	fin..lit	
OPR4	18-45	January 18, 08:36	A1PR74OHURJNTO	yes	yes	A1PR...	new pg 1
OPR4	18-45	January 17, 11:51	A1SNC8UL8YFRH5	yes	yes	doc1..	
OPR4	18-45	january 18, 22:02	A1TIFA6NG8AURO	yes	yes	Scan...	
OPR4	18-45	January 18, 08:54	A1TN78CO1Q1YO7	yes	yes	Adobe scan...	
OPR4	18-45	January 17, 02:13	A1WZY0K6IE3ASG	yes	yes	financial...	
OPR4	18-45	January 16, 22:37	A1X53DM4NR6P07	yes	yes	aix...	
OPR4	18-45	January 16, 22:46	A22GQUUNZAP02U	yes	yes	financi..	
OPR4	18-45	January 17, 23:49	A23KIQSSDCOGIW	no	yes		typed some
OPR4	18-45	January 17, 10:30	A293TIAVWJX7KC	no		instrument...	not by hand
OPR4	18-45	January 17, 15:01	A2BHPYKUHMASEO	yes		Camsca..	Manul HIT report
OPR4	18-45	January 18, 10:01	A2CMQU86SSNY3R	yes	yes	Georgia..	
OPR4	18-45	January 17, 09:27	A2CUST5RXVF09H	yes	yes	IMG...	Q18 by email
OPR4	18-45	January 17, 15:57	A2HLBE6RNK7DGC	yes	yes	Mturk...	
OPR4	18-45	January 18, 11:21	A2J6S7QR4CGXTW	yes	yes	scanned	
OPR4	18-45	January 18, 03:32	A2KHDN6SL7CGMF	yes		instrument...	Manul HIT report
OPR4	18-45	January 18, 09:39	A2L7S6RZOZ6NM9	yes	yes	A2L...	
OPR4	18-45	January 16, 21:53	A2M5I4KGF9J7Q	yes	yes	A2n5	
OPR4	18-45	january 18, extra	A2N9U74YIPDQ9F	yes	yes	Louise	reversed
OPR4	18-45	January 16, 22:18	A2NBBQ3DKW5MV3	yes	yes	CCF...	
OPR4	18-45	January 16, 23:35	A2OVOVZBJYUO	yes	yes	scan 2021	
OPR4	18-45	January 17, 10:37	A2SYTRKH1JWJO5	yes	yes	cam...	
OPR4	18-45	January 17, 12:51	A2WU2VYT4U5DZJ	no	reject	not by hand	

OPR4	18-45	January 16, 22:46	A31AYP9KU02D9M	yes	yes	cam...	
OPR4	18-45	January 18, 11:36	A34DFMN09WJG4J	yes		fin.. survey	Manul HIT report
OPR4	18-45	January 17, 01:41	A35ITMDE4DGGQY	yes		Financial...	Manul HIT report
OPR4	18-45	january 18, 17:17	A35UAZIKU14XW	yes		George...	Manul HIT report
OPR4	18-45	January 16, 22:39	A389KAGDNVULOJ	yes	yes	pdf photo..	
OPR4	18-45	january 18, 18:08	A39TJIST5QLHLO	yes	yes	survey...	
OPR4	18-45	January 17, 11:09	A3ACX99H78WTEK	yes	yes	finlit...	
OPR4	18-45	extra	A3AWC4P8QUK1XB	yes	reversed	Juliet	
OPR4	18-45	January 16, 22:46	A3D6UAJYL8CLAI	no	yes	scan_...	
OPR4	18-45	January 17, 01:56	A3DB9HWCEMSTKW	no		Instument..	not in HIT, not by hand c
OPR4	18-45	January 17, 14:36	A3DPOUCI0VQ0NS	yes	yes	IMG_...	
OPR4	18-45	January 16, 23:12	A3NMU6AVMQ0QDB	no	reject	A3...	typed
OPR4	18-45	January 17, 05:41	A3P3T6XWCUWJEM	yes	yes	!HP...	
OPR4	18-45	January 16, 21:17	A3PYB8Z6FFWSOV	yes	yes	untitled	
OPR4	18-45	January 17, 11:13	A3QDBNW2H8EMFW	no		260...	not in HIT, just 1 pg
OPR4	18-45	January 16, 21:17	A3UN1F1EOHKKE6	yes	yes	untitled	
OPR4	18-45	january 18, 22:36	A3ZWMVK6GNTJ8		reject	instrument...	not by hand
OPR4	18-45	January 18, 08:37	A4W9APAHFVWLO	yes	yes	0613...	
OPR4	18-45	January 16, 22:21	A4WYCIW1ECATE	yes	yes	study..	
OPR4	18-45	January 17, 13:40	A5WWHKD82I8UE	yes	yes	2021...	
OPR4	18-45	January 17, 14:27	A7C6O7C42HU7Q	yes	yes	amazon..	
OPR4	18-45	January 17, 08:50	ACD4OOB4WY7QC	yes		ACD4...	Manul HIT report
OPR4	18-45	January 17, 08:01	ADVCIFLB5A9B	no	reject	test today...	1 pg list, bonus \$4
OPR4	18-45	january 18, 16:33	<u>AFIK3VBMMX6G6</u>	yes	yes	AF1K...	
OPR4	18-45	January 16, 21:53	AFKYO1HML5XAP	yes	yes	scan 1-7	
OPR4	18-45	january 18, 1600	AIEGKVQ47B3FQ	yes	yes	email	
OPR4	18-45	January 17, 15:12	AJZEXCH1TSUE1	yes	yes	financi...	
OPR4	18-45	january 18, 19:48	ANUG05IDFTWF	yes	yes	IMG	
OPR4	18-45	extra	APO4DD2J9RWGP	yes		Jamie make easy	Manul HIT report
OPR4	18-45	January 17, 11:31	ARQR5NIFA1AJ	yes	yes	Ron clark	printed from email
OPR4	18-45	January 17,18:37	AVD6HMIO1HLFI	yes	yes	combine...	
OPR4	18-45	January 18, 11:16	AXPV16CHPFHM0	yes	yes	financial lit..	
OPR4	18-45	January 17, 13:08	AXR1QGU4KTMSZ	no	yes	survey..	
OPR4	18-45	January 18, 10:43	AYSZ8OLE0JQ69	yes	yes	Mturk...	
OPR4	18-45	extra		yes	yes		
OSR5	18-45	Jan 26 2021 08:24 AM	A3HF4FOT5XOZKU	yes	yes		
OSR5	18-45	Jan 26 2021 08:24 AM	A3JC9VPPTHNKVL	yes	rejected		dupe
OSR5	18-45	Jan 26 2021 08:27 AM	A2VFEDAK5C1E1O	yes	yes		
OSR5	18-45	Jan 26 2021 08:28 AM	A2YCMT5BPA0AG9	yes	yes		
OSR5	18-45	Jan 26 2021 08:28 AM	AM0R6CV53UZ2C	yes	yes		
OSR5	18-45	Jan 26 2021 08:31 AM	A2I6ZALE49CVSC	yes	yes		

OSR5	18-45	Jan 26 2021 08:32 AM	A13FUEPWBCLBUI	yes	yes	
OSR5	18-45	Jan 26 2021 08:32 AM	A3U21PUMQ6NGT2	yes	yes	
OSR5	18-45	Jan 26 2021 08:32 AM	AVLWZU0KOFN86	yes	yes	
OSR5	18-45	Jan 26 2021 08:33 AM	A18SXC3JEN1O0U	yes	yes	
OSR5	18-45	Jan 26 2021 08:33 AM	A2HNLXQPYBTD31	yes	yes	
OSR5	18-45	Jan 26 2021 08:33 AM	A34SIGOLUGKIHJ	yes	yes	
OSR5	18-45	Jan 26 2021 08:34 AM	A2Q6L9LKSNU7EB	yes	yes	
OSR5	18-45	Jan 26 2021 08:35 AM	A1ILD5BPLI8X1P	yes	yes	
OSR5	18-45	Jan 26 2021 08:35 AM	A1UCB0D27PY623	yes	yes	
OSR5	18-45	Jan 26 2021 08:35 AM	A24Z9RP5YZZ2TY	yes	yes	
OSR5	18-45	Jan 26 2021 08:35 AM	A2UR8ZKKO51K5N	yes	yes	
OSR5	18-45	Jan 26 2021 08:36 AM	A207IHY6GERCFO	yes	yes	
OSR5	18-45	Jan 26 2021 08:36 AM	A2837NCV9OXBFBZ	yes	yes	
OSR5	18-45	Jan 26 2021 08:36 AM	AUCHGHY1IKZZK	yes	yes	
OSR5	18-45	Jan 26 2021 08:37 AM	A1F1BIPJR11LSR	yes	yes	
OSR5	18-45	Jan 26 2021 08:37 AM	A1NKBXOTZAI1YK	yes	yes	
OSR5	18-45	Jan 26 2021 08:37 AM	A3HOBJ4PJUOCUN	yes	yes	
OSR5	18-45	Jan 26 2021 08:38 AM	A250FES5PFCGK9	yes	yes	
OSR5	18-45	Jan 26 2021 08:38 AM	A3NLLSXAL86VIR	yes	yes	
OSR5	18-45	Jan 26 2021 08:39 AM	A1IFIK8J49WBER	yes	yes	
OSR5	18-45	Jan 26 2021 08:39 AM	A2JRW2Z4MEZB88	yes	yes	
OSR5	18-45	Jan 26 2021 08:39 AM	A2MS1GQLGAX9FZ	yes	yes	
OSR5	18-45	Jan 26 2021 08:40 AM	A1PR74OHURJNTO	yes	rejected	dupe
OSR5	18-45	Jan 26 2021 08:40 AM	A3S3WYVCVWW8IZ	yes	yes	
OSR5	18-45	Jan 26 2021 08:40 AM	AJM4334V07JDQ	yes	yes	
OSR5	18-45	Jan 26 2021 08:41 AM	A2PSR3CMNR1R9X	yes	yes	
OSR5	18-45	Jan 26 2021 08:41 AM	AOOLS8280CL0Z	yes	yes	
OSR5	18-45	Jan 26 2021 08:43 AM	A28T38MOUG43YD	yes	yes	
OSR5	18-45	Jan 26 2021 08:44 AM	A1JM5XNB4NCZR6	yes	yes	
OSR5	18-45	Jan 26 2021 08:45 AM	A1G5N2J0IMPJE8	yes	yes	
OSR5	18-45	Jan 26 2021 08:48 AM	A2IOCAN84DFTZA	yes	yes	
OSR5	18-45	Jan 26 2021 08:49 AM	AIZUOHKQT14OM	yes	yes	
OSR5	18-45	Jan 26 2021 08:53 AM	A3JRXRL5QIRPQ3	yes	yes	
OSR5	18-45	Jan 26 2021 08:56 AM	A36GU3OHGLDS8R	yes	yes	
OSR5	18-45	Jan 26 2021 08:56 AM	A9HQ3E0F2AGVO	yes	yes	
OSR5	18-45	Jan 26 2021 08:57 AM	A37LQ9Z1IN19ZC	yes	yes	
OSR5	18-45	Jan 26 2021 08:59 AM	A1VMPZVVZUCS4	yes	yes	
OSR5	18-45	Jan 26 2021 08:59 AM	A4LCG4MSNJRUF	yes	yes	
OSR5	18-45	Jan 26 2021 09:00 AM	A2IGPW784OFV3D	yes	yes	
OSR5	18-45	Jan 26 2021 09:01 AM	A1H198MRIM37T1	yes	yes	
OSR5	18-45	Jan 26 2021 09:02 AM	A11P1OS26E6AMO	yes	yes	
OSR5	18-45	Jan 26 2021 09:02 AM	A3FOKP72T5I4FR	yes	yes	
OSR5	18-45	Jan 26 2021 09:02 AM	A3UDUHUVFKD833	yes	yes	

OSR5	18-45	Jan 26 2021 09:02 AM	AXAO7UJYYEFCO	yes	yes
OSR5	18-45	Jan 26 2021 09:03 AM	ADGREXTAORHCE	yes	yes
OSR5	18-45	Jan 26 2021 09:04 AM	A26ZA5ZY0G5AGI	yes	yes
OSR5	18-45	Jan 26 2021 09:04 AM	APKTDTD9LK539	yes	yes
OSR5	18-45	Jan 26 2021 09:06 AM	A2YTO4EY3MNIAJ	yes	yes
OSR5	18-45	Jan 26 2021 09:06 AM	A38DHLB88V8DL8	yes	yes
OSR5	18-45	Jan 26 2021 09:07 AM	A2VNSNAN1LZBAM	yes	yes
OSR5	18-45	Jan 26 2021 09:08 AM	A1I0DV4B4MFQCL	yes	yes
OSR5	18-45	Jan 26 2021 09:08 AM	A1P47Q6LZPLQ6P	yes	yes
OSR5	18-45	Jan 26 2021 09:08 AM	A33QMMCDIGGVAE	yes	yes
OSR5	18-45	Jan 26 2021 09:08 AM	AHEVIE2NY1W1Z	yes	yes
OSR5	18-45	Jan 26 2021 09:12 AM	A1T643M1P572AA	yes	yes
OSR5	18-45	Jan 26 2021 09:12 AM	A3D2U4QF7821ZW	yes	yes
OSR5	18-45	Jan 26 2021 09:13 AM	A1OR6CKL5VWQ6D	yes	yes
OSR5	18-45	Jan 26 2021 09:14 AM	A3C2X1L5PVNNLV	yes	yes
OSR5	18-45	Jan 26 2021 09:15 AM	A235DXY5FJN0IW	yes	yes
OSR5	18-45	Jan 26 2021 09:15 AM	A2BWTH9BL4TKHO	yes	yes
OSR5	18-45	Jan 26 2021 09:22 AM	A3USP1ZP069KCK	yes	yes
OSR5	18-45	Jan 26 2021 09:27 AM	AN9MVFWRFC2OP	yes	yes
OSR5	18-45	Jan 26 2021 09:28 AM	A3MKP7902FNY9V	yes	yes
OSR5	18-45	Jan 26 2021 09:34 AM	A1DS5O8MSI3ZH0	yes	yes
OSR5	18-45	Jan 26 2021 09:34 AM	A3HHDPKL3O3O7Y	yes	yes
OSR5	18-45	Jan 26 2021 09:42 AM	A3SRVRFTL8413I	yes	yes
OSR5	18-45	Jan 26 2021 09:54 AM	A3NS1DN6J7Z3EU	yes	yes
OSR5	18-45	Jan 26 2021 10:00 AM	A3G8OON0TDPN1E	yes	yes
OSR5	18-45	Jan 28 2021 12:26 PM	A32JEH06T23HDF	yes	yes
OSR5	18-45	extra	A2CHDWKAYZ3P3E	yes	yes
OSR5	18-45	extra	AEQ8K4HBO323D	yes	yes

Incompletes in HIT 5 SurveyMonkey

AIEKCWYZTS41V	deleted
AS2MFSWNC5CQI	deleted
A3NXT3OVGL7QNR	deleted
AQJWO4YPR3LUQ	deleted
A3L4JI1S352HB8	deleted
VCDGHTHRYJ	deleted
A1XVEKS9O73ERE	deleted
A25KM5DM1Z09ZN	deleted
A2CKWUMTSWIZZQ	deleted
A1YT6E0W0SDP0R	deleted
A7P3R1AIA4TVV	deleted
A1C59M3HPCO503	deleted
A30MP4LXV4MIFD	deleted

Totals
OPR2—21
OSR3—30
OPR4—86
OSR5—75
Grand total--212

VCDGHTRYJ	deleted
A258MR1IS96JEP	deleted
A1EUBMQ86K32XE	deleted
AW02W1A865GT4	deleted
A3MDT9B5CRRQ0G	deleted
A4W9APAHFWVLO	deleted
AYHK8DTZONHKC	deleted

Appendix F. MTurk Rejections and Follow up

Emails received from participants who were rejected, who did not follow instructions, had incomplete uploaded documents, or had helpful comments, etc., numbered 122, from 71 different individuals. The 71 individuals correspond roughly to the 79 rejections. Many of the email comments were follow ups to rejections, for which the researcher had given an explanation. Examples of reasons for rejection were a) one of the pages in the uploaded pdf was blank (probably faced the wrong way in the scanner) or cutoff, b) or the pdf was missing pages, c) or intentionally trying to pass off a typed Word document as a printed handwritten text, d) or two cases of an intentional try to take the survey twice.

Only 10 of the 79 rejections were such cases of technology (scanning) mistakes or malfeasance. The bulk of the rejections came automatically in Workers accepting the HIT quickly (presumably because of the relatively high paying reward) and then failing to complete the HIT for whatever reason (never submitting the OPR test or never clicking through to take the OSR test). If a Worker accepted the HIT but did not complete it within the 30 minutes (plus 5 minutes grace allotted to OPR for uploading), this resulted in an automatic rejection. There were 6 persons who signed into the OSR test, but did not complete it.

This “intake” phenomenon of Workers signing up quickly (to get a place in queue) and not “matriculating” is a risk of the MTurk system and is presumably why MTurk tracks the rejection rate of its Workers (and the reason we set a prerequisite threshold of 90% completion history). The follow up correspondence is indicative of Workers trying to rectify their entry rather than readily accept the HIT. The quick willingness to accept a HIT does support the assumption of randomization in that a willing participant is always next in queue and ready to accept the HIT by quick topic review alone.

Interestingly, the highest rejections came in the 45-55 age group on an OSR HIT and the predominantly younger age group (18-45, 55+) performing an OPR HIT. This does not affect the results of those who did actually perform the tests, but it could indicate the easier entry of those with ready printers.

	Rejection
HIT 2 rejections = 4; Accepted/Paid = 24	OPR older rejection = 14%
HIT 3 rejections = 1 Accepted/Paid = 31	OSR older = 3%
HIT 4 rejections = 41 Accepted/Paid = 83	OPR mixed = 33%
HIT 5 rejections = 3 Accepted/Paid = 75	OSR mixed = 4%
Total rejections = 49 Total Accepted 212, Paid = 213 (one participant was paid accidentally)	
Overall 19% rejection rate	
Avg time OSR = 16.3 min, OPR = 20.9 min	

Appendix G. Linear Regression Results from SPSS

```

GET
  FILE='C:\Users\John Harrison\Documents\GSU\Dissertation\Results\GSU financial literacy
  Combined.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT TrustScaleNum
  /METHOD=ENTER q23Education.
  
```

Regression Trust Model 0

[DataSet1] C:\Users\John Harrison\Documents\GSU\Dissertation\Results\GSU financial literacy Combined.sav

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	23. Education ^b	.	Enter

a. Dependent Variable: Trust Scale Numeric

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.127 ^a	.016	.011	4.17869

a. Predictors: (Constant), 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.579	1	59.579	3.412	.066 ^b
	Residual	3649.435	209	17.461		
	Total	3709.014	210			

a. Dependent Variable: Trust Scale Numeric

b. Predictors: (Constant), 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.741	.809		18.219	.000
	23. Education	.325	.176	.127	1.847	.066

a. Dependent Variable: Trust Scale Numeric

REGRESSION

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT TrustScaleNum
/METHOD=ENTER q23Education q24Medium.
    
```

Regression Trust Model 1

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	24. Reading Medium, 23. Education ^b		Enter

a. Dependent Variable: Trust Scale Numeric

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.129 ^a	.017	.007	4.18742

a. Predictors: (Constant), 24. Reading Medium, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61.842	2	30.921	1.763	.174 ^b
	Residual	3647.172	208	17.534		
	Total	3709.014	210			

a. Dependent Variable: Trust Scale Numeric

b. Predictors: (Constant), 24. Reading Medium, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.023	1.129		13.302	.000
	23. Education	.332	.177	.130	1.872	.063
	24. Reading Medium	-.208	.580	-.025	-.359	.720

a. Dependent Variable: Trust Scale Numeric

REGRESSION

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT TrustScaleNum
/METHOD=ENTER q23Education q21Age.
    
```

Regression Trust Model 2

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	21. Age, 23. Education ^b		Enter

a. Dependent Variable: Trust Scale Numeric

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.203 ^a	.041	.032	4.12395

a. Predictors: (Constant), 21. Age, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	150.724	2	75.362	4.431	.013 ^b
	Residual	3520.442	207	17.007		
	Total	3671.167	209			

a. Dependent Variable: Trust Scale Numeric

b. Predictors: (Constant), 21. Age, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.396	1.302		9.524	.000
	23. Education	.337	.174	.132	1.938	.054
	21. Age	.057	.025	.155	2.278	.024

a. Dependent Variable: Trust Scale Numeric

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT TrustScaleNum
/METHOD=ENTER q23Education q24Medium q21Age.
```

Regression Trust Model 3

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	21. Age, 24. Reading Medium, 23. Education ^b		Enter

a. Dependent Variable: Trust Scale Numeric

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.205 ^a	.042	.028	4.13182

a. Predictors: (Constant), 21. Age, 24. Reading Medium, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154.341	3	51.447	3.014	.031 ^b
	Residual	3516.826	206	17.072		
	Total	3671.167	209			

a. Dependent Variable: Trust Scale Numeric

b. Predictors: (Constant), 21. Age, 24. Reading Medium, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.757	1.522		8.379	.000
	23. Education	.346	.175	.136	1.974	.050
	24. Reading Medium	-.264	.574	-.032	-.460	.646
	21. Age	.057	.025	.155	2.270	.024

a. Dependent Variable: Trust Scale Numeric

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT TrustScaleNum
/METHOD=ENTER q23Education q24Medium q21Age RMAge.

```

Regression Trust Model 4

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	RMAge, 23. Education, 21. Age, 24. Reading Medium ^b		Enter

a. Dependent Variable: Trust Scale Numeric

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.222 ^a	.049	.031	4.12637

a. Predictors: (Constant), RMAge, 23. Education, 21. Age, 24. Reading Medium

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	180.653	4	45.163	2.652	.034 ^b
	Residual	3490.513	205	17.027		
	Total	3671.167	209			

a. Dependent Variable: Trust Scale Numeric

b. Predictors: (Constant), RMAge, 23. Education, 21. Age, 24. Reading Medium

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.628	3.465		4.799	.000
	23. Education	.330	.175	.129	1.880	.062
	24. Reading Medium	-2.805	2.123	-.335	-1.321	.188
	21. Age	-.036	.079	-.099	-.460	.646
	RMAge	.063	.050	.404	1.243	.215

a. Dependent Variable: Trust Scale Numeric

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT RiskScale
/METHOD=ENTER q23Education.
```

Regression Risk Model 0

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	23. Education ^b	.	Enter

a. Dependent Variable: Total Risk Score

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.185 ^a	.034	.030	6.65522

a. Predictors: (Constant), 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	325.072	1	325.072	7.339	.007 ^b
	Residual	9168.440	207	44.292		
	Total	9493.512	208			

a. Dependent Variable: Total Risk Score

b. Predictors: (Constant), 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.582	1.298		8.920	.000
	23. Education	.765	.282	.185	2.709	.007

a. Dependent Variable: Total Risk Score

```
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/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT RiskScale
/METHOD=ENTER q23Education q24Medium.
```

Regression Risk Model 1

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	24. Reading Medium, 23. Education ^b		Enter

a. Dependent Variable: Total Risk Score

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.329 ^a	.108	.099	6.41156

a. Predictors: (Constant), 24. Reading Medium, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1025.234	2	512.617	12.470	.000 ^b
	Residual	8468.278	206	41.108		
	Total	9493.512	208			

a. Dependent Variable: Total Risk Score

b. Predictors: (Constant), 24. Reading Medium, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.516	1.730		9.545	.000
	23. Education	.906	.274	.219	3.307	.001
	24. Reading Medium	-3.690	.894	-.274	-4.127	.000

a. Dependent Variable: Total Risk Score

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT RiskScale
/METHOD=ENTER q23Education q21Age.
```

Regression Risk Model 2

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	21. Age, 23. Education ^b		Enter

a. Dependent Variable: Total Risk Score

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.249 ^a	.062	.053	6.57893

a. Predictors: (Constant), 21. Age, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	586.003	2	293.002	6.770	.001 ^b
	Residual	8872.876	205	43.282		
	Total	9458.880	207			

a. Dependent Variable: Total Risk Score

b. Predictors: (Constant), 21. Age, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.561	2.085		7.463	.000
	23. Education	.767	.279	.186	2.747	.007
	21. Age	-.098	.040	-.164	-2.424	.016

a. Dependent Variable: Total Risk Score

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
```

/DEPENDENT RiskScale
 /METHOD=ENTER q23Education q24Medium q21Age.

Regression Risk Model 3

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	21. Age, 24. Reading Medium, 23. Education ^b		Enter

- a. Dependent Variable: Total Risk Score
- b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.374 ^a	.140	.127	6.31570

- a. Predictors: (Constant), 21. Age, 24. Reading Medium, 23. Education

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1321.713	3	440.571	11.045	.000 ^b
	Residual	8137.167	204	39.888		
	Total	9458.880	207			

- a. Dependent Variable: Total Risk Score
- b. Predictors: (Constant), 21. Age, 24. Reading Medium, 23. Education

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20.680	2.330		8.877	.000
	23. Education	.915	.270	.222	3.387	.001
	24. Reading Medium	-3.793	.883	-.281	-4.295	.000
	21. Age	-.099	.039	-.166	-2.555	.011

a. Dependent Variable: Total Risk Score

REGRESSION

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT RiskScale
/METHOD=ENTER q23Education q24Medium q21Age RMAge.
    
```

Regression Risk Model 4

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	RMAge, 23. Education, 21. Age, 24. Reading Medium ^b		Enter

a. Dependent Variable: Total Risk Score

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.391 ^a	.153	.136	6.28264

a. Predictors: (Constant), RMAge, 23. Education, 21. Age, 24. Reading Medium

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1446.158	4	361.539	9.159	.000 ^b
	Residual	8012.722	203	39.472		
	Total	9458.880	207			

a. Dependent Variable: Total Risk Score

b. Predictors: (Constant), RMAge, 23. Education, 21. Age, 24. Reading Medium

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.160	5.309		5.493	.000
	23. Education	.873	.270	.211	3.234	.001
	24. Reading Medium	-9.335	3.243	-.692	-2.879	.004
	21. Age	-.304	.122	-.511	-2.496	.013
	RMAge	.137	.077	.547	1.776	.077

a. Dependent Variable: Total Risk Score

Appendix H. Other Statistical Tests from SPSS

Appendix H.1 Descriptives for Questions used on Trust and Risk Scales

Descriptives

		Statistic	Std. Error	
3. How likely to invest in Marcus?	Mean	2.6730	.13356	
	95% Confidence Interval for Mean	Lower Bound	2.4097	
		Upper Bound	2.9363	
	5% Trimmed Mean	2.5074		
	Median	2.0000		
	Variance	3.764		
	Std. Deviation	1.94010		
	Minimum	1.00		
	Maximum	8.00		
	Range	7.00		
	Interquartile Range	3.00		
	Skewness	1.043	.167	
	Kurtosis	-.035	.333	
5. How likely to lend friend one month income?	Mean	2.7488	.13535	
	95% Confidence Interval for Mean	Lower Bound	2.4820	
		Upper Bound	3.0156	
	5% Trimmed Mean	2.5811		
	Median	2.0000		
	Variance	3.865		
	Std. Deviation	1.96601		
	Minimum	1.00		
	Maximum	8.00		
	Range	7.00		
	Interquartile Range	3.00		
	Skewness	.967	.167	
	Kurtosis	-.107	.333	
7. How would you describe your interactions with other people?	Mean	4.8066	.13647	
	95% Confidence Interval for Mean	Lower Bound	4.5376	
		Upper Bound	5.0756	
	5% Trimmed Mean	4.8407		
	Median	5.0000		
Variance	3.948			

	Std. Deviation	1.98701	
	Minimum	1.00	
	Maximum	8.00	
	Range	7.00	
	Interquartile Range	3.00	
	Skewness	-.436	.167
	Kurtosis	-.733	.333
11. How trustworthy a large national bank?	Mean	5.5142	.11591
	95% Confidence Interval for Mean	Lower Bound	5.2857
		Upper Bound	5.7426
	5% Trimmed Mean	5.5975	
	Median	6.0000	
	Variance	2.848	
	Std. Deviation	1.68764	
	Minimum	1.00	
	Maximum	8.00	
	Range	7.00	
	Interquartile Range	2.00	
	Skewness	-.741	.167
	Kurtosis	.107	.333
	10. Most people trusted or cannot be too careful?	Mean	1.4575
95% Confidence Interval for Mean		Lower Bound	1.3899
		Upper Bound	1.5252
5% Trimmed Mean		1.4528	
Median		1.0000	
Variance		.249	
Std. Deviation		.49937	
Minimum		1.00	
Maximum		2.00	
Range		1.00	
Interquartile Range		1.00	
Skewness		.172	.167
Kurtosis		-1.989	.333
12. How trustworthy if good cash reserves?		Mean	5.8255
	95% Confidence Interval for Mean	Lower Bound	5.6017
		Upper Bound	6.0493
	5% Trimmed Mean	5.9382	
	Median	6.0000	

	Variance		2.732	
	Std. Deviation		1.65301	
	Minimum		1.00	
	Maximum		8.00	
	Range		7.00	
	Interquartile Range		2.00	
	Skewness		-.907	.167
	Kurtosis		.382	.333
14. Day's income at horse races?	Mean		1.9009	.12007
	95% Confidence Interval for	Lower Bound	1.6642	
	Mean	Upper Bound	2.1376	
	5% Trimmed Mean		1.6551	
	Median		1.0000	
	Variance		3.056	
	Std. Deviation		1.74828	
	Minimum		1.00	
	Maximum		8.00	
	Range		7.00	
	Interquartile Range		1.00	
	Skewness		2.060	.167
	Kurtosis		3.231	.333
15. Co-sign on car loan?	Mean		2.5189	.12553
	95% Confidence Interval for	Lower Bound	2.2714	
	Mean	Upper Bound	2.7663	
	5% Trimmed Mean		2.3522	
	Median		2.0000	
	Variance		3.341	
	Std. Deviation		1.82781	
	Minimum		1.00	
	Maximum		8.00	
	Range		7.00	
	Interquartile Range		2.00	
	Skewness		1.121	.167
	Kurtosis		.259	.333
17. How likely to invest in bank?	Mean		5.0189	.11979
	95% Confidence Interval for	Lower Bound	4.7827	
	Mean	Upper Bound	5.2550	
	5% Trimmed Mean		5.0849	

	Median		5.0000	
	Variance		3.042	
	Std. Deviation		1.74422	
	Minimum		1.00	
	Maximum		8.00	
	Range		7.00	
	Interquartile Range		2.00	
	Skewness		-.689	.167
	Kurtosis		.005	.333
18. What would you do regarding signing up for the 401(k) plan?	Mean		2.1840	.04329
	95% Confidence Interval for Mean	Lower Bound	2.0986	
		Upper Bound	2.2693	
	5% Trimmed Mean		2.1992	
	Median		2.0000	
	Variance		.397	
	Std. Deviation		.63030	
	Minimum		1.00	
	Maximum		4.00	
	Range		3.00	
	Interquartile Range		1.00	
	Skewness		-.049	.167
	Kurtosis		-.336	.333
19. Stock/Bond mix?	Mean		6.13	.177
	95% Confidence Interval for Mean	Lower Bound	5.78	
		Upper Bound	6.48	
	5% Trimmed Mean		6.24	
	Median		6.00	
	Variance		6.569	
	Std. Deviation		2.563	
	Minimum		0	
	Maximum		10	
	Range		10	
	Interquartile Range		4	
	Skewness		-.394	.168
	Kurtosis		-.412	.335
20. Trust or not trust until evidence?	Mean		1.6066	.03371
	95% Confidence Interval for Mean	Lower Bound	1.5402	
		Upper Bound	1.6731	

5% Trimmed Mean	1.6185	
Median	2.0000	
Variance	.240	
Std. Deviation	.48966	
Minimum	1.00	
Maximum	2.00	
Range	1.00	
Interquartile Range	1.00	
Skewness	-.440	.167
Kurtosis	-1.824	.333

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
3. How likely to invest in Marcus?	.247	211	.000	.813	211	.000
5. How likely to lend friend one month income?	.231	211	.000	.828	211	.000
7. How would you describe your interactions with other people?	.179	212	.000	.930	212	.000
11. How trustworthy a large national bank?	.175	212	.000	.920	212	.000
10. Most people trusted or cannot be too careful?	.363	212	.000	.634	212	.000
12. How trustworthy if good cash reserves?	.202	212	.000	.899	212	.000
14. Day's income at horse races?	.390	212	.000	.584	212	.000
15. Co-sign on car loan?	.231	212	.000	.804	212	.000
17. How likely to invest in bank?	.203	212	.000	.920	212	.000
18. What would you do regarding signing up for the 401(k) plan?	.318	212	.000	.787	212	.000
19. Stock/Bond mix?	.111	209	.000	.956	209	.000
20. Trust or not trust until evidence?	.396	211	.000	.620	211	.000

a. Lilliefors Significance Correction

Appendix H.2 Descriptives for Trust and Risk Scales

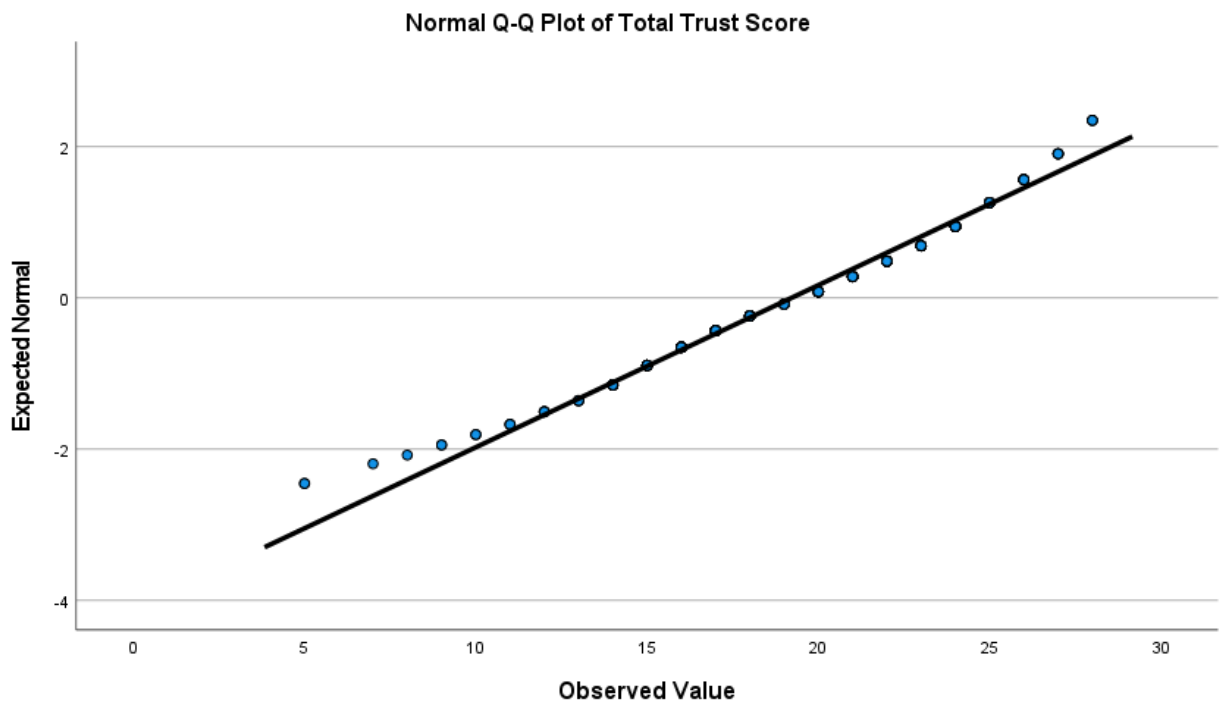
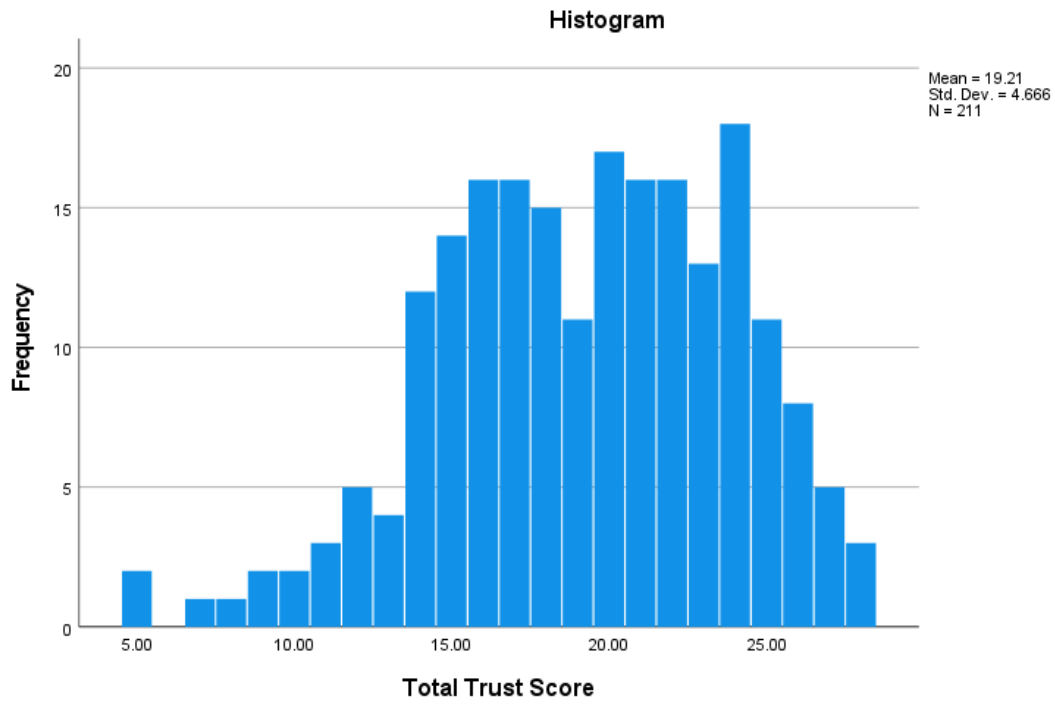
Descriptives

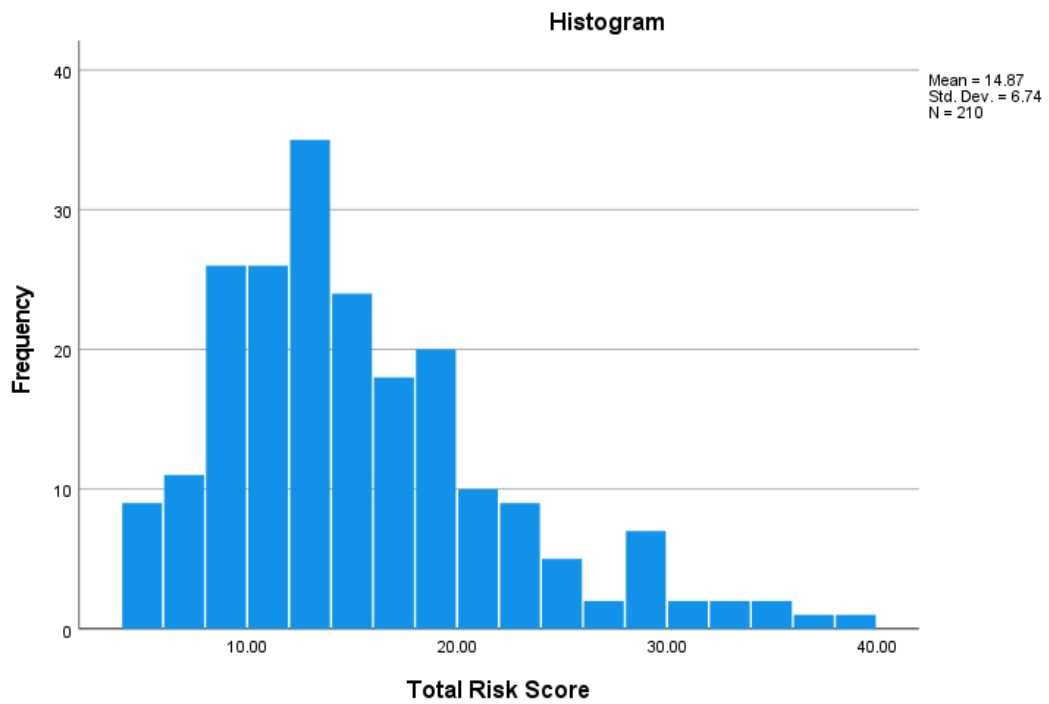
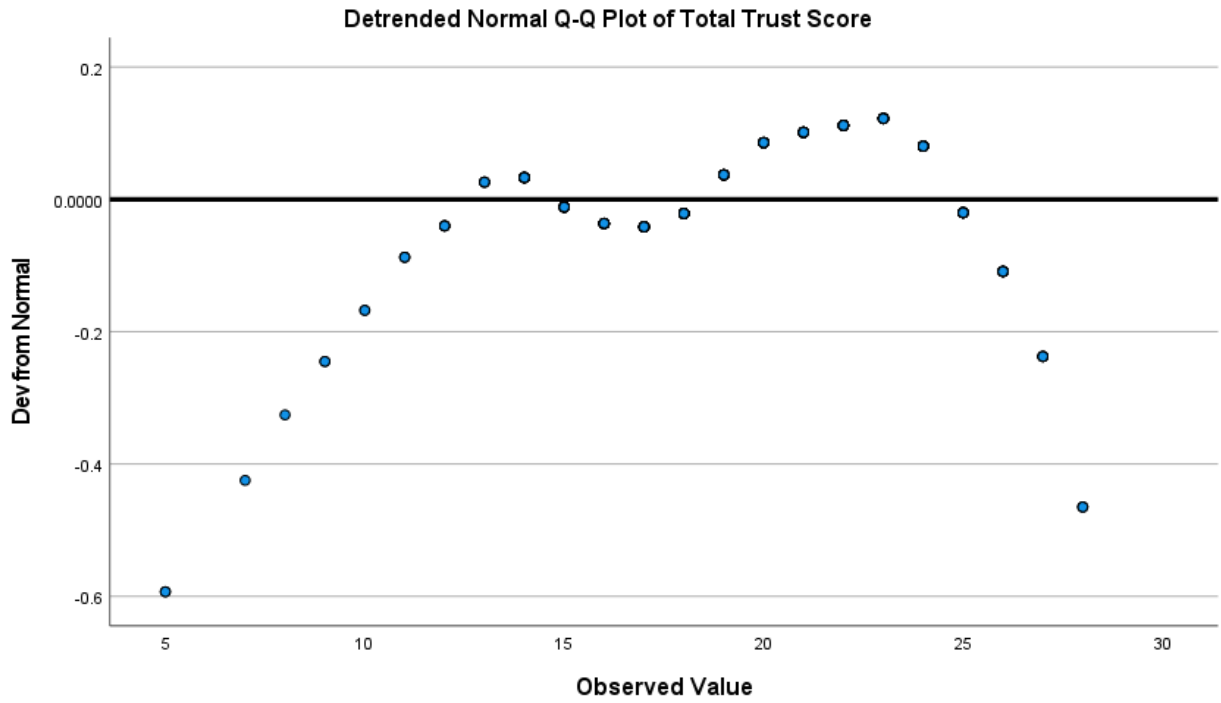
		Statistic	Std. Error	
Total Trust Score	Mean	19.2133	.32120	
	95% Confidence Interval for Mean	Lower Bound	18.5801	
		Upper Bound	19.8465	
	5% Trimmed Mean	19.3662		
	Median	20.0000		
	Variance	21.769		
	Std. Deviation	4.66568		
	Minimum	5.00		
	Maximum	28.00		
	Range	23.00		
	Interquartile Range	7.00		
	Skewness	-.402	.167	
	Kurtosis	-.115	.333	
	Total Risk Score	Mean	14.8714	.46508
95% Confidence Interval for Mean		Lower Bound	13.9546	
		Upper Bound	15.7883	
5% Trimmed Mean		14.4259		
Median		13.0000		
Variance		45.424		
Std. Deviation		6.73970		
Minimum		5.00		
Maximum		39.00		
Range		34.00		
Interquartile Range		8.00		
Skewness		1.048	.168	
Kurtosis		1.101	.334	

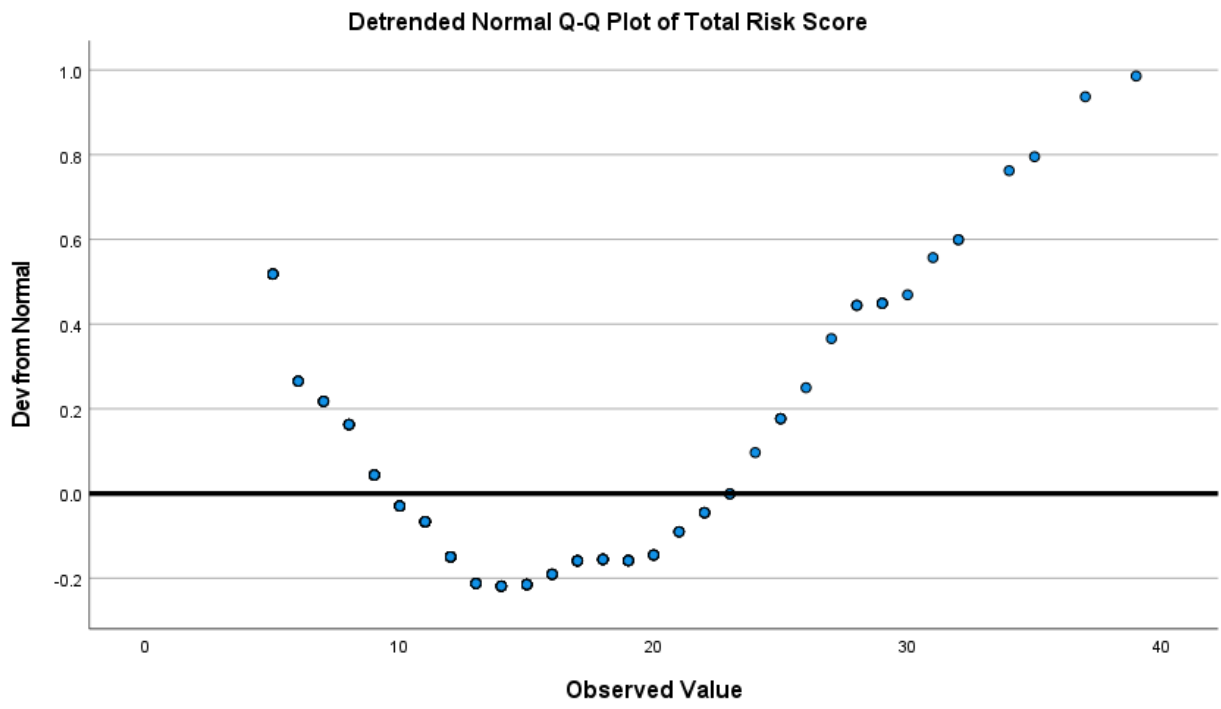
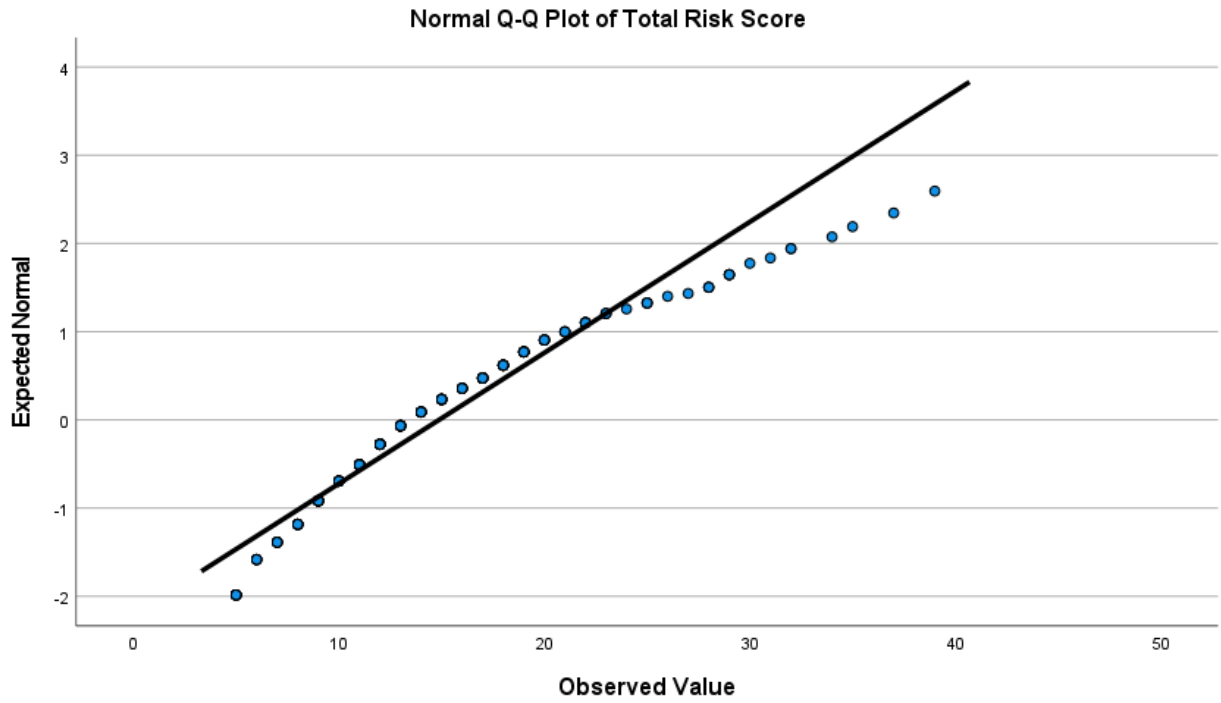
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total Trust Score	.076	211	.005	.978	211	.002
Total Risk Score	.119	210	.000	.929	210	.000

a. Lilliefors Significance Correction







Appendix H.3 Correlations of variables

		Correlations					
		Total Trust Score	Total Risk Score	24. Reading Medium	21. Age	22. Gender	23. Education
Total Trust Score	Pearson Correlation	1	.309**	.009	.165*	-.047	.129
	Sig. (2-tailed)		.000	.897	.016	.500	.062
	N	211	209	211	210	206	210
Total Risk Score	Pearson Correlation	.309**	1	-.246**	-.165*	-.132	.185**
	Sig. (2-tailed)	.000		.000	.017	.060	.007
	N	209	210	210	209	205	209
24. Reading Medium	Pearson Correlation	.009	-.246**	1	-.012	.048	.112
	Sig. (2-tailed)	.897	.000		.865	.489	.104
	N	211	210	212	211	207	211
21. Age	Pearson Correlation	.165*	-.165*	-.012	1	.115	-.009
	Sig. (2-tailed)	.016	.017	.865		.101	.894
	N	210	209	211	211	206	210
22. Gender	Pearson Correlation	-.047	-.132	.048	.115	1	-.029
	Sig. (2-tailed)	.500	.060	.489	.101		.684
	N	206	205	207	206	207	206
23. Education	Pearson Correlation	.129	.185**	.112	-.009	-.029	1
	Sig. (2-tailed)	.062	.007	.104	.894	.684	
	N	210	209	211	210	206	211

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Appendix H.4 ANCOVA for Trust, Age, RM, Education

The following one-way between group ANCOVA (Analysis of Covariance) is included as information. The overall results are in basic agreement with the conclusions of the hierarchical regression analysis as expected; however, the exact data outputs would not be the same because the age variable is here grouped (whereas it is continuous in the regression analysis), and it may also be sensitive to the order of variable input.

Descriptive Statistics

Dependent Variable: Total Trust Score

21. Age in 3 groups	24. Reading Medium	Mean	Std. Deviation	N
Age 18-34	Screen	18.5588	4.39139	34
	Paper	17.6571	4.20044	35
	Total	18.1014	4.28796	69
Age 35-45	Screen	19.5484	4.24923	31
	Paper	19.0000	4.20978	37
	Total	19.2500	4.20510	68
Age 46+	Screen	19.5385	5.57648	39
	Paper	21.2121	4.69546	33
	Total	20.3056	5.22356	72
Total	Screen	19.2212	4.80888	104
	Paper	19.2476	4.55897	105
	Total	19.2344	4.67374	209

Tests of Between-Subjects Effects

Dependent Variable: Total Trust Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^b
Corrected Model	309.042 ^a	6	51.507	2.457	.026	.068	14.742	.822
Intercept	8176.606	1	8176.606	390.055	.000	.659	390.055	1.000
q23Education	68.683	1	68.683	3.276	.072	.016	3.276	.437
Agegroup3	176.280	2	88.140	4.205	.016	.040	8.409	.734
q24Medium	.188	1	.188	.009	.925	.000	.009	.051
Agegroup3 * q24Medium	61.721	2	30.860	1.472	.232	.014	2.944	.312
Error	4234.470	202	20.963					
Total	81866.000	209						
Corrected Total	4543.512	208						

a. R Squared = .068 (Adjusted R Squared = .040)

b. Computed using alpha = .05

Appendix H.5 ANCOVA for Risk, Age, RM, and Education

The following one-way between group ANCOVA (Analysis of Covariance) is included as information. The overall results are in basic agreement with the conclusions of the hierarchical regression analysis as expected; however, the exact data outputs would not be the same because the age variable is here grouped (whereas it is continuous in the regression analysis), and it may also be sensitive to the order of variable input.

Descriptive Statistics

Dependent Variable: Total Risk Score

21. Age in 3 groups	24. Reading Medium	Mean	Std. Deviation	N
Age 18-34	Screen	18.9412	8.20178	34
	Paper	13.4000	3.62345	35
	Total	16.1304	6.85547	69
Age 35-45	Screen	16.4194	7.34291	31
	Paper	13.1316	4.79961	38
	Total	14.6087	6.24786	69
Age 46+	Screen	14.6842	8.60580	38
	Paper	13.1250	4.59839	32
	Total	13.9714	7.05870	70
Total	Screen	16.6117	8.22744	103
	Paper	13.2190	4.33674	105
	Total	14.8990	6.75981	208

Tests of Between-Subjects Effects

Dependent Variable: Total Risk Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^b
Corrected Model	1382.244 ^a	6	230.374	5.733	.000	.146	34.399	.997
Intercept	3102.284	1	3102.284	77.205	.000	.278	77.205	1.000
q23Education	455.247	1	455.247	11.330	.001	.053	11.330	.918
Agegroup3	195.032	2	97.516	2.427	.091	.024	4.854	.485
q24Medium	751.068	1	751.068	18.692	.000	.085	18.692	.990
Agegroup3 * q24Medium	118.221	2	59.110	1.471	.232	.014	2.942	.312
Error	8076.636	201	40.182					
Total	55631.000	208						
Corrected Total	9458.880	207						

a. R Squared = .146 (Adjusted R Squared = .121)

b. Computed using alpha = .05

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VITA

John Harrison has been the Executive Director of ADISA (the Alternative and Direct Investment Securities Association) since 2012, where—along with a prestigious Board of Directors and dedicated staff—has led the organization to rebound as the alternative investment industry’s largest association, with record events and vibrant programs. John has been in association management over 30 years and served in industry, education, and health associations both in the US, Europe, and the Middle East. Before taking the helm at ADISA, John was VP of Global Planning and the Foundation Executive Director at TAPPI, the paper industry’s association, where he worked for 14 years. He was involved in industry research on energy, economics, and the environment. He also served with the American Cancer Society, the international YMCA, and the American Academy of Religion. Harrison has authored dozens of publications in the association management field. He served on a management team nominated for the Nobel Peace Prize in the early 1990’s and was commissioned in the US Air Force out of college. He was a cum laude graduate in biology and psychology from the University of Georgia and earned his MBA from Georgia State University with further graduate research in behavioral finance. He holds FINRA’s Certified Regulatory and Compliance Professional credential earned at Wharton and graduate certificate in Change Leadership from Cornell.