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# Mobile Internet Testing: Applicant Reactions To Mobile Internet Testing

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Mobile Internet Testing: Applicant Reactions To Mobile Internet Testing

By  
Sarah Smeltzer

A Thesis Submitted In Partial Fulfillment of the  
Requirement For The Degree of  
Master Of Arts  
In  
Industrial/Organizational Psychology

Minnesota State University, Mankato  
Mankato, Minnesota

Summer 2013

Mobile Internet Testing: Applicant Reactions to Mobile  
Internet Assessments Sarah Smeltzer

This thesis has been examined and approved by the  
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## Abstract

With the introduction and popularity of using mobile devices to access the internet, mobile-based pre-employment assessments are becoming increasingly common. Previous research suggests that mobile-based assessments are both valid and equivalent to computer based assessments and have no adverse impact. The current study was intended to examine applicant reactions to mobile-based assessments. Findings indicate that using a smartphone to complete a pre-employment assessment had no effect on biodata and personality measures scores. Applicants also reported that using a smartphone interfered with their opportunity to perform, and that they would prefer to complete assessments on a computer. Furthermore, the option of completing mobile assessments on their mobile device would not improve applicants' perceptions about the organization. Applicants did not believe that employers would have negative reactions to the knowledge that applicants were completing assessments on their mobile device, and applicants did not believe this knowledge would affect their likelihood of receiving a job offer.

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## CHAPTER 1

**Introduction**

The introduction of the Internet had a profound effect on our lives. Not only has Internet-based technology enhanced the way humans carry out simple day-to-day functions, it has also played a significant role in many business and human resource (HR) practices. Internet technology has greatly influenced the way that pre-employment assessments are administered. In contrast to the traditional paper-and-pencil method of assessing applicants, online assessments enable organizations to better collect responses, restrict testing time, present different content across applicants, randomize questions, improve and adjust visual layout of testing content, restrict access, generate score reports, and archive data (Reynolds, 2010).

By allowing candidates to take assessments at a time and location of their choosing, organizations can improve their candidate pool by increasing the number of applicants and allowing for those who are currently employed to look for work elsewhere without taking time away from their jobs (Tippins, 2011). This is important, because when an applicant pool increases in proportion to the need for new employees, an organization may then raise their standards and select more qualified candidates.

Unproctored Internet testing (UIT) can reduce the costs of recruitment and selection. By increasing the number of candidates, recruiters can also decrease the number of people they evaluate on-site which in turn lowers the per-hire recruiting and selection costs (Tippins, 2011). The cost of assessment equipment, labor for scoring and administering tests, and the cost of

assessments themselves has also decreased as a result of UIT (Tippins, 2011). For example, in 2002, the Riverside County, California Human Resource Department spent an average of \$28 for administration of paper-and-pencil employment test but only \$17 for the online administration (Mooney, 2002).

Researchers have demonstrated that applicants tend to have more favorable reactions to UIT based assessments than traditional paper-and-pencil administered assessments (Bauer, Truxillo, Mack, & Costa, 2011). In one study, participants rated an unproctored environment in which they were alone as being the most efficient, user-friendly environment (Wasko, 2008). It is important to consider the reactions of applicants because these reactions may predict applicant perceptions about the organization and fairness (Wasko, 2008). Researchers have found that applicant reactions have also been shown to be positively related to self-assessed performance, organizational attractiveness, intentions to recommend the organization to others, and acceptance of job offers (Bell, Weichman, & Ryan, 2006; Hausknecht, Day, & Thomas, 2004; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993).

Regardless of the advantages to using Internet-based assessments, the equivalence and consistency of UIT testing compared to paper-and-pencil based testing has been a concern for some organizations. However, researchers have found that non-cognitive, personality scores are equivalent across modes of assessment (Chuah, Drasgow, & Roberts, 2006), have comparable psychometric properties (Buchanan & Smith, 1999), and similar validities (Beatty, Nye, Borneman, Kantrowitz, Drasgow, & Grauer, 2011).



### **Current Research in Mobile-based Assessments**

People no longer need to rely on a personal computer or laptop to access the Internet. With the rise in popularity of smartphones and other mobile devices, people can now access the Internet on their tablets, smartphones, or other mobile devices anywhere they want. Recent research conducted by Pew Research Center's Internet & American Life Project shows that as of January 2013, approximately 31% of American adults owned a tablet. In December 2012, 45% of American adults owned a smartphone. More specifically, 65% of adults between the ages of 18 and 29 owned a smartphone, and 59% of adults between 30 and 49 owned a smartphone. In spring of 2013, 55% of cell owners used their mobile phone to access the Internet, and 31% reported that they did most of their online browsing using their phones (Brenner, 2013).

Mobile Internet usage also seems to vary among demographic groups. More specifically, 51% of African-American and 42% of Latinos who browse the Internet using their phones do most of their browsing on their phone, compared to 24% for whites (Smith, 2012). When participants were asked why they used their phone so frequently to access the internet, 64% reported that the main reason is because they are convenient, 18% said mobile devices better fit user habits, and 10% said they fill access gaps.

It is no wonder that with such high mobile Internet usage, companies and recruiters are beginning to notice. Several websites designed for job seekers, such as Monster.com and LinkedIn, have developed mobile apps intended to allow candidates to look for job postings and apply for jobs on their mobile device (Mithel, 2013). In March of 2011, the Aberdeen Group (Lombardi, 2011) surveyed over 640 companies to gain insight into their talent

management and assessment processes. Based on criteria relating to overall employee performance, the presence of successors for key positions, and the proper use and interpretation of a battery of assessments, companies were classified as either “Best-in-Class” or “other.” In addition to examining other goals and practices relating to talent management, the Aberdeen Group also examined the prevalence of different technologies in assessment practices. They found that 12% of Best-in-Class companies were delivering and reporting assessments on mobile devices, compared to only 5% of other companies. These companies also displayed a 13% increase in annual manager productivity (Lombardi, 2011).

Mobile applications and options are also becoming impressively high-tech. PeopleAnswers (a company specializing in assessment technology, selection, and retention) launched a mobile app in 2012. This software has the ability to identify which mobile device the applicant is using in order to refer them to the most appropriate format to complete assessments (People Answers, 2012).

SHL is a company that specializes in talent measurement solutions. In 2013, they examined global assessment trends, and found that 41% of respondents endorsed allowing applicants to complete assessments on their mobile device if research could demonstrate that mobile-based assessments were comparable to computer-based assessments. Likewise, 38% believed it would be more efficient to allow recruiters to use their mobile device to access applicant materials (Fallaw & Kantrowitz, 2013).

In 2004, Chandonnet, Sheets, & Perdomo compared participant reactions to a pre-employment survey completed on both a personal digital assistant (PDA) and a computer. Results indicated that although participants found PDA’s to be useful and easy to use, there

were significant differences between perceived ease of use and perceived usefulness between PDA's and computers, with applicants preferring the computer over using a PDA.

Mobile device usage in the applicant process is becoming a reality. It is therefore important to make sure that mobile-based assessments are valid, do not result in adverse impact, and are fair. Little research has been conducted regarding the psychometric properties and fairness of mobile-based assessments. However, a team of researchers investigating the mobile-based assessment research came together and presented their findings in a symposium at the 28<sup>th</sup> Annual SIOP Conference in Houston, Texas. The purpose of the symposium was to examine mobile assessment trends, equivalence, and applicant reactions to mobile-based assessments. It was found that out of over 12 million applicants, 14.3% of applicants completed an assessment on their mobile device, compared to only 9.6% in 2012 (Glubovich & Boyce, 2013).

Researchers from Select International examined applicant data from a national retail chain. Lawrence, Wasko, Delgado, Kinney, & Wolf (2013) found no mean differences in personality scores between applicants using their computers to complete assessments and applicants using their mobile device to complete assessments. Model fit and similar inter-item correlations were also found across devices. Similarly, when comparing scores between different mobile browsers and operating systems, Illingworth, Morelli, Scott, Moon, & Boyd. (2013) found no difference in performance and psychometric equivalence across different mobile devices.

Researchers have also found that allowing candidates to complete assessments on a mobile device does not result in adverse impact (Lawrence, et al., 2013). Boyce & Glubovich

(2013) monitored assessment completion methods for applicants applying to a national restaurant/retail organization. Applicants were given a choice between using an on-site computer, a home computer, and a mobile device. They found that similar rates of Blacks and Hispanics were recommended to move forward in the selection process to Whites who were recommended to move forward (Glubovich & Boyce, 2013). It was also found that minorities (females, Blacks, & Hispanics) were more likely to use their mobile device to complete pre-employment assessments (Glubovich & Boyce, 2013; Impleman, 2013). In 2013, 16.5% of Blacks and 16.6% of Hispanics used a mobile device, compared to 12% of whites. This suggests that in addition to there being no adverse impact, allowing applicants to complete assessments using their mobile device might succeed in further diversifying an organization's applicant pool (Glubovich & Boyce, 2013).

Although research suggests that using a mobile device for completing assessment has little to no effect on psychometric properties or test performance, what we don't know is whether it has an effect on applicant perception of testing fairness and opportunity to perform (OTP). OTP has been linked to procedural justice rules (Gilliland, 1993) and has also been shown to influence an applicant's perceptions of fairness towards a selection system, especially when an applicant receives negative feedback (Dinnen, Noe, & Wang, 2004; Schleicher, Vankatarmani, Morgeson, & Campoin, 2006; Schleicher, et al., 2006). As mentioned previously, taker reactions positively relate to organizational attractiveness and intentions to accept a job offer (Bell, Wiechman, & Ryan, 2006; Hausknecht, Day, & Thomas, 2004; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993;.

In a study very similar to the present study, SHL researchers Gutierrez and Meyers (2013) examined applicant reactions to both cognitive and non-cognitive assessments taken on a computer and a mobile device. The authors found that applicants believed assessments completed on a mobile device were less fair and more difficult to complete than were computer-based assessments. For non-cognitive assessments, participants were confident that they performed well on both devices. However, perceptions of performance were lower for cognitive tests completed on a mobile device.

Gutierrez & Meyer (2013) also found that overall, participants reported preferring to complete assessments using a computer. Participants reported that they were no more likely to apply for a job if the company offered a mobile-based assessment option, nor did they believe the company with a mobile option would be a better place to work.

In summary, it seems that there are few - if any – disadvantages to allowing candidates to apply for jobs and complete assessments using their mobile device. In addition to research indicating higher recruitment productivity and the immediacy of action that a mobile device allows, it might be argued that a mobile device option can decrease the turnaround time for recruitment and selection. With minorities using their mobile devices significantly more often to web-browse, providing applicants with a mobile option could also increase the diversity of the candidate pool. However, utilizing a mobile device to complete an assessment may seem unfavorable to some, particularly in regards to loading time, small screen size, and connectivity. With this in mind, the following study is designed to extend the work of Gutierrez & Meyer and re-examine applicant reactions to completing pre-employment assessments, to determine applicant interest in a mobile option, and to answer additional

questions including applicant perceptions about their opportunity to perform. I ask college age students to complete a battery of non-cognitive assessments on a desktop computer and then three weeks later to complete the same assessments on a smartphone.

Based upon the research presented above, my hypotheses are as follows:

H1: Reliability will be consistent across devices

H2: Applicants will prefer using a computer to complete pre-employment surveys to using a smartphone to complete pre-employment surveys

H3: Although applicants will prefer using a computer, they will express positive reactions to the opportunity to complete an assessment on a mobile device

H4: There will be a significant difference in applicants perceived opportunity to perform between computers and smartphones such that participants will report lower perceptions of OTP when completing assessments on their mobile device than they will when using a computer.

In addition to the hypotheses above, I examined applicants' perceptions of employer reactions to completing a pre-employment survey on a smartphone. Completing assessments on a mobile-device can still be considered non-traditional, and the question remains whether this would have an effect on employer perceptions and impressions about an applicant. Much like dressing down for an interview or arriving late for an appointment, it might be possible that employers will perceive applicants completing assessments on their mobile device as less conscientious or concerned about their performance than are applicants who use a computer.

An important area of interest for the present study is whether applicants believe that completing assessments on a mobile device will reflect negatively upon them in the eyes of the

employer. That is, do applicants believe that completing assessments on their smartphones will make them any less likely to receive a job offer? Do applicants believe that employers will make negative assumptions about an applicant or do they believe employers will react positively to the knowledge that the applicant used their mobile device to complete assessments?

As an exploratory part of the study, applicants were asked how much more difficult employers will believe it is to obtain a good assessment score using their mobile device, how employers will react to the knowledge that a pre-employment assessment was completed using a smartphone rather than a computer, and whether applicants believe they will be more or less likely to obtain a job offer if they complete a pre-employment assessment on their smartphone.

## CHAPTER II

### **Methods**

#### **Participants**

The participants in this research study are 110 students from a Midwestern university enrolled in an introductory psychology course. Participation was restricted to those students who owned a smartphone and who were over the age of 18. The age range of participants was 18-40 with, 91% of participants in the 18-24 age group. Twenty-eight percent of participants were male, and 73% of participants were female. Of the 110 number of participants, 80 completed all of the research requirements. Participants may have received extra credit in their psychology course for their participation.

#### **Procedure**

Participants were recruited using SonaSystems, a human subject pool management software. Participation in this research study required participants to attend two test administrations approximately 3 weeks apart. Each test administration was completed on a separate device, once on a computer and once on a smartphone. Participants were randomly assigned to which version they completed first.

Before subjects responded to any instrument, an introductory statement was presented, that briefly described the project. Participants were told that they would be responding to a series of pre-employment questionnaires and asked to respond to these items as if they were applying for a job. Participants were also told that the time it took to complete the surveys would have no bearing on their scores and were asked to take their time while responding to



the questionnaires. After the introductory statement, subjects were given an informed consent form, which explicitly stated participants' rights. Participants were informed that they reserve the right to discontinue their participation at any time. Subjects were instructed to read the form and sign it, indicating their agreement to participate.

Participants were then given access to the questionnaire via SurveyMonkey, an online survey software. Four separate links were provided (Time 1 Mobile, Time 1 Computer, Time 2 Mobile, Time 2 Computer) to students depending on both device and session of participation. Students were asked to provide their student identification number in order to match survey responses. Once their responses were matched, identification numbers were removed and replaced with randomly assigned numbers. All response data was kept confidential.

### **Measures**

Four proprietary pre-employment measures were used for this study, along with reaction questionnaires, background items, mobile device experience items, a technology beliefs questionnaire, and a threats measures (see Table 2.1).

**Background items.** Participants were asked to respond to 11 items asking their age, gender, racial background, educational background, and employment status.

**Experience with Internet on a mobile device.** Students were asked to respond to 8 items pertaining to their personal experiences with their mobile device. Items include whether students currently own an internet capable mobile device, which type of mobile device they own, how often they use their mobile device, and for which purposes.

**Trust in technology beliefs.** Students also responded to 5 items relevant to their beliefs about mobile testing, such as whether they would prefer to take a pre-employment test

on a mobile device or a PC, their beliefs about mobile capabilities, and how comfortable they feel using different types of mobile device applications (i.e. web browsing, gaming, and banking.)

**Pre-employment measures.** The pre-employment measures used for the purposes of this study are commercially available, proprietary surveys marketed by an international assessment company. These measures include interest items, biodata items, forced choice personality items, and Likert personality items.

**Interest items.** Participants responded to 41 items measuring their interest in carrying out various work activities. Responses were on a 7-point scale from “dislike a lot” to “like a lot.”

**Biodata items.** Participants responded to 15 items relevant to their history and beliefs towards different work-related situations.

**Forced choice personality items.** Participants responded to 35 forced-choice personality items designed to measure constructs relevant to the workplace, i.e. courteousness, innovativeness, stress management, etc.

**Likert-type personality items.** Students were asked to respond on a 5-point Likert scale to 20 items about themselves. Items again were personality-related items relevant to workplace scenarios.

Before taking any of the pre-employment assessments, participants responded to 3 items regarding how many “pre-employment” tests they have taken online as part of an application process, how they typically access the internet, and what device they are currently using to complete the overall assessment.

After participants complete each individual pre-employment measure, they are asked to respond to 11 items related to how well participants thought they did on the test, ease of test completion on the current device, and perceptions of fairness.

**Threats measures.** After completing the pre-employment assessments, participants responded to questionnaires related to environmental elements that may have affected test results, such as test administration environment, test motivation, and efficacy/anxiety toward using computers or mobile devices.

**Test administration environment.** Eight items were included regarding the details of the test environment, such as strength of mobile reception, current setting, whether environment was free from distractions, background noise, impact of distractions, and participants' attention level.

**Efficacy items.** Participants were asked how confident they feel using computers for general activities, how confident they feel using a mobile device for general activities, anxiety felt using computers, and anxiety felt using a mobile device.

**Test motivation.** Participants were asked 7 items on a 6-pt Likert scale that were related to motivation behind completing the assessments, including motivation to do their best, whether they were distracted, amount of effort used, and whether they were ill.

**Preferences.** When participants finished completing all assessments during their second testing session, they were asked 9 questions related to whether they preferred to complete the assessment on a PC or a smartphone, how they compared completion of the assessments on a PC to a smartphone, perceptions of fairness for using a test completed using

a smartphone, and whether they were more or less likely to accept a job offer from a company that allows them to complete the assessments on a mobile device.

**Assumptions about employer perceptions.** At the end of their second testing session, participants were asked questions about how they assume employers would react to their use of a smartphone to complete a pre-employment assessment, how employer perceptions differ from participants perceptions of opportunity to perform, and how employer perceptions are likely to influence whether the participant would obtain a job offer.

Table 2.1

*Measures and Administration Outline*

Test/Measure	Time 1?	Time 2?	Est Time	# of Items
Background questions	Y	N	2	10
Mobile device experience and technology beliefs	Y	N	3	14
Test 1: Interests items	Y	Y	10	41
Test 1 Reactions	Y	Y	2	10
Test 2: Biodata items	Y	Y	4	15
Test 2 Reactions	Y	Y	2	10
Test 3: Forced choice personality	Y	Y	9	35
Test 3 Reactions	Y	Y	2	10
Test 4: Likert personality	Y	Y	12	60
Test 4 Reactions	Y	Y	2	10
Threats measures: Test taking environment Computer/mobile self efficacy Computer/mobile anxiety Test motivation	Y	Y	5	22
Employer Perceptions	N	Y	5	13
TOTAL			58	

## CHAPTER III

**Results**

A total of 110 students participated in the study, 22 males and 58 females, in order to receive extra credit in undergraduate psychology courses. Of these students, 80 participants returned to complete both administrations of the surveys. Participants who did not return for the second survey administration were eliminated from the data analyses. Forty participants completed the first administration on their mobile device, and 40 participants completed the first administration on a desktop computer.

Test scores included in the analysis were biodata, forced-choice (FC) personality, and Likert-scale (RS) personality measures. The Big-Five traits measured in the forced-choice and the Likert-scale personality measures include agreeableness-building a team, agreeableness-showing courtesy, extraversion-building rapport, openness-generating new ideas, conscientiousness- working systematically, and neuroticism- coping with stress.

Group means on each of the measures were compared within subjects across devices (computer vs. mobile) and between subjects across order of administration (mobile first or computer first) using mixed-model repeated-measure ANOVAs.

After comparing means, analyses indicate that there was no significant difference in scores across devices. More specifically, there were no main effects of device on Biodata scores,  $F(1, 75) = 1.79, p = n.s.$ , FC Building a Team  $F(1, 75) = 0.73, p = n.s.$ , FC Showing Courtesy,  $F(1, 75) = 0.46, p = n.s.$ , FC Building Rapport,  $F(1, 75) = 0.45, p = n.s.$ , FC Generating New Ideas,  $F(1, 75) = 1.12, p = n.s.$ , FC Working Systematically,  $F(1, 75) = 0.10, p = n.s.$ , or on FC Coping with Stress  $F(1, 75) = 0.31, p = n.s.$  There was no significant effect

of device on RS Building a Team,  $F(1, 75) = 0.58, p = n.s.$ , RS Showing Courtesy,  $F(1, 75) = 0.91, p = n.s.$ , RS Building Rapport,  $F(1, 75) = 1.46, p = n.s.$ , RS Generating New Ideas,  $F(1, 75) = 0.02, p = n.s.$ , RS Working Systematically,  $F(1, 75) = 0.14, p = n.s.$  or on RS Coping with Stress,  $F(1, 75) = 0.06, p = n.s.$  This supports Hypothesis 1, which predicts that assessment scores would be comparable across devices.

Table 3.1 Measure Scores for Mobile and PC Administrations

	Mobile Score		Computer Score	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Biodata	17.19	4.25	16.60	4.40
FC - Building a Team	.14	.74	.20	.74
FC - Showing Courtesy	.27	.78	.20	.71
FC - Building Rapport	.63	.90	.65	.92
FC - Generating New Ideas	.61	.75	.52	.71
FC - Working Systematically	.35	.61	.32	.65
FC - Coping With Stress	1.00	.73	.94	.62
RS - Building a Team	-.06	0.92	.00	.81
RS - Showing Courtesy	-.01	.98	.04	.86
RS - Building Rapport	-.02	1.05	.06	1.03
RS - Generating New Ideas	.02	.89	.01	.90
RS - Working Systematically	.03	.93	-.01	.90
RS - Coping With Stress	.06	1.00	.06	.83

Likewise, scores were consistent across order of administration (mobile first or computer first) for all measures except for FC Working Systematically and both Neuroticism-Coping with Stress scales. More specifically, there were no main effects of device order on Biodata scores,  $F(1, 75) = 1.48, p = n.s.$ , FC Building a Team,  $F(1, 75) = 0.06, p = n.s.$ , FC

Showing Courtesy,  $F(1, 75) = 0.10, p = n.s.$ , FC Building Rapport,  $F(1, 75) = 0.68, p = n.s.$ , FC Generating New Ideas,  $F(1, 75) = 1.19, p = n.s.$ , RS Building a Team,  $F(1, 75) = 2.09, p = n.s.$ , RS Showing Courtesy,  $F(1, 75) = 0.40, p = n.s.$ , RS Building Rapport,  $F(1, 75) = 0.66, p = n.s.$ , RS Generating New Ideas,  $F(1, 75) = 2.39, p = n.s.$ , and RS Working Systematically,  $F(1, 75) = 0.15, p = n.s.$

There was a significant effect of order of administration on FC Working Systematically scores,  $F(1, 75) = 6.01, p < 0.05, partial \eta^2 = 0.07$ . Working Systematically scores were significantly higher for participants in the computer first group ( $M = 0.50$ ) than students in the mobile first group ( $M = 0.19$ ). Likewise, there was a significant effect of order of administration on both FC Coping with Stress,  $F(1, 75) = 5.46, p < 0.05, partial \eta^2 = 0.07$ , and RS Coping with Stress,  $F(1, 75) = 5.64, p < 0.05, partial \eta^2 = 0.07$ . For both forced-choice and Likert-scale Coping With Stress measures, participants in the mobile first groups scores consistently higher ( $M = 1.71$ ) than participants in the computer first groups ( $M = 0.82$ ). It should be noted that in all three cases, however, device order only accounted for an estimated 7% of the differences in Working Systematically or Coping with Stress scores.

Table 3.2.

*FC Working Systematically*

	Mobile Score	Computer Score
Mobile First	0.18	0.19
Computer First	0.47	0.52



Table 3.3.

*FC Coping With Stress*

	Mobile Score	Computer Score
Mobile First	1.16	1.09
Computer First	0.82	0.81

Table 3.4

*RS Coping With Stress*

	Mobile Score	Computer Score
Mobile First	0.27	0.29
Computer First	-0.17	-0.15

The second hypothesis was the prediction that participants would prefer using a computer to a mobile device for completing a pre-employment assessment. At the end of the second administration, both groups were asked to respond on a 5-point Likert scale ranging from strongly disagree to strongly disagree to strongly agree to the question, "I would prefer to complete tests on a mobile device versus completing them on a computer." Of all respondents, 74% disagreed that they would prefer a mobile device, 13% were neutral, and only 13% agreed that they would prefer a mobile device rather than a computer to complete assessments.

Table 3.5.

*Agreement Ratings To "I Would Prefer To Complete Assessment Tests On A Mobile Device Vs. Completing Them On A Computer"*

	<i>n</i>	%
Strongly Disagree	33	43.4
Disagree	24	31.6
Neutral	10	13.2
Agree	8	10.5
Strongly Agree	2	2.6

Participants were asked at the beginning of the first administration and at the end of the second administration if they would prefer to use a smartphone to complete a pre-employment assessment. At the beginning of the analysis, only 10.3% responded that they would want to use a mobile device, 66.7% would NOT use a mobile device, and 23.1% were unsure.

However, at the end of the second administration, the percentage of students who responded that they would want to use a smartphone significantly increased,  $t(1, 73) = 2.67, p < 0.01$ . A total of 25% reported that they would prefer a smartphone, 61% reported that they would not prefer a smartphone, and 14% were unsure.

Table 3.6

*Mobile Device Preference for Test Completion*

	Before Administration		After Administration	
	<i>n</i>	%	<i>n</i>	%
Would prefer	8	10.3	19	25
Would not prefer	52	66.7	46	60.5
Unsure	18	23.1	11	14.5

After completing the second administration of personality measures, participants were also asked which device they would prefer to complete a pre-employment assessment. A total of 80% of participants reported that they preferred a computer to complete assessments, 12% had no preference, and only 3% reported that they preferred a mobile device to complete a pre-employment assessment. Therefore, Hypothesis 2 was supported. As an exploratory analysis, responses to the question, "How much more difficult is it to get a good score on a phone based test than a computer based test?" indicated that a 62% of respondents thought it was much

harder to complete an assessment on their mobile device, 31% thought it was harder, and 7% thought that both devices were equally difficult.

Table 3.7

*Device Preferences*

	<i>n</i>	%
Computer	64	85
Mobile	2	3
No Preference	9	12

The third hypothesis was the prediction that regardless of device preference, participants would have positive reactions to the option to complete a pre-employment assessment using a mobile device. Participants were asked to indicate their level of agreement to three questions: “I believe a company that allows me to take its test on my mobile device would be a better place to work compared to a company that only allows its test to be taken on a computer,” “Having the option to complete this assessment on a mobile device positively represents the company’s brand image,” and “I would be more likely to accept a job offer from a company that allows me to take its test on my mobile device versus a company that only allows its test to be taken on a computer.”

A total of 52% of respondents disagreed that a company allowing for completion of an assessment on a mobile device, 38% were neutral, and only 11% agreed. In response to whether participants believed that having a mobile device option was a positive representation of the company’s brand image, 26% of respondents disagreed, 32% were neutral, and 42% agreed. Lastly, a total of 62% disagreed that they would be more likely to work for a company

that allows a mobile device option, 31% were neutral, and only 6% agreed. Therefore,

Hypothesis 3 was not supported.

Table 3.8

*Belief That A Company That Allows A Mobile Option Would Be A Better Place To Work*

	<i>n</i>	%
Strongly Disagree	10	13
Disagree	30	39
Neutral	29	37.7
Agree	6	7.8
Strongly Agree	2	2.6

Table 3.9.

*Belief that having a mobile option positively represents a company's brand image*

	<i>n</i>	%
Strongly Disagree	4	5.3
Disagree	16	21.1
Neutral	24	31.6
Agree	28	36.8
Strongly Agree	4	5.3

Table 3.10

*Applicants Belief That They Would Be More Likely To Accept A Job Offer From A Company That Provide A Mobile Device Option*

	<i>n</i>	%
Strongly Disagree	10	13
Disagree	38	49.4
Neutral	24	31.2
Agree	4	5.2
Strongly Agree	1	1.3

Hypothesis four was the prediction that there would be a significant difference in participants' perceived opportunity to perform between mobile completion and computer completion. After completing each biodata measures, combined force-choice measures, and combined Likert-scale measures, both groups were asked to rate their agreement that the test

gave applicants the opportunity to show what they can really do. Participants responded on a scale ranging from 1-Strongly Disagree to 5-Strongly Agree. Repeated –measure ANOVAs were run to investigate whether device had a significant effect of responses.

For Biodata responses, device had no significant effect on responses,  $F(1, 75) = 0.96$ ,  $p = n.s.$  There was a significant effect of order of administration on responses,  $F(1, 75) = 4.22$ ,  $p < 0.05$ , and a significant interaction between device and order of administration,  $F(1, 75) = 9.31$ ,  $p < 0.01$ . More specifically, participants in the mobile first group had a lower rating of agreement that the test gave applicants the opportunity to show what they are capable of ( $M = 2.90$ ) than did participants in the computer first group ( $M = 2.50$ ). Students in the mobile first group had the highest rating of agreement during their second computer administration, ( $M = 3.10$ ). For a description of means, please refer to Table 3.11.

Table 3.11

*Biodata Opportunity to Perform*

	Mobile Score	Computer Score
Mobile First	2.69	3.10
Computer First	2.63	2.42
Total	2.66	2.77

For all forced choice questions, there was no significant effect of device  $F(1, 75)=0.01$ ,  $p=n.s.$ , or order of administration,  $F(1, 75) = 3.21$ ,  $p = n.s.$ . There was also no significant interaction between device and order of administration,  $F(1, 75) = 4.10$ ,  $p = n.s.$

For all rating scale measures, there was a significant effect of device on participants belief that the test gave applicants an opportunity to show what they are capable of,  $F(1, 75) = 11.08$ ,  $p < 0.01$ , and a significant effect of order of administration,  $F(1, 75) = 6.54$ ,  $p < 0.05$ .

There was also a significant interaction between device and order,  $F(1, 75) = 4.10, p = 0.05$ . More specifically, computer scores were higher than mobile scores, and participants in the mobile first group scored higher than participants in the computer first group. Lastly, mobile scores in the computer first group were lower than scores in all other administrations.

Table 3.12

*Agreement Ratings For, "This Test Gives Applicants The Opportunity To Show What They Are Capable Of"*

	Mobile Score		Computer Score	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Biodata	2.65	0.91	2.76	0.95
Forced-Choice Personality	2.59	1.12	2.58	1.09
Likert-Scale Personality*	3.19*	1.07	3.5*	0.99

\* Means significantly different at the  $p < 0.01$  level

Table 3.13

*Rating Scale Opportunity to Perform*

	Mobile Score	Computer Score
Mobile First	3.54	3.67
Computer First	3.34	2.82
Total	3.44	3.75

After completing each measure, both groups were also asked to rate their agreement "Using this device did not interfere with my opportunity to perform," to which students were asked to rate their agreement. For biodata scores, there was a significant effect of device on participants agreement ratings,  $F(1, 75) = 6.93, p < 0.01$ . More specifically, participants had higher ratings of agreement after the computer administration ( $M = 3.78$ ) than after the mobile administration ( $M = 3.38$ ). For the forced-choice measures, device had a significant effect on participants' ratings of agreement,  $F(1, 75) = 4.74, p < 0.00$ . More specifically, participants

had higher ratings of agreement after the computer administration ( $M = 3.32$ ) than after the mobile administration ( $M = 2.46$ ). For Likert-scale measures, device had a significant effect on participants' agreement ratings,  $F(1, 75) = 13.49$ ,  $p = 0.00$ , again with participants having a higher rating of agreement after the computer administration ( $M = 3.86$ ) than after the mobile administration ( $M = 3.32$ ). Therefore, Hypothesis 4 was supported.

Table 3.14

*Agreement Ratings to, "Using This Device Did Not Interfere With My Opportunity to Perform"*

	Mobile Score		Computer Score	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Biodata*	3.38*	1.15	3.76*	1.21
Forced-Choice Personality*	2.99*	1.20	3.33*	1.27
Likert-Scale Personality**	3.23**	1.15	3.78**	1.09

\*Means significantly different at the  $p < 0.05$  level

\*\*Means significantly different at the  $p < 0.001$  level

As an exploratory part of the study, participants were asked questions about their beliefs of employer attitudes towards applicants completing pre-employment assessments. When asked how likely participants believed they were to get a job offer if employers knew they used their phones to complete a pre-employment assessment, 77.9% of participants believed it would make no difference whether they used a mobile device, 18.2% believed they would be less likely to receive a job offer, and 3.9% believed they would be more likely to be offered a job. Participants were also asked how much more difficult employers would believe it was to obtain a good assessment score on a mobile device compared to a computer. A total of 61.8% of respondents thought employers would believe it was equally difficult as a computer, 27.6% believed obtaining a good score on a mobile device would be harder than on

a computer, 5.3% believed it would be much harder on a mobile device, and 5.3% of respondents thought that it would be easier to obtain a good score on a mobile device.

Participants were also asked to rate their agreement to potential assumptions that employers would make about an applicant if they knew applicants had completed a pre-employment assessment on their mobile device. Of respondents, 79.5% agreed that employers would assume the applicant was technologically savvy, 19.4% would assume that applicants did not own a computer, 24% would assume that applicants were enthusiastic to work for them, 35.1% of respondents believed that employers would assume that the applicant was too busy to use a computer, 46.4% believed that the applicant was addicted to their phone, 17.1% believed that employers would assume that applicants were undisciplined, 57.9% believed that the employer would assume that the applicant was concerned about their performance, and 24.7% thought employers would assume the applicant was NOT concerned about their test performance. Lastly, 55.3% of respondents believed that employers would not care if applicants completed a pre-employment assessment on their mobile device, with 31.6% of respondents being neutral, and 13.1% disagreeing that employers wouldn't care. These percentages indicate that few applicants believe that employers would have negative reactions to the realization that applicants were completing pre-employment assessments on their mobile phones.



## CHAPTER IV

## DISCUSSION

The primary focus of this study was to evaluate the viability of using mobile devices to complete Internet-based pre-employment assessments, to examine difference across devices in applicants perceived opportunity to perform, device preferences for completing pre-employment assessments, and applicant reactions to the opportunity to complete pre-employment assessment using their mobile assessments. A secondary focus of the study was to also examine how applicants believed that potential employers would react to the knowledge that applicants used a mobile device to complete a pre-employment assessment.

Overall, using a mobile device had no effect on biodata and personality measure scores, which indicates that mobile devices could be used to complete Internet-based pre-employment assessments without affecting assessment scores. Order of administration had an effect on a select few personality scores, although the effect sizes were relatively small. This may not be relevant in an actual application process, where applicants would not be completing the same assessments on more than one device.

Device did have a significant effect on applicants' perceived opportunity to perform, with applicants reporting that computers gave applicants more opportunity to show what they were capable of. Applicants also reported that using a mobile device to complete each assessment interfered with their opportunity to show what they were capable of. As stated in the introduction, perceptions about opportunity to perform can impact an applicant's attitudes

towards an organization and their likelihood to accept a job offer. One explanation for this is that results show that a majority of participants believed that it was much harder to complete an assessment on a mobile device than it was on a computer.

In terms of participant preferences, a majority of respondents reported that they would not prefer to use a mobile device to complete a pre-employment assessment, and that they would prefer to use a computer to a mobile device. However, when comparing pre-test and post-test responses to whether applicants would use a mobile device, there was a 15% increase in the number of participants who reported that they would prefer to use a mobile device after completing the assessment on both devices. This suggests that participants may have found completing an assessment on a mobile device to be less challenging than they initially believed it would be.

Surprisingly, participants did not seem to have positive reactions to the option of completing mobile assessments on their mobile device. More specifically, only 11% of participants thought that a company offering a mobile device option for assessment completion would be a better place to work, and only 6% reported that they would be more likely to accept a job offer from a company allowing for a mobile device option.

Lastly, participants disagreed that employers would make negative assumptions about applicants who used a mobile device to complete an assessment, and 80% believed that if employers knew an assessment was completed on a mobile device, the employer would assume that the applicant was technology savvy and 60% believed employers would assume the applicant was concerned about their performance. Half of participants believed that

employers would not be care whether applicants completed assessments on a mobile device, and 78% believed they would be no more or less likely to receive a job offer. This suggests that applicants reasoning for not using a mobile device would not include a fear of negative employer reactions or a lesser chance at receiving a job offer.

This last point is of particular importance when considering what reasoning an applicant would use in choosing a device to complete a pre-employment assessments. Results suggest that when an applicant is making a choice between completing an assessment on a mobile device or a computer, they are more likely to consider difficulty and ease of use than they are to consider employer reactions or assumptions.

### **Limitations and Future Directions**

One major limitation in this study was that unlike a real application process, participants were given no autonomy on where to complete the assessment, when, or on which device. Although assigning groups allowed us to compare scores across devices, it is probable that if applicants were given a choice between a mobile device and a computer, applicants choosing to complete an assessment on their mobile device would report more positive assumptions about the organization, have higher perceived ratings of opportunity to perform, and overall find using a mobile device to be less difficult.

The laboratory setting also forced several participants into one lab room at a time, which was not entirely free from audible distractions and also suffered from frequent lags in network connectivity and speed. In a real world setting, applicants completing assessments would have the opportunity to complete the assessment in a more appropriate setting or a time

during which connectivity was faster. It is likely that Internet connection speeds played a large role in applicants' perceptions towards opportunity to perform or difficulty to complete the assessment.

Another consideration as that this study was limited to researching the effects of smartphones and did not include other mobile devices, such as tablets. Future research should examine the differences in perceptions of opportunity to perform among tablets, and it would be interesting to see if device effects would be any less for tablets than they are for smartphones. It would also be interesting to see if there is a relationship between voluntarily completing pre-employment assessments on a mobile device and work performance, to examine whether the choice of using a mobile device had any impact on performance or turnover. More specifically, are people who use mobile devices any less likely to perform well on the job? Lastly, it would also be of interest to examine employer attitudes towards the knowledge that applicants used a mobile device to complete and assessment on their mobile device, and whether this knowledge would have an impact on their selection decisions and recommendation.

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