What Matters in the Test Environment?

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This study examined the impact of test environment on applicant perceptions, test performance and validity. The results indicated that test performance and validity were relatively unaffected by test environment, but some applicant reactions were less favorable in the unproctored setting. The findings further support for the value of UIT.

While not all personnel psychologists agree that employment tests should be administered without supervision (Tippins, 2009; Tippins, Beaty, Drasgow, Gibson, Pearlman, Segall, & Shepherd, 2006), unproctored internet testing (UIT) has become a common method of administration among employers. Allowing candidates to complete phases of the selection process outside of a proctored, dedicated testing location, results in costs savings, efficiencies and quicker candidate processing. Additionally, the increased use of mobile technology by candidates makes it even more likely that UIT is here to stay.

Issues with UIT

Many researchers are hesitant to endorse the use of UIT because of the inherent issues that are involved in allowing applicants to complete an assessment in an unsupervised setting (for a review, see Tippins et al. 2006). First of all, the testing experience for every candidate is likely to be different with regard to computer or device hardware/software, internet speed, testing location, and environmental conditions. Secondly, an unsupervised environment provides candidates the opportunity to cheat on the assessment. Cheating can occur by obtaining help from sources and other individuals, finding a copying test items to share with others. This last point speaks to a third issue – test security. If the content of an assessment becomes compromised so does the validity or accuracy of the tool, which can lead to poor hiring decisions.

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Test Environment & Test Performance

Given the aforementioned issues, researchers have investigated measurement equivalence to determine if the test environment has an effect on the internal structure of an assessment(c.f., Do, Shepherd, & Drasgow, 2005; Chuah, Drasgow & Roberts, 2006; Templer & Lange, 2008). In sum, the results from these studies suggest that test properties are not being affected by the unproctored nature of the testing environment. While the test environment does not seem to affect the underlying constructs being measured, candidates may still be affected by the unpredictable nature of an unproctored environment.

With this in mind, other researchers have examined candidate test scores and test environment factors. Lawrence, Quist & O'Connell (2009) examined different aspects of the test environment and how these related to test performance on an online sales assessment. The results showed that having others present was significantly related to performance on a cognitive ability measure. Individuals who completed the assessment all at once (instead of starting and stopping)

performed significantly better on a cognitive ability measure. Individuals who scored higher on extraversion, time management, achievement orientation and locus of control were more likely to have scheduled a specific time to take the assessment. Lastly, individuals who scored lower in time management were more likely to report being distracted during the assessment. Sinar and Wasko (2008) gathered perceived environmental suitability from candidates on a variety of factors. Individuals who rated their environment more favorable scored significantly higher on an entry-level sales selection battery than did individuals in lesser quality testing environments. More research is needed in this area to determine exactly how test environment factors affect individual test performance.

Test Environment & Validity

Another key question to be answered with regard to UIT is in relation to test validity. If it is believed that unfavorable testing conditions and/or cheating in unproctored settings could diminish the validity of the assessment that is being used.? Beaty and colleagues recently conducted a meta-analysis to determine if the type of test administration (proctored v. unproctored) resulted in validity differences for the assessment scales (Beaty, Nye, Borneman, Kantrowitz, Drasgow & Grauer, 2011). Their results showed no significant validity differences in biodata and personality measures. Kaminski and Hemingway (2009) of Starwood Hotels showed no validity differences between a proctored and unproctored version of a sales assessment (biodata, personality, situational judgment). Preliminary validity results in a study by Weiner and Morisson (2009) and Cober, Wasko, Smedley & Chan (2008) also showed no considerable differences in validity. The few studies that have investigated this issue show consistency in test validities in proctored and unproctored settings.

Test Environment & Applicant Reactions

As previously mentioned, one of the issues with UIT is the fact that the context in which candidates complete the assessment is not standardized. Little published research has addressed the role that test environment plays and Beaty et al. (2011) discuss the need for future research in this area. Researchers have begun to look into this issue to determine how different aspects of the test environment impact applicant reactions, test performance and test validity.

With regard to applicant reactions, research has shown that candidates find public locations or locations where many other people are present as less favorable (Lawrence et. al.,, 2009, Sinar & Wasko, 2008) and taking the assessment at home is the most favorable location (Cober, Wasko, Medley & Chan, 2008, Mastrangelo, Safran & Haaland, 2008). In a 2008 study, Sinar and Wasko identified test-taking environments of varying levels of environmental suitability. They found that an unproctored environment where the candidate completed the test alone, on a frequently used computer, with a fast internet connection was rated as highest quality test-taking environment. The lowest favorability ratings were for unproctored environments with many people around during the testing. Bauer and colleagues also found that experience with computers acted as a moderator when examining procedural justice perceptions of

unproctored testing (Bauer, Truxillo, Tucker, Weathers, Bertolino, & Erdogan (2006). Weiner and Morrison (2009) discussed two field studies where they focused on candidate perceptions of the testing conditions in proctored and unproctored environments. They found that applicants' rated overall environmental conditions to be more favorable in the unproctored environment. Proctored environments were considered more favorable with regard to workspace. To date, the data suggest that candidates with computer experience respond favorably to unproctored settings; however, they would prefer to be alone with a fast internet connection that would allow them to concentrate without technical difficulties.

Purpose and Expectations

The main purpose of this study is to examine test environment factors and further our understanding of how they affect applicant reactions, test performance, and test validity. This paper builds off of Lawrence et al. (2009) by replicating the analyses with regard to applicant reactions and test performance. We will also look at each applicant reaction question separately to explore how these test environment factors are related to certain reactions (e.g., fairness, opportunity to perform).

This sample also provides us with the opportunity to investigate test validity and determine what, if any, test environment factors act as moderators in the relationship between sales assessment scores and overall job performance. The paucity of published research in this area prevents us from drawing specific hypotheses about how our environmental factors may affect validity. This paper contributes to the test environment literature by using a real world, Latin American, applicant sample to provide additional understanding of unproctored testing conditions and their affect on key practitioner issues.

Method

Participants and Procedure

A sample of 120 applicants for three different sales positions at a large Latin American financial institution was used in this analysis. All individuals were asked to complete an assessment as part of the hiring process; some applicants completed it in a proctored environment and others did not. Demographic data on this sample was not available.

All participants received e-mails with a link to a web-based sales assessment that measured personality characteristics and cognitive ability. They were instructed to complete the assessment as part of the hiring process. The e-mail provided them with instructions on how to access the website, check their computer for software and hardware requirements and who to contact if they experienced technical problems. They were also instructed to choose a quiet location that allowed them to concentrate, and they were informed that the assessment did not have to be completed all at once (meaning it was possible to log out and log back in to complete the assessment). After the assessment was completed an optional survey section was presented. This section asked about their reactions to the assessment and their test environment conditions and experience. Sales performance ratings were collected

approximately a year after individuals were hired.

Measures

The sales assessment used in this study contained six personality scales and a cognitive ability section. The constructs measured and scale reliabilities were: 1) Achievement Orientation (21 items, α=.76); 2) Adaptability (16 items, α=.70); 3) Extroversion (14 items, α =.74); 4) Locus of Control (19 items, α =.61); 5) Positive Affectivity (7 items, α =.54); 6) Time Management (14 items, α =.67). The personality statements were presented with a five point Likert response scale (1=*Strongly Disagree*, 2=*Disagree*, 3=*Neither Agree Nor Disagree*, 4=*Agree*, 5=*Strongly Agree*). The cognitive ability section required individuals to calculate sales percentages and quotas as well as draw conclusions from sales data that were presented. There were 15 total items with a Cronbach's alpha of .55.

The assessment reactions survey used was comprised of eight items which asked individuals to identify their agreement with the statements on a five point Likert scale (1=*Strongly Disagree to* 5=*Strongly Agree*). These items were averaged to create an overall applicant reactions variable (α =.86). This scale was developed by the consulting firm conducting the study and was inspired by published research (e.g., Hausknecht, Day, & Thomas 2004).

The test environment survey was also developed by the consulting firm associated with this study. The questions being asked were chosen based on feedback received from customers and open questions in the UIT literature. The questions were multiple-choice and asked the respondent to report on factors such as location, time of day, number of others present, technical problems, and distractions.

Supervisor performance ratings were gathered for use in a predictive criterion-related validity study. Ratings were collected on all individuals for whom predictor data were available and had been on the job for at least one year. Supervisors were asked to rate employees' performance on factors including Emotional Intelligence, Accountability, Adaptability, Drive, Sales, Analytical Ability, and Commitment. Performance items were rated on a 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) scale and were averaged to form an overall performance composite for use in the validation study.

Results

To examine the conditions under which Latin American applicants completed the assessment, we examined frequencies of the various test environment factors for those who completed the test in a proctored (*N* = 29) and an unproctored environment (*N* = 89). Results are in Table 1. Chi square tests were used to identify whether or not the testing environment factors differed between proctored/unproctored environments. No significant differences were found with regard to ability to focus, completing the assessment in one sitting, experiencing technical difficulties, scheduling a time to take the assessment, or being distracted.

We then investigated the impact that presence/absence of a proctor had on applicant reactions and test performance (using independent samples *t*-tests), as well

as test validity (using moderated multiple regression where supervisor-rated performance was first regressed on test performance and the categorical proctored/unproctored testing environment variable, and then on the product of the two). All analyses examined differences in overall reactions and test performance as well as differences in individual applicant reactions items and test predictor scales.

Results of the *t*-tests showed that those in a proctored environment did perceive the test differently than those that were in an unproctored environment; specifically, those in a proctored environment were more likely to indicate that they had the opportunity to perform and that the assessment was relevant to the sales role (see Table 2). There were also score differences on the Achievement Orientation, Adaptability, Time Management and Cognitive Ability scales. While there were differences at the factor level, there was no impact on the overall predictor score or overall test validity (as indicated by a non-significant delta R^2 with the addition of the interaction term).[1]

Next, we further explored the impact of the specific unproctored test environment conditions on applicant reactions, test performance, and test validity (results are in Tables 3 through 13).[2] Again, ANOVAs and *t* –tests were used to identify differences between the test environment factors, while MMR was used to examine the impact on validity.

There were quite a few instances where test-taking environment impacted applicant perceptions. First, we found that individuals who took the test in their home or business office felt that the content of the assessment was significantly more related to the sales job than individuals that completed the assessment in a public location. No significant differences were found for time of day or for number of people around during the testing. Applicants who indicated that they could have been able to focus better in a different environment and applicants who experienced technical difficulties were more likely to have lower overall applicant reactions. Specifically both groups were significantly lower in their ratings of assessment fairness and desire to work for an employer who used the assessment as a hiring tool. Individuals who completed the assessment all in one sitting rated the relevance of the assessment lower than those who did not. However, applicants who scheduled a specific time to complete the assessment rated the relevance of the assessment more favorably than those who did not. Lastly, applicants who said they were distracted during testing had significantly lower overall applicant reaction scores. They gave significantly lower ratings to items related to their opportunity to perform, overall fairness of the assessment, relevance of the assessment to the job, and desire to work for an employer who uses the assessment as part of the hiring process. Overall, these results suggest that negative experiences in an unproctored environment (specifically, being distracted and experiencing technical difficulties) can

[1] Results of the moderation analyses are not presented as there were no significant interactions.
[2] We retained only the home, public location and business office response options when examining applicant reactions and test score differences between test-taking locations.

affect applicants' perceptions of the test and organization. In some instances, it could affect their willingness to accept a job with the employer. Hiring managers and personnel psychologists who use UIT should pay special attention to ensure that candidates have a positive experience during the UIT process.

Results of the *t*-tests and ANOVAs indicated very few significant differences in test performance across the various test environment conditions (see Tables 11, 12, and 13 for ANOVA results, and Tables 6 though 10 for t-test results). For example, while there were no test score differences between test-taking locations, there were differences with regard to the time of day that the applicant completed the test; that is, significant differences were found for Overall Test Score, Adaptability, and Positive Affectivity such that individuals that took the test in the afternoon and evening consistently received the lowest scores on these variables, while those that took the test in the early morning, morning, and late evening received the highest. Additionally, there were significant differences in Extraversion scores based on how many individuals that were in the room during the assessment; specifically, those with 21+ individuals in the assessment room scored significantly higher than the other groups on Extraversion. Lastly, those that indicated they would have been able to focus if they had been in a different environment scored significantly lower on Time Management than those that did not, while those that scheduled a specific time to take the assessment scored significantly higher on Adaptability, Extraversion, and Cognitive Ability than those that did not schedule a specific time. All other comparisons were non-significant. Lastly, there were no instances where the test environment condition significantly moderated the relationship between predictor and criterion, providing evidence that the validity of the test was preserved across testing conditions.

Discussion

This study took a closer look at unproctored internet testing to better understand what kind of impact the unstandardized nature of the testing environment and increased opportunity for applicant malfeasance has on applicant reactions, test performance, and test validity. Our results were relatively consistent with previous research. Individuals in an unproctored environment did not report significantly different testing conditions than those in a proctored environment. Overall test scores and test validity were not significantly different between the two groups. What did differ was applicant reactions. Individuals in a proctored environment rated the test and selection process more favorably than those in an unproctored environment. Overall, this finding is important for practitioners to keep in mind. The efficiencies of unproctored testing do not appear to have a deleterious effect on test integrity or validity, the trade off may come in how applicants view the process and the organization.

A closer look at each test environment factor also yielded no significant differences in test validity. There were a few noteworthy differences with regard to test performance; individuals who set aside a specific time to complete the assessment scored significantly higher on Adaptability, Extraversion, and Cognitive

Ability. Similar to previous research, individuals who indicated they were distracted or could have focused more in different location during testing had lower perceptions of the test, testing process, and employer. This study found a similar pattern with applicants who experienced technical difficulties. Future research should identify what those distractions were, or if there are certain types of individuals that are more "distracted" than others. All in all, the results of this research suggest that unproctored testing environments in a real world sample has little impact on applicant test scores or test validity, but it can lead to less favorable reactions from some applicants with regard to the relevancy of the assessment and the selection process.

Limitations

As with most real world samples, there are some limitations that could impact the generalizability of these results. The data collected were from a predictive validation study where the assessment was used as decision making tool in the hiring process. This adds a level of range restriction to the sample that can reduce the ability to detect some differences. Additionally, the sample size was relatively small, especially when the proctored applicants were filtered from the data set. As such, the power needed to find moderator differences through an MMR may have been limited. We encourage researchers to continue to investigate the role that test environment plays in unproctored settings. UIT is an inevitable truth within our discipline and as practitioners it is important that we understand the consequences and learn how to mitigate the negative effects.

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Table 1. Frequencies of Test Environment Factors

	Proctored		Unproctored	
	N	*%*	*N*	*%*
Where were you when you completed this assessment?				
Home	0	0.00	27	30.34
Public	9	31.03	25	28.09
Business office	15	51.72	30	33.71
Testing Center	5	17.24	1	1.12
Other	0	0.00	6	6.74
Approximately, what time of day did you take the assessment?				
Early morning (12am to 5am)	0	0.00	4	4.49
Morning (5am to 12pm)	18	62.07	16	17.98
Afternoon (12pm to 5pm)	8	27.59	37	41.57
Evening (4pm to 9pm)	3	10.34	20	22.47
Late Evening (9pm to 12am)	0	0.00	12	13.48
Approximately, how many other people were around when you were taking the assessment?				
0	2	6.90	44	49.44
1 to 5	7	24.14	21	23.60
6 to 10	10	34.48	9	10.11
11 to 20	8	27.59	12	13.48
21+	2	6.90	3	3.37
Do you feel that you would have been able to focus on the assessment more if you had been in a different environment or location?				
Yes	10	34.48	39	43.82
No	19	65.52	50	56.18
Did you complete this assessment all at once (i.e., did not log out and log back in later to complete it)?				
Yes	20	68.97	52	58.43
No	9	31.03	37	41.57
Did you experience any technical problems while completing this assessment?				
Yes	7	24.14	30	33.71
No	22	75.86	59	66.29
Did you schedule a specific time to take this assessment?				
Yes	19	65.52	60	67.42
No	10	34.48	29	32.58
Were you distracted while taking this assessment?				
Yes	9	31.03	41	46.07
No	20	68.97	48	53.93

Note. N = 29 applicants in the proctored condition and 89 applicants in the unproctored condition.

Table 2. Proctored/Unproctored Differences in Applicant Reactions and Test Scores

	Proctored		Unproctored			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	4.11	0.53	3.88	0.66	1.70	0.09
This assessment allowed me to show my skills and abilities.	4.24	0.69	3.84	0.96	2.08	0.04
Overall, I thought the assessment was fair.	3.90	0.77	3.80	0.85	0.57	0.57
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.28	0.65	4.11	0.90	0.91	0.37
Applicants who do well on this assessment will probably do well in sales role.	4.10	0.72	3.49	1.05	3.50	0.00
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	4.18	0.61	3.63	1.06	3.40	0.00
I think I performed well on this assessment.	3.93	0.75	4.06	0.75	-0.78	0.44
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.24	0.58	4.21	0.89	0.20	0.85
I would want to work for an employer who used this assessment as a hiring tool.	4.07	0.75	3.93	1.00	0.78	0.43
	Proctored		Unproctored			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.32	1.33	5.78	1.24	-1.62	0.11
Achievement Orientation	5.34	1.99	6.38	1.87	-2.56	0.01
Adaptability	5.55	1.24	6.15	1.89	-1.95	0.06
Positive Affectivity	5.62	1.78	5.83	1.93	0.65	0.60
Extraversion	5.93	1.75	5.75	1.83	0.46	0.65
Locus of Control	5.62	2.04	6.07	1.86	-1.10	0.28
Time Management	5.10	1.52	5.81	1.79	-1.91	0.06
Cognitive Ability	3.48	1.24	4.30	2.01	-2.61	0.01

Note. N = 29 proctored candidates; *N* = 87-89 unproctored candidates.

Table 3. Differences in Applicant Reactions between Test-Taking Locations

	Home		Public		Business Office		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Applicant Reactions - Overall mean	3.88	0.57	3.98	0.53	3.72	0.81	3.85	0.66
This assessment allowed me to show my skills and abilities.	3.74	0.94	4.04	0.89	3.61	1.07	3.79	0.98
Overall, I thought the assessment was fair.	3.89	0.75	3.68	0.80	3.69	0.97	3.75	0.84
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	*4.00*	*0.68*	*4.44*	*0.71*	*3.93*	*1.11*	*4.11*	*0.89*
Applicants who do well on this assessment will probably do well in sales role.	3.48	0.98	3.60	0.82	3.34	1.26	3.47	1.04
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.70	0.99	3.80	0.96	3.34	1.14	3.60	1.04
I think I performed well on this assessment.	4.00	0.68	4.04	0.68	3.93	0.84	3.99	0.73
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.31	0.62	4.04	1.06	4.14	0.99	4.16	0.91
I would want to work for an employer who used this assessment as a hiring tool.	3.93	1.14	4.16	0.85	3.66	1.01	3.90	1.02

Note. N = 27 for Home locations; *N* = 24 - 25 for Public locations; *N* = 25 -30 for Business Office. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 4. Differences in Applicant Reactions between Test-Taking Times

	Early Morning		Morning		Afternoon	
	M	*SD*	*M*	*SD*	*M*	*SD*
Applicant Reactions - Overall mean	3.84	0.41	4.14	0.58	3.79	0.62
This assessment allowed me to show my skills and abilities.	*3.25*	*0.96*	*4.38*	*0.62*	*3.57*	*1.12*
Overall, I thought the assessment was fair.	3.75	0.50	4.25	0.68	3.58	0.77
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	3.75	0.50	4.19	1.11	4.16	0.76
Applicants who do well on this assessment will probably do well in sales role.	3.75	0.50	3.63	0.81	3.25	1.08
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	*4.00*	*0.00*	*3.81*	*1.05*	*3.64*	*0.99*
I think I performed well on this assessment.	3.75	0.50	4.25	0.58	4.00	0.59
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.50	0.58	4.50	0.63	4.14	0.99
I would want to work for an employer who used this assessment as a hiring tool.	4.00	1.15	4.13	1.02	3.94	1.01

Note. N = 4 for early morning, 14-16 for morning, 34-37 for afternoon, 19-20 evening, 11-12 for Late Evening. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 4. Differences in Applicant Reactions between Test-Taking Times (continued)

	Evening		Late Evening		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Applicant Reactions - Overall mean	3.72	0.85	4.11	0.50	3.88	0.66
This assessment allowed me to show my skills and abilities.	*3.80*	*0.89*	*4.17*	*0.58*	*3.84*	*0.96*
Overall, I thought the assessment was fair.	3.85	1.04	3.75	0.87	3.80	0.85
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.05	1.10	4.08	0.79	4.11	0.90
Applicants who do well on this assessment will probably do well in sales role.	3.40	1.31	4.08	0.67	3.49	1.05
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	*3.05*	*1.23*	*4.17*	*0.83*	*3.63*	*1.06*
I think I performed well on this assessment.	3.95	1.10	4.25	0.75	4.06	0.75
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.05	1.10	4.18	0.40	4.21	0.89
I would want to work for an employer who used this assessment as a hiring tool.	3.60	0.94	4.17	1.03	3.93	1.00

Note. N = 4 for early morning, 14-16 for morning, 34-37 for afternoon, 19-20 evening, 11-12 for Late Evening. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 5. Differences in Applicant Reactions

	0		1 to 5		6 to 10	
	M	*SD*	*M*	*SD*	*M*	*SD*
Applicant Reactions - Overall mean	3.89	0.70	3.92	0.59	3.85	0.77
This assessment allowed me to show my skills and abilities.	3.95	0.87	3.70	0.80	3.44	1.33
Overall, I thought the assessment was fair.	3.88	0.85	3.86	0.79	3.67	1.00
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.14	0.90	4.10	0.89	4.33	0.50
Applicants who do well on this assessment will probably do well in sales role.	3.47	1.08	3.43	1.12	3.78	0.67
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.51	1.12	3.81	0.93	3.44	1.42
I think I performed well on this assessment.	3.95	0.82	4.10	0.70	4.11	0.78
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.21	0.95	4.38	0.59	4.11	0.93
I would want to work for an employer who used this assessment as a hiring tool.	3.98	1.06	3.95	0.86	3.89	1.05

Note. N = 42-43 for 0, 21 for 11 to 5 people, 9 for 6 to 10 people, 12 for 11 to 20 people, 3 for 21+ people. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 5. Differences in Applicant Reactions (continued)

	11 to 20		21+		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Applicant Reactions - Overall mean	3.84	0.58	3.83	0.88	3.88	0.66
This assessment allowed me to show my skills and abilities.	3.83	1.27	4.33	0.58	3.84	0.96
Overall, I thought the assessment was fair.	3.75	0.62	2.67	1.15	3.80	0.85
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	3.83	1.19	4.33	0.58	4.11	0.90
Applicants who do well on this assessment will probably do well in sales role.	3.17	1.03	4.67	0.58	3.49	1.05
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.83	0.72	3.67	1.53	3.63	1.06
I think I performed well on this assessment.	4.42	0.51	3.67	0.58	4.06	0.75
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.08	1.00	3.67	1.53	4.21	0.89
I would want to work for an employer who used this assessment as a hiring tool.	3.83	1.03	3.67	1.53	3.93	1.00

Note. N = 42-43 for 0, 21 for 11 to 5 people, 9 for 6 to 10 people, 12 for 11 to 20 people, 3 for 21+ people. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 6. Reaction and Test Score Differences to, "Do you feel that you would have been able to focus on the assessment more if you had been in a different environment or location?"

	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	3.74	0.54	4.00	0.73	-1.89	0.06
This assessment allowed me to show my skills and abilities.	3.66	1.10	3.98	0.83	-1.51	0.14
Overall, I thought the assessment was fair.	3.59	0.75	3.96	0.89	-2.07	0.04
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.00	0.89	4.20	0.90	-1.04	0.30
Applicants who do well on this assessment will probably do well in sales role.	3.31	1.08	3.63	1.01	-1.45	0.15
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.56	0.94	3.67	1.16	-0.48	0.64
I think I performed well on this assessment.	3.97	0.58	4.12	0.86	-0.96	0.34
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.08	0.87	4.31	0.90	-1.23	0.22
I would want to work for an employer who used this assessment as a hiring tool.	3.72	0.89	4.10	1.07	-1.81	0.07
	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.68	1.25	5.83	1.25		
Achievement Orientation	6.46	2.10	6.32	1.70		
Adaptability	5.85	1.97	6.38	1.81		
Positive Affectivity	5.56	1.87	6.04	1.96		
Extraversion	5.72	1.90	5.78	1.79		
Locus of Control	5.72	1.96	6.34	1.75		
Time Management	5.44	1.76	6.10	1.78	-1.78	0.08
Cognitive Ability	4.31	2.18	4.30	1.90		

Note. N = 36-39 for Yes; N = 46-50 for No. For test score differences, only significant t-test results are shown (p <.10).

Table 7. Applicant Reactions and Test Score Differences to, "Did you complete this assessment all at once (i.e., did not log out and log back in later to complete it)?"

	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	3.81	0.64	3.99	0.68	-1.30	0.19
This assessment allowed me to show my skills and abilities.	3.80	0.83	3.89	1.14	-0.38	0.69
Overall, I thought the assessment was fair.	3.75	0.84	3.86	0.87	-0.60	0.55
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.08	0.74	4.16	1.09	-0.41	0.66
Applicants who do well on this assessment will probably do well in sales role.	3.33	1.06	3.72	1.00	-1.76	0.08
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.46	1.11	3.86	0.96	-1.75	0.08
I think I performed well on this assessment.	4.04	0.77	4.08	0.73	-0.28	0.78
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.14	0.94	4.31	0.82	-0.87	0.39
I would want to work for an employer who used this assessment as a hiring tool.	3.85	1.06	4.06	0.92	-0.96	0.34
	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.66	1.25	5.90	1.24		
Achievement Orientation	6.12	2.00	6.76	1.64		
Positive Affectivity	5.71	2.02	6.00	1.80		
Extraversion	5.94	1.73	5.49	1.95		
Time Management	5.60	1.74	6.11	1.84		
Cognitive Ability	4.23	2.14	4.41	1.85		

Note. N = 46-52 for Yes; N = 36-37 for No. For test score differences, only significant t-test results are shown (p <.10).

Table 8. Applicant Reactions and Test Score Differences to, "Did you experience any technical problems while completing this assessment? "

	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	3.70	0.51	3.98	0.71	-1.91	0.06
This assessment allowed me to show my skills and abilities.	3.67	0.99	3.93	0.94	-1.22	0.23
Overall, I thought the assessment was fair.	3.53	0.78	3.93	0.86	-2.13	0.04
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	3.90	0.99	4.22	0.83	-1.61	0.11
Applicants who do well on this assessment will probably do well in sales role.	3.33	0.99	3.57	1.08	-1.00	0.32
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.43	0.94	3.72	1.12	-1.22	0.23
I think I performed well on this assessment.	4.00	0.69	4.09	0.78	-0.51	0.61
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.10	0.80	4.26	0.94	-0.81	0.42
I would want to work for an employer who used this assessment as a hiring tool.	3.63	0.93	4.09	1.01	-2.04	0.04
	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.68	1.45	5.81	1.13		
Achievement Orientation	6.13	1.94	6.51	1.84		
Adaptability	6.13	1.81	6.15	1.94		
Positive Affectivity	5.70	2.07	5.90	1.86		
Extraversion	5.70	1.82	5.78	1.85		
Locus of Control	5.70	2.12	6.25	1.70		
Time Management	5.93	1.74	5.75	1.83		
Cognitive Ability	4.20	2.22	4.36	1.92		

N = 28 – 30 for Yes; *N* = 54 -59 for No. For test score differences, only significant t-test results are shown (*p* <.10).

Table 9. Applicant Reactions and Test Score Differences for "Did you schedule a specific time to take this assessment?"

	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	3.92	0.67	3.81	0.64	0.69	0.49
This assessment allowed me to show my skills and abilities.	3.97	0.76	3.57	1.26	1.53	0.14
Overall, I thought the assessment was fair.	3.83	0.93	3.72	0.65	0.62	0.54
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.03	0.97	4.28	0.70	-1.12	0.23
Applicants who do well on this assessment will probably do well in sales role.	3.64	1.00	3.17	1.10	2.01	0.05
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.63	1.05	3.62	1.12	0.03	0.98
I think I performed well on this assessment.	4.14	0.80	3.90	0.62	1.42	0.16
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.10	1.00	4.41	0.57	-1.54	0.13
I would want to work for an employer who used this assessment as a hiring tool.	3.98	1.01	3.83	1.00	0.68	0.50
	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.89	1.18	5.50	1.35		
Achievement Orientation	6.43	1.70	6.28	2.22		
Adaptability	6.48	1.79	5.45	1.92	2.49	0.01
Positive Affectivity	6.03	1.81	5.41	2.11		
Extraversion	6.02	1.72	5.21	1.95	1.99	0.05
Locus of Control	6.10	1.81	6.00	1.98		
Time Management	5.87	1.67	5.69	2.04		
Cognitive Ability	4.58	1.90	3.72	2.15	1.92	0.06

Note. N = 37 and 41; N = 45 and 48. For test score differences, only significant t-test results are shown (*p* <.10).

Table 10. Applicant Reactions and Test Score Differences for, "Were you distracted while taking this assessment?"

	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Applicant Reactions - Overall mean	3.69	0.63	4.05	0.65	-2.59	0.01
This assessment allowed me to show my skills and abilities.	3.50	1.11	4.13	0.71	-3.08	0.00
Overall, I thought the assessment was fair.	3.59	0.77	3.98	0.87	-2.22	0.03
I felt the content of the assessment was, to the best of my knowledge, relevant to sales jobs.	4.02	0.94	4.19	0.87	-0.85	0.40
Applicants who do well on this assessment will probably do well in sales role.	3.37	1.18	3.60	0.92	-1.02	0.31
Employers who choose to use this assessment in the hiring process are likely to end up hiring good sales people.	3.34	1.15	3.87	0.92	-2.40	0.02
I think I performed well on this assessment.	4.00	0.67	4.11	0.81	-0.66	0.51
This assessment provided a positive first impression of the company's commitment to hiring the best employees.	4.08	0.89	4.32	0.89	-1.23	0.21
I would want to work for an employer who used this assessment as a hiring tool.	3.63	0.99	4.19	0.95	-2.69	0.01
	Yes		No			
	M	*SD*	*M*	*SD*	*t*	*p*
Overall Test Score	5.79	1.39	5.75	1.12		
Achievement Orientation	6.29	2.04	6.46	1.74		
Adaptability	5.90	2.13	6.35	1.64		
Positive Affectivity	5.85	2.16	5.81	1.72		
Extraversion	6.05	2.05	5.50	1.60		
Locus of Control	5.88	1.95	6.23	1.78		
Time Management	5.83	1.94	5.79	1.68		
Cognitive Ability	4.44	2.21	4.19	1.84		

Note. N = 37 and 41; N = 45 and 48. For test score differences, only significant t-test results are shown (p <.10).

Table 11. Differences in Test Scores between Test-Taking Locations

	Home		Public		Business Office		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Overall Test Score	5.80	1.17	5.44	1.51	6.09	1.09	5.78	1.27
Achievement Orientation	6.26	1.63	6.36	2.10	6.47	2.06	6.37	1.92
Adaptability	6.33	1.47	5.92	2.10	6.27	2.10	6.18	1.90
Positive Affectivity	6.04	1.99	5.56	1.76	5.87	2.16	5.83	1.97
Extraversion	5.59	1.74	5.56	2.08	6.17	1.78	5.79	1.86
Locus of Control	6.15	1.79	5.76	1.76	5.87	1.94	5.93	1.82
Time Management	6.07	1.57	5.60	1.68	5.90	2.01	5.87	1.76
Cognitive Ability	4.30	2.07	4.08	1.96	4.53	2.16	4.32	2.05

Note. N = 27 for Home locations; N = 24 - 25 for Public locations; N = 25 -30 for Business Office. Items in italics indicate that results of the ANOVA were significant at $p < .10$.

Table 12. Differences in Test Scores between Test-Taking Times

	Early Morning		Morning		Afternoon			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Overall Test Score	6.17	1.39	6.24	1.07	5.33	1.20	2.49	0.05
Achievement Orientation	6.50	1.29	7.19	1.47	6.03	2.14	1.14	0.34
Adaptability	6.50	2.08	6.94	1.84	5.57	1.80	2.24	0.07
Positive Affectivity	6.75	2.06	6.69	1.82	5.49	1.79	2.15	0.08
Extraversion	5.75	2.06	5.88	1.78	5.35	1.98	0.85	0.50
Locus of Control	6.00	0.82	6.63	1.63	5.68	1.92	1.35	0.26
Time Management	6.50	1.73	6.06	2.08	5.51	1.61	0.75	0.56
Cognitive Ability	4.75	2.87	4.44	1.21	4.00	2.20	0.38	0.82

	Evening		Late Evening		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Overall Test Score	5.77	1.23	6.37	1.22	5.77	1.24
Achievement Orientation	6.25	1.71	6.58	1.78	6.38	1.87
Adaptability	6.05	2.11	6.92	1.24	6.15	1.89
Positive Affectivity	5.25	2.22	6.42	1.51	5.83	1.93
Extraversion	6.20	1.61	6.08	1.73	5.75	1.83
Locus of Control	5.90	1.89	6.83	1.99	6.07	1.86
Time Management	5.70	1.84	6.33	1.92	5.81	1.79
Cognitive Ability	4.60	2.01	4.42	2.19	4.30	2.01

Note. N = 4 for early morning, 14-16 for morning, 34-37 for afternoon, 19-20 evening, 11-12 for Late Evening.

Table 13. Differences in Test Scores between Number of Individuals in the Assessment Room.

	0		1 to 5		6 to 10	
	M	*SD*	*M*	*SD*	*M*	*SD*
Overall Test Score	5.77	1.16	5.60	1.23	5.83	1.23
Achievement Orientation	6.30	1.87	5.86	1.77	7.00	2.50
Adaptability	6.41	1.83	5.62	1.80	6.44	1.51
Positive Affectivity	5.95	1.98	5.57	2.11	5.78	1.20
Extraversion	*5.75*	*1.62*	*4.81*	*1.66*	*6.44*	*1.74*
Locus of Control	6.09	1.88	5.90	2.00	6.22	2.17
Time Management	5.77	1.67	6.00	2.14	5.22	1.48
Cognitive Ability	4.43	2.06	4.19	2.18	3.78	2.54
	11 to 20		21+		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Overall Test Score	5.65	1.67	6.85	1.16	5.77	1.24
Achievement Orientation	6.83	1.47	7.67	1.53	6.38	1.87
Adaptability	5.50	2.32	7.67	1.53	6.15	1.89
Positive Affectivity	5.67	2.19	6.67	0.58	5.83	1.93
Extraversion	*6.50*	*2.39*	*7.33*	*1.15*	*5.75*	*1.83*
Locus of Control	6.00	1.71	6.67	0.58	6.07	1.86
Time Management	5.75	1.96	7.00	1.00	5.81	1.79
Cognitive Ability	4.17	1.19	5.33	1.53	4.30	2.01

Note. N = 42-43 for 0, 21 for 11 to 5 people, 9 for 6 to 10 people, 12 for 11 to 20 people, 3 for 21+ people. Items in italics indicate that results of the ANOVA were significant at $p < .10$.