

## RESEARCH REPORT

# Are Applicants More Likely to Quit Longer Assessments? Examining the Effect of Assessment Length on Applicant Attrition Behavior

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Conventional wisdom suggests that assessment length is positively related to the rate at which applicants opt out of the assessment phase. However, restricting assessment length can negatively impact the utility of a selection system by reducing the reliability of its construct scores and constraining coverage of the relevant criterion domain. Given the costly nature of these tradeoffs, is it better for managers to prioritize (a) shortening assessments to reduce applicant attrition rates or (b) ensuring optimal reliability and validity of their assessment scores? In the present study, we use data from 222,772 job-seekers nested within 69 selection systems to challenge the popular notion that selection system length predicts applicant attrition behavior. Specifically, we argue that the majority of applicant attrition occurs very early in the assessment phase and that attrition risk decreases, not increases, as a function of time spent in assessment. Our findings supported these predictions, revealing that the majority of applicants who quit assessments did so within the first 20 min of the assessment phase. Consequently, selection system length did not predict rates of applicant attrition. In fact, when controlling for observed system length and various job characteristics, we found that systems providing more conservative (i.e., longer) estimates of assessment length produced lower overall attrition rates. Collectively, these findings suggest that efforts to curtail applicant attrition by shortening assessment length may be misguided.

*Keywords:* applicant attrition, assessment design, selection, self-selection

Technology has revolutionized recruitment and selection practices for both the applicant and the organization. A major force driving these changes is the emergence of the Internet as the primary vehicle of modern recruitment and selection (Anderson, 2003). Innovations such as “one-click” applications that automatically link applicant profiles to open positions, career-oriented social-media platforms such as LinkedIn, and remote, online delivery of high-stakes assessments have fundamentally altered the process of applying for a job (Chapman & Webster, 2003; Feldman & Klaas, 2002; Skeels & Grudin, 2009). As a result, many job-seekers have come to expect short, streamlined, effortless application options. In fact, recent surveys indicate that modern job-seekers expect the entire online job application process to take less than 15 min, with 47% reporting that they would outright quit an application they felt was “too lengthy or complicated” (Jibe, 2014; SevenStepRPO, 2013). This is a legitimate cause for concern, as the consequences of adverse applicant withdrawal include reductions in the utility of the selection system and an increased risk of adverse impact (Schmit & Ryan, 1997).

Organizations are reacting to these changes in applicant expectations by pushing for shorter and shorter assessments, citing concerns that they will miss out on applicants that fail to complete longer assessments (Jarrett, 2016; Ryan & Huth, 2008). In response, a cottage industry of firms that specialize in providing extremely short job application options has emerged in recent years (e.g., Smart Recruiters, Criteria, Gild, HireRight, Jibe, etc.), equipped with promises to increase staffing efficiency through the use of shorter, less time-intensive application protocols. A rule of thumb that is often repeated in these circles is that preemployment testing should take no longer than 20 to 30 min (Criteria, 2016; Handler, 2011; Moran, 2016; Sandberg, 2014) and that initial rounds of testing in particular should be subject to “strict time limits” (Handler, 2011). These recommendations are based on anecdotal claims that “assessment experiences are longer than they should be” (Handler, 2011) and that “candidates complete tests much less frequently” when test length “exceeds 40 minutes” (Criteria, 2016).

Although there are many good arguments for why organizations should seek to reduce the overall burden placed upon their applicants, there are critical tradeoffs to consider when attempting to do so by constraining the length of the assessment phase (Ryan & Huth, 2008). For instance, shortening an assessment can reduce the reliability of its scores (Cortina, 1993). Similarly, decisions to remove longer assessments from the selection battery altogether make it more difficult to ensure appropriate coverage of the relevant criterion domain (Messick, 1995). Given the costly nature

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of these tradeoffs, what should hiring managers prioritize—(a) reducing applicant attrition rates or (b) ensuring optimal reliability and validity of their assessment scores? **At present, it is surprisingly difficult to provide evidence-based recommendations for addressing concerns pertaining to selection system length because the available evidence on this topic is almost entirely anecdotal** (Ryan & Huth, 2008). In light of this critical gap in our collective knowledge, empirical research devoted to systematically investigating the link between applicant behavior and assessment format is greatly needed.

Toward this end, the purpose of the present study is to develop a better understanding of the effects of preemployment assessment length on applicant attrition during the assessment phase. Specifically, we argue that there is reason to believe the presumed relationship between assessment length and applicant attrition behavior has been overstated and that **attempts to retain applicants through the use of shorter assessments may be misguided**. In this regard, the current effort moves beyond the traditional emphasis within this literature on applicant reactions alone—an approach that has been criticized for lacking the practical implications necessary for application by hiring managers (Hülshager & Anderson, 2009; Ryan & Huth, 2008).

### **Competing Models of Change in Applicant Attrition Risk During the Assessment Phase**

The prevailing characterization of the typical applicant is not very favorable. Hiring managers tend to consider job-seekers to be an impatient, distractible, and demanding bunch—a description often supported by self-reports of job-seekers themselves (Jibe, 2014; SevenStepRPO, 2013). In the applicant reactions literature, it has been argued that job-seekers who do not like an organization's personnel policies will simply go "job shopping" somewhere else (p. 50; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993) and empirical research has shown that job pursuit intentions are heavily influenced by an organization's recruitment and selection practices (Harris & Fink, 1987; Hausknecht, Day, & Thomas, 2004; Powell, 1991). The threat of losing high-quality applicants is one that should not be ignored, because even the most expensive, well-designed selection system cannot function properly without a sufficiently robust pool of applicants from which to select (Schmit & Ryan, 1997; Taylor & Russell, 1939).

As discussed above, many organizations are responding to this threat by moving to reduce the overall length of the assessment phase within the selection process (Jarrett, 2016; Ryan & Huth, 2008). However, potential gains in system utility from a greater number of applicants retained in the selection process come at the cost of reductions in system reliability and validity associated with the use of shorter assessments (Cortina, 1993; Messick, 1995). The close relationship between system validity and utility is generally well understood (Schmidt & Hunter, 1998). Therefore, to justify a shift toward shorter assessments, it is important to demonstrate that losses in utility resulting from reduced reliability and validity are sufficiently offset by gains in utility from retaining a larger applicant pool. Unfortunately, little empirical research is available that can speak to the effect of system length on applicant attrition rates.

In this paper, **we argue that the key to understanding the effect of assessment length on applicant attrition is identifying when attrition is most likely to occur**. If attrition behavior is concentrated

later in the assessment phase, decisions to shorten selection systems will have a strong effect on system attrition rates. On the other hand, if attrition behavior is concentrated early in the assessment phase, the effect will be much weaker. To illustrate this point, consider the relative implications of the three different theoretical models shown in Figure 1 representing competing predictions for patterns of change in applicant attrition risk as a function of time spent in the assessment. In this figure, conditional risk of attrition refers to the probability that an applicant will quit the assessment at a given point in time. Cumulative risk of attrition refers to the probability that an applicant will quit the assessment at any point preceding a given point in time. In each of these models, it is only the distribution of attrition risk over the course of the assessment that varies. The total amount of attrition risk is held constant.

In the increasing risk model (Figure 1 left), attrition risk is expected to increase as a function of time in assessment, resulting in a concentration of attrition behavior later in the assessment phase. This model is consistent with the idea that time spent applying for a position incurs a form of opportunity cost to the applicant, because it is time that cannot be spent applying for other positions or doing other, more enjoyable tasks (Lippman & McCall, 1976). Because time is limited, the increasing risk model predicts that job-seekers will become increasingly likely to quit an assessment as costs associated with the assessment (e.g., time and energy spent answering questionnaires) begin to surpass its potential benefits (e.g., receiving consideration for the position). This logic is particularly relevant for highly confident and competitive applicants that are pursuing multiple job opportunities simultaneously (Kanfer, Wanberg, & Kantrowitz, 2001). If true, the increasing risk model implies that longer assessments will produce higher rates of applicant attrition than shorter assessments because shorter assessments end before applicants are exposed to the bulk of the total attrition risk. A conservative alternative to this is the uniform risk model (Figure 1 center) in which attrition risk is argued to remain stable throughout the assessment phase. Although risk in this model is less back-loaded than in the increasing risk model, its conclusions remain the same. That is, like the increasing risk model, the uniform risk model also tends to favor shorter assessments in terms of expected attrition rates, albeit to a lesser degree. This is because longer assessments provide a greater number of opportunities for applicants to quit than shorter assessments, even when attrition risk is stable.

The predictions of these two models suggest that there is theoretical merit to the notion that decisions to shorten assessments increase the utility of a selection system by enabling organizations to retain a greater proportion of their overall applicant pool. At first glance, this idea appears to be substantiated by research showing that time lags between initial application and subsequent selection procedures is positively related to decisions to withdraw from the overall selection process (Arvey, Gordon, Massengill, & Mussio, 1975; Rynes, 1989). However, attempting to generalize findings reported within the context of the entire selection process (which can take days, weeks, or months to complete) to applicant behavior within the narrower context of the assessment phase (which often takes less than an hour) is potentially problematic.

On this point, **we argue that there is good reason to expect that the magnitude of the effect of system length on applicant attrition behavior has been overstated**. Specifically, **we propose that the decreasing risk model (Figure 1 right) represents the most accurate**

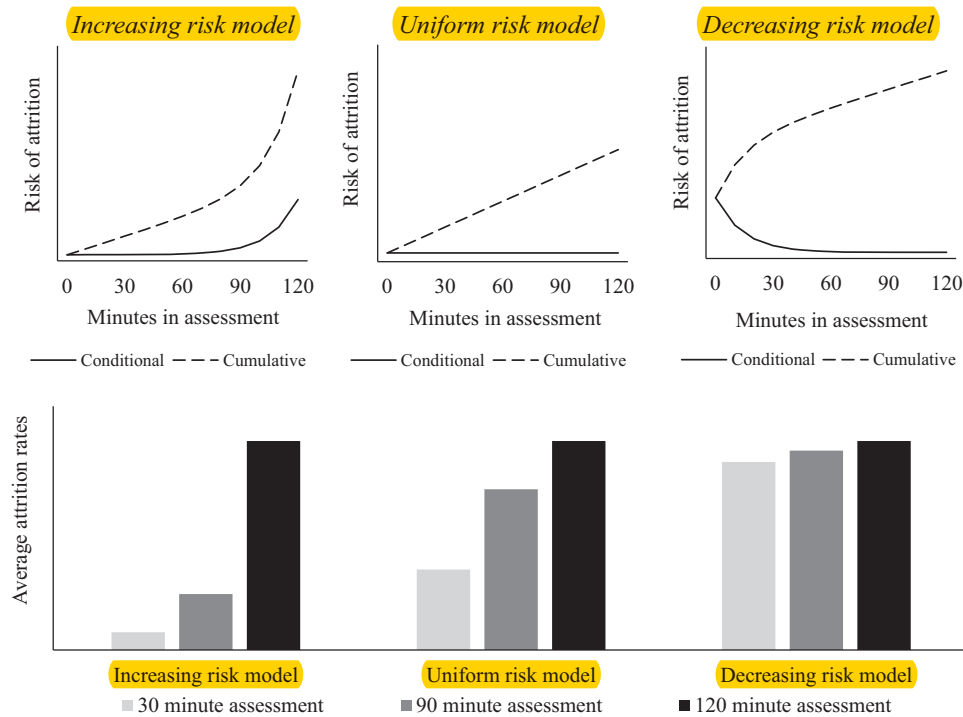


Figure 1. Competing theoretical models of the pattern of change in applicant attrition risk as a function of time spent in assessment. **Conditional risk** refers to the chance applicants will quit the assessment at each respective minute. **Cumulative risk** refers to the collective chance applicants will quit the assessment at any point prior to each respective minute.

description of changes in applicant attrition risk as a function of time spent in assessment. According to the decreasing risk model, attrition risk is (a) highest in the moments immediately following the start of the assessment and (b) rapidly decreases as a function of time spent in assessment. If true, the decreasing risk model implies that differences between longer and shorter assessments in system attrition rates will be minimal, because the bulk of attrition risk is concentrated before applicants have completed any meaningful proportion of the assessment.

There are a number of theories of human behavior that support the viability of the decreasing risk model. For example, research on escalation of commitment and self-justification theory has shown that people are motivated to seek information and pursue courses of action that validate their prior decisions (Staw, 1981). When applied to the decision to continue or withdrawal from an assessment, self-justification theory would predict that applicants in later stages of the assessment phase will be more motivated to continue completing the assessment to justify their earlier decision to begin the application. In addition, applicants who have progressed deeper into the assessment phase will feel that they have more to lose by withdrawing from the assessment than other applicants who have only just begun. This is consistent with a decreasing risk model, in that the majority of attrition can be expected to occur very early in the assessment phase when job-search commitments are weak compared to later when commitments are more entrenched. Building upon this point, there is additional research that suggests motivation increases as people move closer to goal attainment, particularly when they are focused

on their aspirations and the potential gains of a given outcome (Förster, Higgins, & Idson, 1998). This “goal looms larger” effect suggest that participants will be motivated to work harder to complete a battery of assessments as the completion of their application draws nearer, and will be most likely to withdraw early in assessment when this motivational force is weakest.

In summary, we argue that design decisions based on the increasing or uniform risk models overlook the simple reality that job-seekers are formally expressing their interest in the position by initiating the application process and progressing into the assessment phase in the first place. Given this interest, we believe that the majority of job seekers are more motivated by the opportunity to submit a competitive application than in finding the quickest way to complete a somewhat undesirable task, particularly if the job has characteristics they perceive to be desirable (e.g., a reputable organization, good pay, high levels of visibility and prestige, etc.) In fact, longer assessments may even appeal to higher quality applicants, because longer assessments (a) offer more opportunities for applicants to perform (Ryan & Ployhart, 2000) and (b) signal that the organization is “serious” about their application (Rafaeli, 1999). Based on the collective rationale provided above, we hypothesize that the decreasing risk model most closely represents actual changes in applicant attrition risk as a function of time in assessment. Consequently, we expect that selection system length will not predict applicant attrition rates.

**Hypothesis:** Risk of attrition will decrease as a function of time spent in assessment.

**Method**

Our predictions for the relationship between assessment length and applicant attrition behavior speak to both (a) changes in the pattern of attrition risk as a function of time in assessment at the individual level and (b) implications of these changes for the relationship between system length and attrition rates at the system level. Therefore, to test these predictions, we started by using survival analysis in a large sample of job-seekers to examine changes in attrition risk as a function of the time applicants spent in assessment. We then considered the implications of this pattern of effects at the system level of analysis using logistic hierarchical linear modeling in which applicants were nested within their respective systems.

In addition, there is a possibility that differences in industry, job characteristics, and system content serve as boundary conditions for any observed trajectories and effects. Accordingly, as an additional consideration, we examined the extent to which the present findings generalized across a wide range of job-seekers operating within the context of a variety of different types of industries, jobs, and selection systems.

**Data and Sample**

To test our predictions, we used a large, multisystem, multi-organization dataset of 222,772 job-seekers that began a preemployment assessment in one of 69 different selections systems between January 2015 and April 2015 (the dataset was determined to be exempt from further review by the institutional review board [IRB] of Oregon State University [7718: Selection System Length and Applicant Attrition]). This sample included job-seekers applying for a variety of different types of positions in 29 different organizations across 14 industries. Table 1 provides additional details on the sample's characteristics.

The selection systems in the present sample were presented in an interactive and engaging format customized by the vendor to meet the needs of the client organization. To take the assessments, applicants logged on to an online testing site. The selection system delivery software then tracked the total amount of time applicants spent taking the assessments and recorded a completion date and time when they finished. All applicants in

this sample started an assessment between January and April of 2015, but some may have completed it days, weeks, or even months later. Therefore, we waited 6 months past the end of our initial data collection window before examining the data to ensure applicants that intended to complete the assessments had sufficient opportunity to do so. All systems consisted of a realistic job preview followed by three to eight individual assessments, ( $M = 5.59, SD = 1.14$ ). All 69 systems in our sample included a work styles inventory (similar to a personality test) and a situational judgment test customized for the specific position. All but three also included a work history (i.e., biodata) inventory. Eighty-seven percent of systems included assessments targeting various forms of cognitive ability. In addition, 39% of systems included assessments targeting person-organization fit and 45% included assessments targeting various forms of job knowledge and skill (e.g., typing ability, knowledge of medical standard operating procedures, technical knowledge, etc.).

**Measures**

**Time in assessment.** Time in assessment was operationalized in two different ways: (a) the raw cumulative number of minutes applicants had spent in the assessment at the time of either completion or attrition and (b) the proportion of minutes spent in the assessment at the time of completion or attrition relative to the estimated assessment length quoted to each applicant at the onset of the assessment, represented as a percentage using the formula below:

$$\frac{\text{Total time spent in assessment (mins)}}{\text{Estimated assessment length (mins)}} \times 100$$

This second operationalization allowed us to determine at what point within the assessments applicants were quitting, normalized across systems of varying lengths. Time in assessment included the total amount of time applicants were logged into the assessment, including time spent receiving instructions. In cases where applicants exited the selection system and returned to complete them at a later date, only the time applicants spent within the selection

**Table 1**  
*Sample Characteristics*

Industry	Organizations		Systems		Applicants	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Automotive services	2	6.9	3	4.4	2,425	1.1
Banking and security	4	13.8	15	21.7	46,687	21.0
Building material manufacturer	2	6.9	5	7.3	1,892	0.9
Education	1	3.5	2	2.9	1,089	0.5
Fitness services	1	3.5	1	1.5	271	0.1
Food and beverage manufacturer	2	6.9	5	7.3	2,381	1.1
Government services	1	3.5	6	8.7	3,160	1.4
Grocery	1	3.5	1	1.5	7,685	3.5
Healthcare	4	13.8	15	21.7	70,602	31.7
Hospitality services	1	3.5	1	1.5	774	0.4
Insurance services	1	3.5	1	1.5	1,546	0.7
Retail	4	13.8	7	10.1	53,418	24.0
Tax services	1	3.5	2	2.9	227	0.1
Telecommunications	4	13.8	5	7.3	30,615	13.7
Total	29		69		222,772	

Table 2  
Means, Standard Deviations, and Intercorrelations of Study Variables at the Assessment System and Applicant Levels

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
Selection system level ( <i>N</i> = 69)											
1. Person-organizational fit assessed	.39	.49									
2. Knowledge and skill assessed	.45	.50	-.13								
3. Cognitive ability assessed	.87	.34	-.04	-.17							
4. Organization brand value	.58	.50	-.22	.12	-.16						
5. Position median annual salary	47.44	28.63	-.08	-.45**	.24*	.08					
6. Position supervisory responsibility	.28	.45	.04	-.56**	.24*	.06	.63**				
7. Position prestige	38.77	10.16	.30	-.30*	.11	-.17	.13	.25*			
8. Median system length (mins)	67.45	18.97	.04	-.16	.47**	.06	.41**	.26*	.31*		
9. Estimated system length (mins)	57.46	15.18	-.09	-.14	.54**	.04	.37**	.24*	.16	.66**	
10. Average system attrition rate	.21	.15	.20	.27*	.01	-.30*	-.46**	-.39**	-.12	-.16	-.25*
Applicant level ( <i>N</i> = 222,772)											
1. Time in assessment (mins) <sup>a</sup>	61.03	39.92									
2. Percent estimated length complete <sup>a</sup>	120.01	100.72	.64**								
3. Applicant attrition	.35	.48	-.38**	-.31**							

Note. Position median annual salary is in thousands of dollars. Sample comprised 222,772 applicants nested within 69 individual selection systems.

<sup>a</sup> Correlations based on subsample of 175,706 applicants with information available on total time spent in the assessment phase.

\*  $p < .05$ . \*\*  $p < .01$  (two-tailed).

system was recorded.<sup>1</sup> In cases where applicants withdrew from the selection system and did not return before the 6-month deadline, the total number of minutes spent in the selection system before they withdrew was used to determine their total time in assessment. Because of differences in the information collected on applicants across the various systems, data on time in assessment for each individual applicant were not available for 47,066 of the 222,772 applicants included in our sample (21%), but were instead aggregated at the system level. Therefore, analyses at the individual level of analysis were run using a subset of 175,706 applicants for whom information on time in assessment for each individual applicant was available.<sup>2</sup>

**System length.** Median selection system length was calculated by taking the median time to completion for all applicants that successfully completed each respective selection system. The median was used in this case to reduce the disproportionate influence of extremely long or extremely short applicant completion times on overall length estimates. In addition, after logging into the assessment, all applicants were provided a general estimate of the total amount of time they should expect completing the assessments to take.

**Applicant attrition.** Each applicant who logged into a selection system was assigned a status code by the system software categorizing them as complete or incomplete based on whether they had successfully responded to and submitted all required assessments before the 6-month deadline following the end of the data collection period. The dummy coded variable for applicants that did not complete the required assessment within this timeframe was set as 1. The dummy variable for applicants that successfully completed the assessments was set as 0.

**Control variables.** Given the possibility that there are systematic differences in system length as a function of system content, we controlled for variations in system content using three dummy coded variables representing the inclusion (coded 1) or omission (coded 0) of assessments targeting person-organization fit, knowledge and skill, and cognitive ability, respectively in the selection system. In addition, because we expect that both attrition

decisions and assessment length depend in part on the characteristics of the job, we also controlled for organization brand value, position median salary, position supervisory responsibility (dummy coded, 1 = supervisory position, 0 = no supervisory responsibility), and position prestige. Organization brand value was coded 1 for companies that were listed in the Fortune 500 or were ranked in one of three other lists: the top 500 largest privately owned American companies, the top 500 largest publically traded companies in the world, or the top 500 largest privately traded companies in the world. Companies not included on these lists were coded 0. Values for position prestige ranging between 0 (low) and 100 (high) were assigned to each system using the Total Socioeconomic Index (TSEI) ratings developed by Hauser and Warren (1997).

## Results

### Changes in Attrition Risk as a Function of Time in Assessment

Descriptive statistics and intercorrelations of study variables at the system and applicant level respectively are provided in Table 2. We started by testing the prediction that attrition risk decreases as a function of time in assessment using survival analysis on a subset of 175,706 applicants for whom data on time in assessment was available. The purpose of a survival analysis is to provide

<sup>1</sup> A relatively small proportion of applicants in the sample (5.6%) completed the assessment in multiple sittings. This applicant subgroup was somewhat unique in that nearly all of the individuals who returned to the assessment 12 or more hours after starting it ended up completing it. Nevertheless, rerunning all analyses after removing these applicants from the sample revealed that the decision to include or omit returning applicants did not substantively alter any of the findings in the present study for any study variables, including the controls.

<sup>2</sup> Removing applicants for whom individual time in assessment was missing from subsequent analyses using the full sample did not substantively alter any of the study's conclusions.

estimates of the probability that the status of an individual will change from one state to another at each given point in time (Allison, 2010; Morita, Lee, & Mowday, 1989). These values can then be plotted on graphs with time on the *x* axis to allow for examinations of how event probabilities change as a function of time. In the present study, we focused on how conditional risk of attrition changes as a function of time spent in assessment using the two different operationalizations described above. Conditional risk of attrition in this case refers to the probability that an applicant will quit the assessment within a given interval, conditional on that applicant having neither quit nor completed the selection system prior to that interval.

As shown in Table 3, these analyses revealed that a little more than 50% of all applicant attrition observed in this sample occurred within the first 20 min of assessment. Furthermore, as shown in Figure 2a, the conditional risk of attrition rapidly decreased following the start of the selection system before gradually leveling off in later stages of assessment. These findings were corroborated by the results shown in Table 4 and displayed in Figure 2b. Specifically, we found the majority of applicants who quit elected to do so before surpassing the halfway mark of the time required for completion. In other words, the greatest risk of applicant attrition behavior in this sample was realized in the early stages of the assessment phase, and applicants who made it out of this high-risk time period showed a greater tendency to see the remaining assessments through to completion. Collectively, these findings provide support for our hypothesis and for the viability of the decreasing risk model as a description of changes in applicant attrition risk.

Next, we examined the extent to which the decreasing risk model of attrition generalized to applicants from a variety of different industries, across systems that varied in content, and across positions that varied in four job characteristics (organization brand value, position salary, position supervisory responsibility, and position prestige). As shown in Figure 3, the characteristic downward-sloping distribution of the decreasing risk model remained remarkably consistent, even in cases where overall levels of attrition risk varied. This supports the decreasing risk model as a highly generalizable description of the trajectory of applicant attrition risk.

### The Effect of Median System Length on Applicant Attrition Rates

To consider the implications of these findings, we next examined the system-level effect of median system length on applicant attrition behavior. Because we expected that applicant attrition decisions would be influenced by factors associated with the selection system in which they participated, we used the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., 2015) to run a logistic hierarchical linear model (Raudenbush & Bryk, 2002) using the full sample of 222,772 applicants nested within the 69 selection systems. The intraclass correlation of applicant attrition justified this decision, revealing that approximately 32% of attrition variance was at the system level of analysis. Following the recommendations of Becker (2005) regarding the use of control variables, we ran two models; one in which the effect of system length on assessment

Table 3  
Attrition Risk Survival Analysis—Minutes Spent in Assessment

Interval (mins)		Number quit	Number complete	Effective sample size	Conditional probability of failure	Standard error	Survival	Failure
Lower	Upper							
0	10	9,860	3,797	173,807.5	.0567	.0006	1.00	.00
10	20	6,396	3,601	160,248.5	.0399	.0005	.94	.06
20	30	4,655	7,031	148,536.5	.0313	.0005	.91	.09
30	40	3,732	12,403	134,164.5	.0278	.0004	.88	.12
40	50	2,351	16,713	115,874.5	.0203	.0004	.85	.15
50	60	1,634	20,639	94,847.5	.0172	.0004	.84	.16
60	70	1,136	21,659	72,064.5	.0158	.0005	.82	.18
70	80	756	17,689	51,254.5	.0147	.0005	.81	.19
80	90	483	12,555	35,376.5	.0137	.0006	.80	.20
90	100	318	8,127	24,552.5	.0130	.0007	.79	.21
100	110	208	5,364	17,489.0	.0119	.0008	.78	.22
110	120	142	3,685	12,756.5	.0111	.0009	.77	.23
120	130	118	2,448	9,548.0	.0124	.0011	.76	.24
130	140	90	1,815	7,298.5	.0123	.0013	.75	.25
140	150	55	1,252	5,675.0	.0097	.0013	.74	.26
150	160	61	948	4,520.0	.0135	.0017	.73	.27
160	170	59	697	3,636.5	.0162	.0021	.72	.28
170	180	32	537	2,960.5	.0108	.0019	.71	.29
180	190	25	416	2,452.0	.0102	.0020	.70	.30
190	200	27	324	2,057.0	.0131	.0025	.70	.30
200	210	25	255	1,740.5	.0144	.0029	.69	.31
210	220	28	212	1,482.0	.0189	.0035	.68	.32
220	230	19	178	1,259.0	.0151	.0034	.66	.34
230	240	14	141	1,080.5	.0130	.0034	.65	.35
240+		139	857	567.5	.2449	.0181	.65	.35
Total		32,363	143,343					

Note. Applicant-level *N* = 175,706.

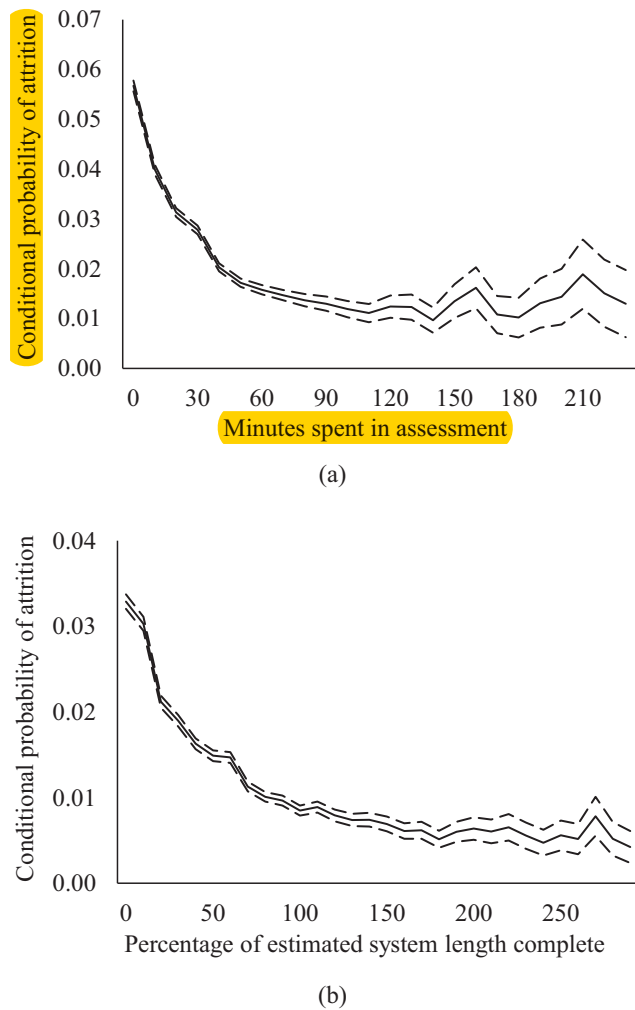


Figure 2. Conditional risk of attrition. Dashed lines represent the 95% confidence interval surrounding the probability estimate within each given interval.

behavior was examined without the controls and one in which these controls were included.<sup>3</sup>

The results of these analyses revealed that organization brand value and position salary negatively predicted attrition behavior. As shown in Table 5, applicants applying for positions in organizations with high brand value were 42% less likely to quit the assessment than applicants applying for positions in organizations with low brand value ( $\beta = 0.55$ ,  $SE = .26$ ,  $t = 2.01$ ,  $p < .05$ ). Similarly, individuals applying for jobs with higher average salaries (\$10,000 a year above the sample average) were 36% less likely to quit the assessment than applicants for jobs that paid lower salaries (\$10,000 a year below the sample average;  $\beta = -0.02$ ,  $SE = .01$ ,  $t = -2.99$ ,  $p < .01$ ). In contrast, median system length was not associated with applicant attrition behavior ( $\beta = 0.00$ ,  $SE = .01$ ,  $t = -0.16$ ,  $p > .05$ ). These findings support our prediction that the effects of selection system length on applicant attrition behavior may not be as robust as has been previously assumed. In fact, in the current sample, selection system length was trending toward a small negative (albeit not statistically sig-

nificant) effect on attrition rates, implying that longer systems were, in some cases, showing lower attrition rates than shorter systems.

To better understand the phenomena that might be driving this trend, we ran one final model in which estimated time to completion (i.e., estimates provided to applicants pertaining to expected assessment length) was added to the model that included both median system length and the control variables. As shown in Model 3 of Table 5, decisions to provide applicants with more conservative time estimates (i.e., longer estimates controlling for average system length) were associated with a reduction in overall attrition rates ( $\beta = -0.03$ ,  $SE = .01$ ,  $t = -2.53$ ,  $p < .05$ ). To put this into context, this finding suggests that even after controlling for other factors, systems with a 5 min overestimate in assessment length showed attrition rates that were 27% lower than systems with a 5 min underestimate in assessment length.<sup>4</sup> Collectively, these findings suggest that it may not be assessment length, but rather characteristics of the job itself and the accuracy of information communicated to applicants regarding expected time in assessment that produce the strongest influence on applicant attrition behavior.

### Discussion

To maximize their odds of selecting the best candidate, it is in an organization's best interest to attempt to attract and retain as many applicants to their open positions as possible. A strategy often advocated by hiring managers as a means to achieving this goal is shortening the assessment phase to reduce the number of applicants that quit due to lengthy hiring procedures (Jarrett, 2016; Ryan & Huth, 2008). However, to justify a shift toward shorter assessments, it is important to first demonstrate that losses in utility resulting from reduced reliability and validity are sufficiently offset by gains in utility resulting from successfully retaining a larger applicant pool. On this point, the results of the present study suggest that efforts to curtail applicant attrition by shortening selection system length may be misguided. Specifically, we found that the majority of applicant attrition occurred within the first 20 min spent in assessment and that attrition risk decreased dramatically for applicants that stayed in the assessment phase beyond these early "high-risk" stages. As a result, overall system length

<sup>3</sup> Controls for industry were omitted from these models because several industries were represented by a limited number of selection systems (e.g., hospitality services). This decision did not influence the study's findings.

<sup>4</sup> A potential alternative explanation for this finding is that longer assessment length estimates discourage time-sensitive applicants from beginning the assessment in the first place, leading to lower attrition rates within the assessment phase but higher attrition rates overall. To test this possibility, we expanded our sample to include 14,302 additional applicants who received an invitation to take an assessment (as evidenced by their inclusion in the system's ATS), but did not ultimately proceed into the assessment phase. By expanding our criteria to include these applicants in our analysis (full sample  $N = 237,074$ ), we were able to test the possibility that longer time estimates might have prevented some applicants from applying in the first place. Results of these analyses revealed that applicants invited to complete systems with longer time estimates were no more or less likely to start the assessment than applicants invited to complete systems with shorter time estimates ( $B = 0.00$ ,  $SE = 0.02$ ,  $t = -0.18$ ,  $p > .05$ ), even when controlling for system content and job characteristics. These findings offer further support for the notion that system length is not dissuading applicants from completing the assessment phase.

Table 4  
Attrition Risk Survival Analysis Results—Percentage of Estimated Length Complete

Interval (%)		Number quit	Number complete	Effective sample size	Conditional probability of failure	Standard error	Survival	Failure
Lower	Upper							
0	10	5,775	417	175497.5	.0329	.0004	1	0
10	20	5,102	1,713	168657.5	.0303	.0004	.97	.03
20	30	3,437	1,365	162016.5	.0212	.0004	.94	.06
30	40	2,987	1,561	157116.5	.0190	.0003	.92	.08
40	50	2,487	1,496	152601.0	.0163	.0003	.90	.10
50	60	2,205	2,429	148151.5	.0149	.0003	.89	.11
60	70	2,091	4,612	142426.0	.0147	.0003	.87	.13
70	80	1,514	7,448	134305.0	.0113	.0003	.86	.14
80	90	1,247	10,420	123857.0	.0101	.0003	.85	.15
90	100	1,072	12,903	110948.5	.0097	.0003	.84	.16
100	110	818	14,418	96216.0	.0085	.0003	.83	.17
110	120	721	14,400	80989.0	.0089	.0003	.83	.17
120	130	528	12,942	66597.0	.0079	.0003	.82	.18
130	140	401	10,768	54214.0	.0074	.0004	.81	.19
140	150	326	9,006	43926.0	.0074	.0004	.81	.19
150	160	247	6,943	35625.5	.0069	.0004	.80	.20
160	170	178	5,541	29136.5	.0061	.0005	.80	.21
170	180	149	4,295	24040.5	.0062	.0005	.79	.21
180	190	103	3,481	20003.5	.0052	.0005	.79	.21
190	200	101	2,755	16782.5	.0060	.0006	.78	.22
200	210	91	2,137	14235.5	.0064	.0007	.78	.22
210	220	74	1,722	12,215.0	.0061	.0007	.77	.23
220	230	69	1,446	10,557.0	.0065	.0008	.77	.23
230	240	51	1,220	9,155.0	.0056	.0008	.76	.24
240	250	38	955	8,016.5	.0047	.0008	.76	.24
250	260	40	750	7,126.0	.0056	.0009	.75	.25
260	270	33	640	6,391.0	.0052	.0009	.75	.25
270	280	45	578	5,749.0	.0078	.0012	.75	.25
280	290	27	470	5,180.0	.0052	.0010	.74	.26
290	300	20	400	4,718.0	.0042	.0009	.74	.26
300%+		386	4,112	2,442.0	.1581	.0074	.73	.27
Total		32,363	143,343					

Note. Applicant-level *N* = 175,706.

did not have an observable effect on system attrition rates. Even when controlling for system content and job characteristics, we found little evidence of systematic differences in attrition rates as a function of system length.

Nevertheless, it may be tempting to read the findings of the present study and say that the short assessments in our sample are simply not short enough. Indeed, the current data suggest that reducing 30-min assessments to 20 min would have retained 4,655 applicants that would have otherwise been lost. However, when considered in context, even this best-case scenario represents only a 2.5% gain in the total applicant pool—a gain that comes at the loss of 33% of the total time allowed for assessment. Barring the existence of dramatic inefficiencies in the original assessments, it is unlikely that the inevitable reductions in reliability and validity from sacrificing such a sizable portion of assessment content are worthwhile.

That being said, it is important to note that we are not advocating for a wholesale shift toward the use of longer assessments. Although the present findings rule out the desire to reduce assessment attrition rates as a viable reason to shorten the assessment phase, they cannot speak to the potential consequences of lengthy protocols within the broader recruitment and selection context. Indeed, given the strong reactions reported by applicants on the topic of assessment length (Jibe, 2014; SevenStepRPO, 2013), it is

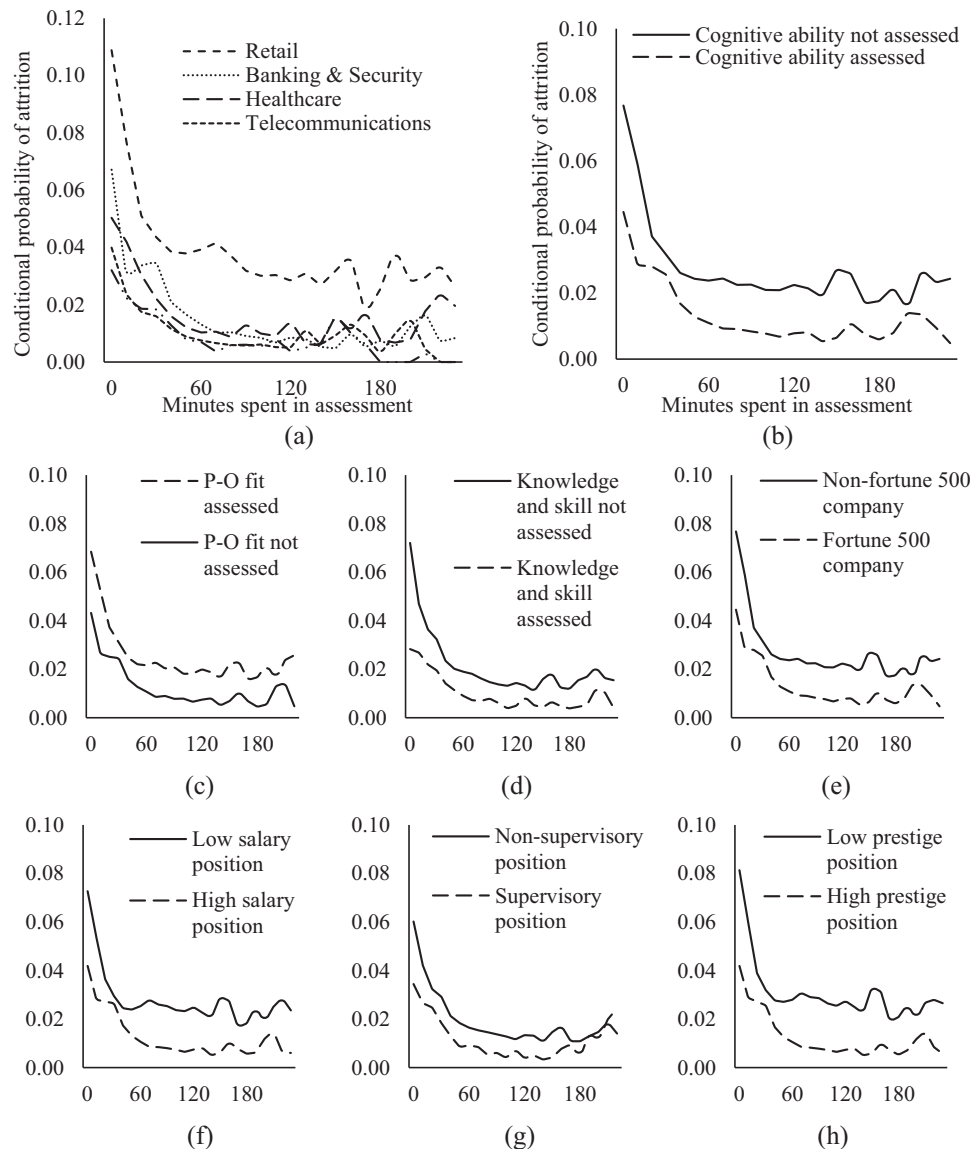
reasonable to expect that applicant responses to lengthy assessments may extend beyond attrition behavior within the assessment phase itself. However, again, there is little research that can help us understand whether and how assessment length is linked to other forms of job seeker behavior such as the initial decision to apply for a position or the decision to accept a position following a formal job offer. As a result, we believe this presents itself as an area ripe for future research.

### Practical Implications

Collectively, these findings support recommendations that the reliability and validity of assessment scores should be the primary drivers of assessment length, not concerns about applicant attrition rates (Ryan & Huth, 2008). This is not to say that attrition risk is unimportant as a criterion. Rather, we believe organizations need to get more creative when looking for ways to combat this behavior. Fortunately, our findings point to one relatively simple solution that can help combat attrition behavior during assessment. Specifically, we found that more conservative time estimates (i.e., estimates that are slightly longer than actual protocol length) were associated with reduced attrition rates across the systems in our sample. As such, we recommend that organizations favor slight overestimates when quoting applicants the total amount of time

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*Figure 3.* Conditional risk of attrition (y axis) as a function of total minutes spent in assessment (x axis) broken down by system differences in (a) industry, (b) inclusion of cognitive ability assessments, (c) inclusion of person-organizational fit assessments, (d) inclusion of knowledge and skill assessments, (e) organizational brand value (e.g., Fortune 500 or equivalent status), (f) position salary, (g) position supervisory responsibility, and (h) position prestige. High/low values for position salary and position prestige were operationalized using a median split with a solid line representing attrition risk for applicants to positions below the median and a dashed line representing attrition risk for applicants to positions above the median in salary and prestige respectively.

they need to set aside for completing the assessments early in the assessment phase. **Communicating time expectations up front allows job-seekers to plan their time more effectively, increasing the likelihood that they will see the application through to completion.**

### Limitations and Future Directions

The findings of the present study should be considered in light of several limitations. To start, all of the selection systems included in this sample were developed and administered by a single vendor. In some ways, this was a strength of this study because it

ensured greater consistency across the systems in terms of content and format, allowing us to draw stronger conclusions regarding the influence of assessment timing and length as a result. However, this characteristic of the sample also potentially limits the generalizability of the present findings across a broader range of selection systems with different implementations and structure. As a result, appropriate caution should be taken when applying the present findings in other contexts.

Another limitation is that the nature of the current data constrained our ability to examine applicant-level decision-making

Table 5  
*Logistic HLM Results for the Prediction of Assessment Attrition*

Variable	Estimate	SE	Odds ratio	[95% CI]
<b>Model 1: System length</b>				
Intercept	-.67	.55		
Median system length	-.01	.01	0.87	[0.74, 1.02]
<b>Model 2: System length plus controls</b>				
Intercept	-.37	.92		
Median system length	.00	.01	0.99	[0.83, 1.18]
Person-organizational fit assessed	.44	.28	1.56	[0.89, 2.72]
Knowledge and skill assessed	.16	.32	1.18	[0.62, 2.22]
Cognitive ability assessed	.40	.44	1.49	[0.62, 3.56]
Organization brand value	-.55*	.26	0.58	[0.33, 0.99]
Position salary	-.02**	.01	0.64	[0.47, 0.86]
Position supervisory responsibility	-.47	.41	0.62	[0.28, 1.42]
Position prestige	-.01	.01	0.92	[0.69, 1.22]
<b>Model 3: Adding estimated system length</b>				
Intercept	-.41	.93		
Median system length	.01	.01	1.12	[0.92, 1.37]
Person-organizational fit assessed	.38	.27	1.46	[0.85, 2.49]
Knowledge and skill assessed	.16	.31	1.18	[0.64, 2.17]
Cognitive ability assessed	.80	.45	2.23	[0.91, 5.48]
Organization brand value	-.53*	.25	0.59	[0.35, 1.00]
Position salary	-.02**	.01	0.65	[0.49, 0.87]
Position supervisory responsibility	-.54	.40	0.58	[0.26, 1.28]
Position prestige	-.01	.01	0.93	[0.71, 1.24]
Estimated system length	-.03*	.01	0.73	[0.57, 0.94]

Note. Odds ratios for median system length represent difference in attrition risk per 10 additional minutes in assessment. *N* (system level) = 69; *N* (applicant level) = 222,772.

\* *p* < .05. \*\* *p* < .01 (two-tailed).

processes underlying the phenomena of applicant attrition. As such, additional research is needed to explore these processes in greater depth. Toward this end, Kuncel and Klieger (2007) argued that (a) the state of the labor market, (b) perceptions of person-job fit, and (c) applicant hiring expectancies each play a unique role in applicant decisions to engage in self-selection. An interesting area of future research would be examining how these and other factors influence applicant assessment attrition behavior throughout the assessment phase. For example, evidence from multiple-hurdle selection contexts suggests that applicants will not continue in the broader selection process when they perceive poor fit with the organization or if they feel that they are not likely to succeed in obtaining a job offer (Ryan, Sacco, McFarland, & Kriska, 2000). This raises a number of interesting questions such as whether applicant attrition risk is influenced by applicant quality and interest in the position, whether applicant sensitivity to assessment length is more pronounced in strong versus weak labor markets, and what factors drive applicant decisions to quit early relative to later in the assessment phase. Answers to these questions carry important implications for assessment design and implementation.

Finally, although our results suggest that assessment length does not lead to higher rates of assessment attrition overall, we were unable to rule out the possibility that the consequences of longer assessments are realized in other ways throughout the selection process. Future research on this topic should consider examining the effects of assessment length and applicant attrition on other important criteria in selection contexts, such as adverse impact,

response quality, applicant reactions, and job-acceptance intentions. In general, developing a better understanding of the influence of assessment format on applicant behavior and reactions is an area of research that is ripe for future exploration. We hope the present study is able to contribute to a new line of research on this important topic.

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