Selection in the Information Age: The Impact of Privacy Concerns and Computer Experience on Applicant Reactions†

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*The authors examined the influence of personal information privacy concerns and computer experience on applicants' reactions to online screening procedures. Study 1 used a student sample simulating application for a fictitious management intern job with a state personnel agency (*N *= 117) and employed a longitudinal, laboratory-based design. Study 2 employed a field sample of actual applicants (*N *= 396) applying for jobs online. As predicted, procedural justice mediated the relationship between personal information privacy concerns and test-taking motivation, organizational attraction, and organizational intentions in the laboratory and field. Experience with computers moderated the relationship between procedural justice with test-taking motivation and organizational intentions in the field but not in the laboratory sample. Implications are discussed in terms of the importance of considering applicants' personal information privacy concerns and testing experience when designing online recruitment and selection systems.*

Keywords: *online selection; personal information privacy; applicant reactions; familiarity with computers; organizational justice*

A critical function of organizations is to attract and hire the best employees. As Viswesvaran noted in his introduction to a special issue on technology and human resources, "Of the technological advances, perhaps the introduction of computers and related technology has had the most profound impact on the science and practice of personnel staffing and selection" (2003: 107). Information technologies such as Web-based recruitment and assessment allow organizations to process large numbers of applications and can help an organization save time and money (Anderson, 2003). For example, Harris and Dewar (2001) showed that the use of Internet sites could reduce the cost per hire from $3,295 for traditional advertising formats to $377 for online recruiting.

There is growing concern, however, regarding security issues and the use of information given online in terms of the privacy of personal information and the unintended uses of it (Gueutal & Stone, 2005; Hunt et al., 2005; Safire, 2005; Stone & Stone, 1990). Some of these concerns surround the use of personal data submitted to governmental agencies that can be stored and compiled. This is not an unfounded concern; the General Accounting Office (GAO) surveyed 128 federal agencies and found that for those agencies that responded, 52 reported using or planning to implement data-mining programs that would compile personal data and look for patterns, and 46 federal agencies routinely share personal information (Hudson, 2004). As Milberg, Smith, and Burke (2000) noted, public opinion surveys show that many citizens of the United States are becoming increasingly concerned about threats to the privacy of their personal information. These personal privacy concerns are at the forefront of the technological age, with 30 million Americans paying to have their telephone number unlisted (Safire, 2005). Bartram (2001) argued that security concerns are overstated in the context of Internet selection, but it is unclear how concerns may affect applicants during online testing. To date, few studies have been published that examine how applicants' attitudes toward personal information privacy concerns and experience with computers relate to factors associated with the selection process. This is surprising given the

dramatic rise in the use of technologies such as the Internet and computer-assisted interviewing in the past few years (Anderson, 2003; Lievens & Harris, 2003).

In recent years, interest in examining the relationships among applicant reactions and key outcomes has grown (e.g., Gilliland, 1993; Gilliland & Steiner, 2001; Hausknecht, Day, & Thomas, 2004; Ryan & Ployhart, 2000). Therefore, realizing the importance of applicant reactions, particularly in the context of online selection, helps organizations ensure that their selection procedures help garner the best employees but do not inadvertently send undesirable signals to applicants.

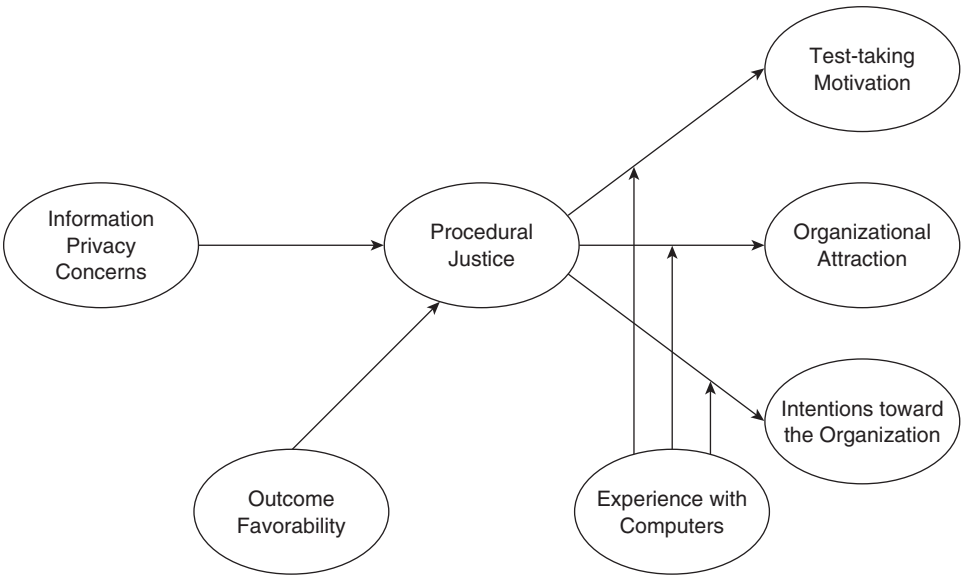
The current study was designed to make three important contributions to the literature. First, research on actual applicant reactions to online selection technology has lagged far behind the use of these technologies. The present study adds to the growing body of research on technology in selection (e.g., Weichmann & Ryan, 2003) by delineating and testing the impact of specific technology-related factors that may influence reactions to online selection procedures. Specifically, familiarity with computers and personal information privacy concerns are considered two important factors that should influence attitudes toward organizations using technology as part of the selection process; however, they have not yet been examined in an actual applicant setting. Second, although research on applicant reactions has grown in recent years, research examining mediation and moderation among these variables still remains relatively limited. Recent reviews have called for increased attention to such factors and to the antecedents of applicant reactions (e.g., Hausknecht et al., 2004; Ryan & Ployhart, 2000). The model tested in the present study addresses this gap. Third, researchers have long noted the relative merits of field studies that have enhanced generalizability and laboratory studies that have enhanced control, concluding that using both designs in research is preferable (e.g., Anderson, Lindsay, & Bushman, 1999; Ryan & Ployhart, 2000; Varma, DeNisi, & Peters, 1996). Therefore, our study addresses both generalizability and control issues by using both field and laboratory designs to test our hypotheses. Moreover, Study 2 goes beyond student-only, hypothetical job designs to examine whether these relationships matter in a field setting with actual applicants.

To summarize, the present studies examined whether individuals vary in their reactions to an online applicant screening procedure depending on their personal information privacy concerns and their familiarity with computer technology. Consistent with prior research, test-taking motivation, organizational attraction, and intentions toward the organization were identified as key outcomes of the selection process (e.g., Bauer, Truxillo, Paronto, Weekley, & Campion, 2004; Ryan & Ployhart, 2000). Both laboratory and field studies were used to examine these issues.

Model of Applicant Reactions

Gilliland's (1993) theoretical model of applicant reactions has guided research in this area for more than a decade. His model posits that justice perceptions mediate the relationship between features of the selection system and applicant reactions such as test-taking motivation and organizational attraction and intentions. In addition, applicants' prior experience is hypothesized to moderate these relationships. This overall model has been generally

Figure 1
Conceptual Model of Applicant Reactions in an Online Context



supported as summarized by review articles (e.g., Hausknecht et al., 2004; Ryan & Ployhart, 2000). What has not been extensively studied to date is how privacy concerns about online testing affect applicant reactions. Our goal was not to compare reactions to online testing to other formats such as paper-and-pencil as other research has done (e.g., Bauer et al., 2004; Ployhart, Weekley, Holtz, & Kemp, 2003; Potosky & Bobko, 2004); rather, our objective was to examine the influence that individual differences such as concerns about information privacy and experience with computers had on applicants' procedural justice perceptions in an online screening context. Privacy concerns are a salient aspect of the selection context in online settings as it is easy to intentionally or unintentionally share applicant information with others.

Building on Gilliland's (1993) model of applicant reactions, we present an updated theoretical model, which takes into account the changing nature of the hiring process in modern organizations. We test this model in the lab and field. This model is presented in Figure 1. First, we predict that information privacy concerns will be related to perceptions of procedural justice. Procedural justice will then affect applicant reactions including test-taking motivation, organizational attraction, and intentions toward the organization. Furthermore, we predict that experience with computers will moderate the relationship between procedural justice and these outcomes, such that the effects of fairness will be greater for applicants with less computer experience.

The Relationship Between Information Privacy Concerns and Procedural Justice

The issue of privacy had been a pertinent research topic before the widespread use of computers and the Internet (Stone & Stone, 1990). With the increased prevalence of the Internet, there has been a resurgence of interest in information privacy in the last decade as information privacy concerns have reached all-time highs (Milberg et al., 2000). Online privacy has received attention from private organizations as well as from government officials (e.g., Culnan & Bies, 2003; Gurau, Ranchhod, & Gauzente, 2003). The current study focuses on a specific aspect of privacy concerns that is labeled *personal information privacy concerns*. Although privacy is a multifaceted construct (Stone & Stone, 1990), our goal was to focus on the portion of privacy that relates to the perceived security of information provided during online testing.

Stone-Romero, Stone, and Hyatt (2003) found relatively large differences in the perception of privacy invasiveness of 12 different selection procedures and suggested that organizations may encounter varying levels of resistance to using these procedures by applicants. In fact, when asking students to respond to hypothetical online selection scenarios, Harris, Van Hoye, and Lievens (2003) found some support for the relationship between privacy perceptions and reluctance to submit employment-related information over the Internet. Stone-Romero et al. (2003) argued that consideration of privacy-related beliefs and attitudes are important given that when individuals feel that they have been treated unfairly by a work organization, they are less likely to accept a job offer and more likely to quit their jobs. Eddy, Stone, and Stone-Romero (1999) found privacy concerns and fairness perceptions to be strongly correlated (−.77), but distinct constructs. These authors called for future research to test the hypothesis that concern for privacy is an antecedent of fairness perceptions.

In a related human resources context, Alge (2001) studied the effects of computer surveillance on perceptions of privacy and procedural justice and found that they were related such that lower levels of invasion of privacy were related to higher perceptions of procedural justice. Therefore, consistent with prior research and Gilliland's (1993) argument that procedures are seen as improper or invasive (such as impropriety of questions), we predicted that in an online screening context, applicants with lower information privacy concerns will have more positive perceptions of procedural justice.

Hypothesis 1: Applicants who have generally lower concerns for personal information privacy will report higher procedural justice perceptions than applicants with generally higher concerns for privacy.

The Relationship Between Procedural Justice and Applicant Reactions

In the applicant reactions literature, research has found that procedural justice is related to test-taking motivation (Arvey, Strickland, Drauden, & Martin, 1990; Chan, Schmitt, DeShon, Clause, & Delbridge, 1997; Sanchez, Truxillo, & Bauer, 2000), organizational attraction (Bauer, Maertz, Dolen, & Campion, 1998; Ployhart & Ryan, 1998), and intentions toward the organization (Macan, Avedon, Paese, & Smith, 1994). In addition, research has

shown that feelings of justice violations may lead to negative feelings regarding actions such as intentions to sue (Goldman, 2001). This is a consistent finding in the applicant reaction literature. In a similar vein, Ambrose and Alder (2000) found that perceptions of fairness in a monitoring context were related to reactions to the monitoring system. Therefore, we seek to replicate these findings in this online context.

Hypothesis 2: Applicants with positive perceptions of procedural justice will have more favorable reactions. Specifically, they will have (a) higher test-taking motivation, (b) higher organizational attraction, and (c) more positive intentions toward the organization.

The above arguments imply that procedural justice acts as a mediator. Consistent with Gilliland (1993), we propose that procedural justice has a central role in linking selection system characteristics and candidate characteristics to applicant reactions.

Hypothesis 3: Procedural justice mediates the relationship between personal information privacy concerns and the outcomes of (a) test-taking motivation, (b) organizational attraction, and (c) intentions toward the organization.

Experience With Computers

In his model of applicant reactions, Gilliland (1993) noted that applicants' prior experiences with selection are important. Applicant familiarity seems particularly relevant to the issue of online screening, as online screening is a relatively new approach to personnel selection and is probably unfamiliar to some applicants. Specifically, apprehension regarding online selection procedures may be exacerbated for applicants who are less familiar with computers and who may therefore be intimidated by applying for jobs online. For example, in their laboratory study of students, Weichmann and Ryan (2003) found that computer anxiety was negatively related to perceptions of process fairness, whereas computer experience was positively related. Similarly, Gilliland and Hale (2005) noted that *widespread use* of a selection procedure may be a component of fairness that affects applicant reactions. For example, when applicants have substantial experience with computers and other things related to online selection, process fairness will have relatively little effect on applicant reactions because they may predict that they will do well under that system. In contrast, applicants with less experience with computers should encounter a more novel situation in which process fairness becomes a greater determinant. Therefore, although some research suggests that applicants may prefer computerized and Web-based testing over traditional paper-and-pencil tests (e.g., Salgado & Moscoso, 2003), this should vary by applicants' level of experience with computers. Thus, it may be that applicants with limited computer experience may see online selection as an unfamiliar, unfair part of the selection process that they should not have to contend with and with which they will be less successful.

In addition to the main effects of computer experience, this construct should also moderate the relationship between process fairness and other applicant reactions. Gilliland (1993) noted that those who have experience with certain types of selection procedures such as structured interviews should see them as more fair. Moreover, he noted that an applicant's

prior experience with a particular hiring procedure will affect how he or she perceives the fairness of that rule. Similarly, Arvey and Sackett (1993) posited that reducing uncertainty through information should improve applicant reactions. In other words, experience with the selection procedure should compensate for low levels of procedural justice in determining applicant reactions, such that the effects of procedural justice are strongest when experience is limited.

We therefore hypothesized that those with more computer experience should have positive applicant reactions regardless of perceptions of procedural justice. In contrast, process fairness should have stronger effects on applicant reactions for those with less computer experience.

Hypothesis 4: Experience with computers moderates the relationship between procedural justice and applicant reactions. Specifically, the relationship between procedural justice and (a) test-taking motivation, (b) organizational attraction, and (c) organizational intentions is stronger for applicants with less computer experience compared with applicants with more computer experience.

Study 1: Longitudinal Student Sample

Method

Sample. Undergraduate students (N = 148) from business classes at a northwestern U.S. university participated in this longitudinal study. Of these, 31 respondents did not participate in both of the waves of data collection. Thus, our final sample consisted of 117 participants with matched data for a response rate of 79%. Of these, 52% were male. Whites made up 61.5% of the sample; 24.8% were Asian/Pacific Islander; 2.6% were Hispanic, African American, or Native American; and 3.4% classified themselves ethnically in some other way. The average age of the participants was 22.82 (SD = 4.82). In terms of employment and work experience, 68.4% of the sample was currently employed. The average number of hours worked per week by these participants was 18.07 (SD = 15.08). The average full-time work experience was 3.01 years (SD = 4.16), whereas the average number of years in part-time work experience was 3.34 (SD = 2.69). The average GPA for this sample was 3.27 (SD = .40).

Procedure. The participants received a survey packet during a normal class session in an undergraduate business class. The packet consisted of a job description for a management intern position for a northwestern U.S. state, a survey consisting of the scales to measure participants' initial reactions to the organization, a short demographic survey (including personal information privacy concerns and experience with computers), and an informed consent sheet. The students were asked to read the job description, to imagine they were job applicants, to complete a paper-and-pencil survey (Time 1), and to return their materials when they were finished. Upon completion of the Time 1 survey, they were given instructions on how to apply for the management intern position online and were instructed to apply for the position. Once they had completed the online application, participants received pass or fail feedback based on their actual qualifications and completed a final survey online (Time 2) regarding their experiences with the online screening procedure. Students were given extra credit and a cash incentive of $20 per person for their full participation. This may

help explain the relatively high response rate of 79% despite the longitudinal nature of the study and the requirement that they use a computer outside of class time.

The participants applied for a management intern position by first obtaining a user name and password from the state personnel department's actual online application Web site. Next, they logged onto the Web site created by the state personnel department for this study with their user name and password and completed the online application. Specifically, they entered information regarding their previous work history, education, and work preferences. This information was automatically scored by the software. Thus, after submitting their applications, the participants were automatically sent to another Web page created by the state personnel department, which provided their scores on the application ($M = 61.47$) and whether they passed (64%) the online application procedure. After receiving their scores and pass/fail information, the participants were provided with the postsurvey Web site. At this Web site, they were asked to complete the postsurvey online.

Measures. All the measures employed in this study were on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*), and scales were formed by averaging items. Personal information privacy concerns were measured using two items from Harris, Hoye, and Lievens (2003; for example, "Employment-related information [e.g., information on an application form] that I submit over the Internet is secure"). This measure was scored so that lower numbers indicated fewer concerns regarding personal information privacy concerns. Procedural justice (e.g., "Overall, I believe that the online application screening process is fair") was assessed with two items from Truxillo and Bauer (1999). Experience with computers was measured with five items adapted from Weiss and Barbeite (2003; e.g., "My computer is an important part of my day-to-day life").

For the applicant reaction outcomes, test-taking motivation was measured with an adapted version of Sanchez et al.'s (2000) 10-item Valence (V), Instrumentality (I), and Expectancy (E) Motivation Scale (VIEMS; e.g., "If you do well on this online application screening procedure, you have a good chance of being hired" and "If you try to do your best on this online application screening procedure, you can do well"). This measure was created by averaging scores on the V, I, and E subscales. Organizational attraction was measured with four items from Macan et al. (1994) and Smither et al. (1993; e.g., "This organization is one of the best places to work"). Organizational intentions were measured using a three-item scale (e.g., "I would encourage others to apply for a job with this organization").

Control variables. We considered several control variables such as archival data from the organization including outcome favorability (passing or failing the screening) information. As Folger and Cropanzano (1998) noted, feelings of unfairness are especially salient when the outcome is undesirable, and outcome favorability is one of the consistent determinants of applicant reactions (Ryan & Ployhart, 2000). Therefore, we included this as a control variable. We coded outcome favorability as 0 for failing and 1 for passing the initial screening. We also gathered information about age, gender, work experience, and GPA. However, Hausknecht et al. (2004) found that the average correlation between applicant perceptions and gender, age, and ethnic background was near zero; therefore, we did not control for these variables in the analyses.

Table 1
Study 1: Means, Standard Deviations, Internal Consistency Estimates, and Intercorrelations Among Study Variables

Scale	*M*	*SD*	1	2	3	4	5	6	7
1. Outcome favorability	0.64	.48	—						
2. Privacy concerns	3.45	.67	–.01	(.81)					
3. Experience with computers T1	4.37	.73	–.04	–.12	(.90)				
4. Procedural justice T2	2.73	.86	.14	–.29**	.07	(.92)			
5. Test-taking motivation T2	3.33	.28	.16	–.26**	.10	.54**	(.84)		
6. Organizational attraction T2	3.26	.66	.15	–.19*	.05	.43**	.56**	(.88)	
7. Organizational intentions T2	3.19	.77	.16	–.40**	.20*	.49**	.59*	.61*	(.89)

Note: $N = 117$. Outcome favorability is coded 1 = passed selection hurdle and 0 = failed selection hurdle; T1 refers to Time 1, which was prior to the online application. T2 refers to postfeedback. Coefficient alpha internal consistencies are located on the diagonal in parentheses.
*$p < .05$
**$p < .01$

Results

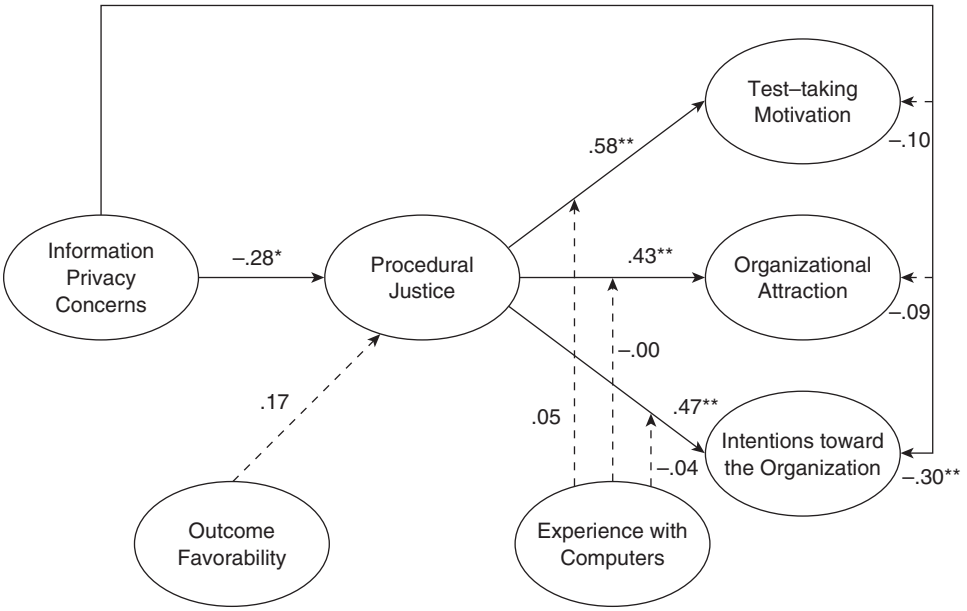
Preliminary considerations. Table 1 presents the means, standard deviations, intercorrelations, and reliability estimates for all of the study variables. Reliabilities ranged from .81 to .92.

Structural model considerations. We tested our hypotheses using structural equation modeling via LISREL (Jöreskog & Sörbom, 1996). Because we had to estimate a large number of parameters and had a modest sample size, we used a single indicator approach for each of our latent variables. We adjusted for measurement error by setting paths from indicators to latent variables to the square root of the reliability. Furthermore, we set the error variances to the variance of the scale multiplied by the square root of reliability (Hayduk, 1987). For the interaction hypotheses, we centered the main effects and created two interaction terms using the centered main effects. Then, following Masterson's (2001) and Ping's (1996) approaches, we adjusted the measurement error and error variances of interaction terms.

We allowed the error terms of test-taking motivation, organizational attraction, and organizational intentions to correlate, because different reactions to selection systems may share antecedents. Consistent with Medsker, Williams, and Holahan (1994), because we did not include all antecedents of these variables, it would be inappropriate to assume that the residuals would be uncorrelated.

Hypothesis tests. The hypothesized fully mediated model resulted in acceptable fit statistics ($\chi^2 = 15.04$, $df = 8$, $p < .05$; root mean square error of approximation [RMSEA] = .08, Comparative Fit Index [CFI] = .96, Adjusted Goodness-of-Fit Index [AGFI] = .86, standardized root mean residual [SRMR] = .05). However, an alternative model (the partially

Figure 2
Results of the Structural Equation Modeling Analyses for the Longitudinal Student Sample



mediated model) where privacy was specified to have direct paths to outcomes had better fit to data ($\chi^2 = 2.69$, $df = 5$, $p > .05$; RMSEA = .00, CFI = 1.00, AGFI = .96, SRMR = .02). The results for this alternative model led us to infer that the relationship between privacy and outcomes was partially mediated rather than fully mediated. Standardized path estimates are shown in Figure 2, with nonsignificant paths indicated with dashed lines. As presented in the figure, those with lower privacy concerns reported higher procedural justice perceptions, supporting Hypothesis 1. Furthermore, procedural justice perceptions were positively related to test-taking motivation, organizational attraction, and organizational intentions, supporting Hypothesis 2. Privacy concerns had a main effect on organizational intentions, indicating that the relationship between privacy concerns and organizational intentions was only partially mediated. At the same time, privacy concerns had only indirect effects on test-taking motivation and organizational attraction, through procedural justice, in support of Hypothesis 3. Finally, Hypothesis 4 did not receive support, as the interaction term of procedural justice and experience with computers was not related to any of the three outcome variables. The model explained 40% of the variation in test-taking motivation, 21% of the variance in organizational attraction, and 42% of the variation in organizational intentions, respectively.

Discussion

Personal information concerns were related to procedural justice such that lower concerns were related to higher perceptions of procedural justice. This is an interesting finding given that it was a student sample concerning a hypothetical job opening. Such laboratory studies are important for establishing that effects exist as was found for privacy concerns and for studying the process longitudinally. However, although this was the relevant population in terms of the management trainee job, the students were not actually applying for the job. Thus, the stakes were lower for these students than for actual applicants. Employing a longitudinal design increases our confidence that our findings were not simply due to common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) as personal information privacy concerns and procedural justice were gathered at different times on separate surveys with different formats (written versus online).

Procedural justice was also related to test-taking motivation, organizational attraction, and intentions toward the organization. This is consistent with prior research (e.g., Hausknecht et al., 2004) and shows that this student sample was consistent with prior laboratory and field research.

Outcome favorability was used as a control variable in the model as we were primarily interested in perceptions of procedural justice at this early selection stage. The findings held with and without the inclusion of outcome favorability.

The lack of support for familiarity with computers may be due, in large part, to the sample used in Study 1. It seems easy to imagine that students would be more familiar with computers than the general population. In fact, compared to older applicants, we would expect students to be relatively high on experience with computers, and we found the mean rating for experience with computers for this sample was relatively high at 4.37 (SD = .73).

Additional research was needed to assess these relationships with a sample of applicants that goes beyond students applying for fictitious jobs where more is at stake. Therefore, we designed Study 2 that employed a field sample to see if we could replicate the findings for personal information privacy concerns and to see if a sample of actual applicants might have more variance that might allow our moderation hypotheses for computer experience to be supported.

Study 2: Field Sample

Method

Sample. To collect the data for this study, we collaborated with the same state personnel department in the northwestern United States. In an effort to compete with the private sector for applicants, particularly for high-tech jobs, and to speed up the selection process, the personnel department had transitioned from a paper-based application system to an online system. Rather than taking weeks or months to respond to applications, the new system is able to score applications in terms of training and experience within seconds. The online system gives quick feedback to applicants regarding whether they pass or fail the screening, and it

Table 2
Study 2: Means, Standard Deviations, Internal Consistency Estimates, and Intercorrelations Among Study Variables

Scale	*M*	*SD*	1	2	3	4	5	6	7
1. Outcome favorability	0.96	.20	—						
2. Privacy concerns	3.32	.86	−.05	(.75)					
3. Experience with computer	4.16	.83	.00	−.23**	(.91)				
4. Procedural justice	3.71	.81	.16**	−.29**	.07	(.90)			
5. Test-taking motivation	3.82	.65	.06	−.33**	.43**	.54**	(.86)		
6. Organizational attraction	3.39	.92	.10*	−.31**	.41**	.33**	.49**	(.89)	
7. Organizational intentions	3.98	.83	.04	−.32**	.44**	.30**	.59**	.60**	(.88)

Note: $N = 396$. Outcome favorability is coded 1 = passed selection hurdle and 0 = failed selection hurdle. Coefficient alpha internal consistencies are located on the diagonal in parentheses.
*$p < .05$
**$p < .01$

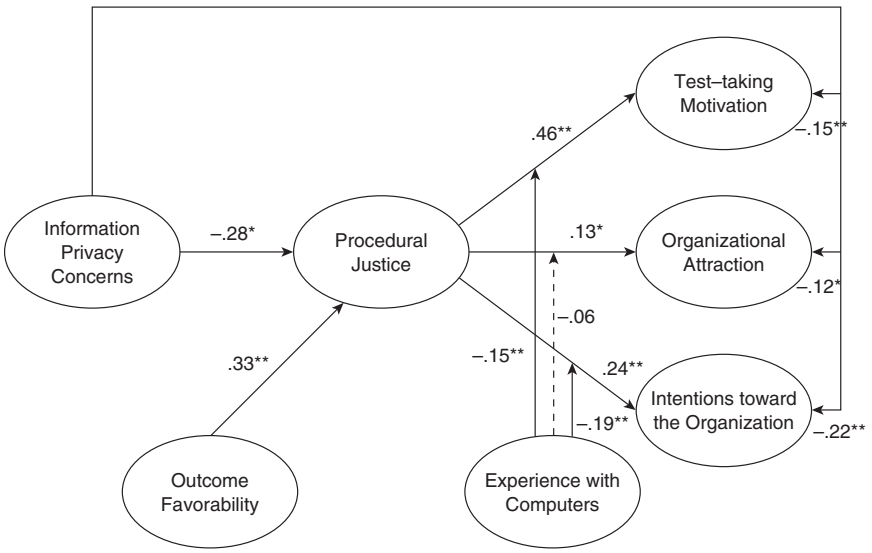
quickly provides a list of applicants who passed to hiring managers. Although this system was developed to be competitive for technical and professional jobs, a large majority of applicants for all state jobs are now submitted via the online application system.

Our potential sample consisted of all the applicants for professional jobs (e.g., nurses, human resource professionals, accountants) across 1 month ($N = 692$). Of those, a total of 396 (57%) responded to the survey. The applicants were 51% male, and the average age of the participants was 37.79 ($SD = 11.46$). In terms of employment and work experience, 66% of the sample were employed at the time of the survey, and the average number of years of full-time work experience was 14.86 ($SD = 10.60$). A response-nonresponse analysis showed no differences in terms of passing the selection hurdle, age, or gender.

Procedure. The personnel department provided us with the e-mail addresses of all applicants who applied for a job using their online application procedure during the month prior to our data collection. Using a retrospective design, we sent all the applicants for these professional jobs an e-mail inviting them to participate in our study, noting that their participation was unrelated to their likelihood of getting a job with the state. Applicants who were interested in participating were instructed to click on a hyperlink in the e-mail that led to an online survey regarding their experiences with the online application procedure. As an incentive to participate, participants were entered into a raffle to win 1 of 20 $100 gift certificates to various retail stores.

Measures. All the measures used in this study were the same as those used in Study 1, and the alphas are presented in Table 2. Again, we controlled for *outcome favorability* (passing or failing the screening) information. For this sample, the average score was 88.06 ($SD = 16.18$) out of 100, and 96% of the applicants passed the initial screening. We coded outcome favorability as 0 for failing and 1 for passing the initial screening. We also gathered data from applicants in terms of age, gender, education, work experience, and current employment status.

Figure 3
Results of the Structural Equation Modeling Analyses for the Field Sample

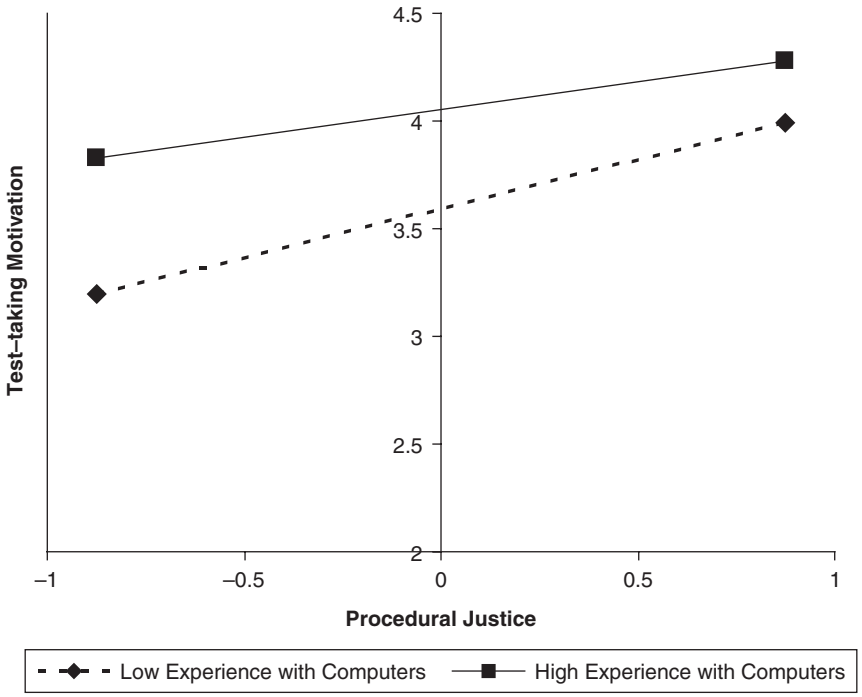


Results

Preliminary considerations. Table 2 contains the correlation matrix for the study variables. Education was the only demographic variable that was related to study variables. Its inclusion or exclusion did not make a difference in the results, so we report the results without education to conserve degrees of freedom and to focus on our hypothesized relationships. Reliabilities ranged from .75 to .91.

Hypothesis tests. Following our Study 1 procedures, we tested the overall model using structural equations modeling. The fully mediated model had acceptable fit to data ($\chi^2 = 47.64$, $df = 8$, $p < .05$; RMSEA = .11, CFI = .95, AGFI = .87, SRMR = .05). At the same time, the alternative model where we added direct paths from privacy concerns to outcome variables had significantly better fit to data ($\chi^2 = 24.34$, $df = 5$, $p < .05$; RMSEA = .10, CFI = .98, AGFI = .89, SRMR = .03). In other words, the partially mediated model was a better fit than the fully mediated model. As presented in Figure 3, privacy concerns were negatively related to procedural justice, supporting Hypothesis 1. Furthermore, procedural justice was positively related to test-taking motivation, organizational attraction, and organizational intentions, supporting Hypothesis 2. The relationship between privacy concerns and outcomes was mediated through procedural justice, in support of Hypothesis 3. However, because privacy concerns had main effects on all three outcomes, this mediation was partial.

Figure 4
Experience With Computers as a Moderator of the Relationship Between Procedural Justice and Test-Taking Motivation

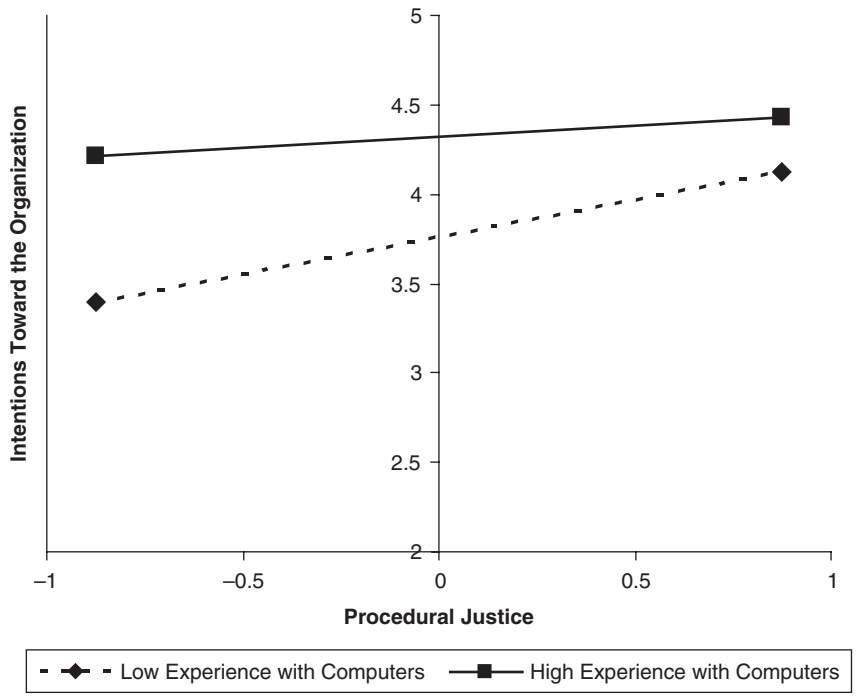


Interactions. Finally, experience with computers moderated the relationships between procedural justice and test-taking motivation, as well as procedural justice and intentions toward the organization. These significant paths provided initial evidence for Hypothesis 4. We plotted the significant interactions at one standard deviation above and below the mean (Aiken & West, 1991). The plots are presented in Figures 4 and 5. As expected, the relationship between procedural justice and outcomes was weaker when individuals had high levels of computer experience, whereas the relationship was more pronounced when they had low levels of computer experience. The model explained 48% of the variation in test-taking motivation, 13% of the variance in organizational attraction, and 33% of the variance in intentions toward the organization, respectively.

Discussion

The results from the field sample reveal an interesting pattern of results that showed greater support for the hypotheses than did the student lab study. First, personal information

Figure 5
Experience With Computers as a Moderator of the Relationship Between Procedural Justice and Intentions Toward the Organization



privacy concerns were related to procedural justice as they were in Study 1. Procedural justice was also related to all three outcomes, which is consistent with past research (e.g., Hausknecht et al., 2004).

What was different about the findings for this field sample was the role that experience with computers played in moderating the relationship between procedural justice and the outcomes of test-taking motivation and intentions toward the organization. Specifically, for those with high levels of experience with computers, procedural justice was only weakly related to these outcomes, whereas a stronger relationship was found between procedural justice and these outcomes for those with less computer experience. Moderation was not found for organizational attraction. Finally, outcome favorability was related to procedural justice in this context.

Potential limitations of Study 2. Although Study 2 went beyond prior research by using a sample of actual applicants, it also has some potential limitations that should be discussed. First, because this was not a longitudinal study, we do not know how the applicants felt about

the organization prior to their application. Second, although all the applicants were sufficiently motivated to apply for the job in the first place, we do not know how their reactions varied over time, or what their initial reactions were. Third, the cross-sectional nature of this study could cause relationships between the individual difference measures and the dependent variables to be inflated because of common method variance. Similarly, the retrospective design of the study is a potential limitation. Future research should seek to replicate this finding to make sure that it is confirmed in the field with longitudinal research.

Another limitation (which we did not anticipate) was the relatively high number of applicants who passed the initial selection screening. Of the 396 applicants in our study, only 16 failed (4%). This pass rate was similar to the population pass rate of 4.6% and may indicate a great deal of self-selection by applicants who only applied for jobs for which they felt relatively qualified or that those who passed the screening were more likely to respond to our survey. Although this is a potential limitation, it also indicates that our sample truly reflected individuals who were both qualified and interested in doing the professional jobs for which they applied. Moreover, the findings for Study 2 were similar to those for the longitudinal student sample in Study 1, which had more balanced numbers for outcome favorability.

Overall Discussion

Overall, the results of these two studies were consistent with prior research and models (e.g., Gilliland, 1993) while extending what we know about applicant reactions in an online screening context. Research has shown that feelings of unfairness can lead to negative outcomes such as decreased reapplication, decreased recommendations, and lower job attraction (Hausknecht et al., 2004; Ryan & Ployhart, 2000). In the case of online screening, it appears that fairness perceptions largely drive applicant reactions also, although certain dimensions such as privacy issues may be particularly salient as a determinant of fairness.

Accordingly, these results suggest that organizations should look for ways to bolster applicants' perceptions that the online hiring process is secure. Applicants do not have to look far to see instances of personal information being used for unintended purposes such as fraud or data sharing across both public and private organizations (O'Harrow, 2005). We found that personal privacy information concerns affected procedural justice perceptions, which in turn affected applicant reaction outcomes. Furthermore, we found that experience with computers moderated this relationship for some outcomes in the field but not the lab setting.

These studies also emphasize the importance of expanding established applicant reactions models such as Gilliland's (1993) in light of the changing nature of the application process. We suggest that existing theories such as organizational justice theory guide this work. For example, the present study examined two factors, information privacy concerns and experience with computers, which have been incorporated less explicitly in earlier models of applicant reactions. For example, Gilliland (1993) noted the importance of invasiveness (whether the employer is seeking highly personal information) in determining the perceived fairness of a selection process. However, whereas a few studies (e.g., Harris et al., 2003) have examined privacy concerns (whether the employer may be able to easily share personal information with others), the current studies specifically examine its effects on process fairness. Similarly,

Gilliland and Hale (2005) recently suggested the importance of *widespread use* in determining the fairness of selection procedures. We believe that this factor is particularly relevant to online selection methods, as has been suggested by previous theoretical discussions (e.g., Truxillo, Steiner, & Gilliland, 2004). However, it is unclear whether or not simply being familiar with a method is enough to induce positive reactions. Future research should continue to expand applicant reactions models to fit the changing nature of the hiring process and to explore the role of experience with methods.

Implications for Practice

Taken together, these findings have important implications for both applicants and organizations. In the present study, the relationship between personal information privacy concerns and procedural justice suggest a significant benefit to organizations that use online hiring processes that are easy for all applicants to use and that are perceived as being safe and secure to use. In doing so, hiring organizations may be able to increase important outcomes. In times of low unemployment, applicants have more choices, and thus personal information privacy concerns and limited computer experience may lead otherwise qualified applicants to go elsewhere. Providing information and explanations to applicants regarding the organization's privacy policy may help applicants feel more assured that their data are being kept safe. This may in turn lead to increased perceptions of fairness and more positive applicant reactions.

Similarly, increasing applicants' confidence in the ease of online screening may also benefit employers, because we found in the field study that applicants with high computer experience had more positive applicant reactions regardless of the process fairness of the procedures. This might include making the online process as simple as possible or having online help available to applicants to increase their confidence. On the other hand, although increasing applicants' confidence in the ease of the online screening process seems to have no downside, there may be some limited circumstances where employers would not want to provide support for applicants who are less familiar with the Internet or computers. For example, for jobs where familiarity with the Internet and computers is expected (e.g., some of today's service and white-collar jobs), it may be possible to decrease the number of unqualified applicants by providing only basic support for using the online screening process. In a sense, the online application process would serve as a type of realistic job preview. Future research should examine the usefulness of online hiring processes for causing less qualified applicants to self-select from the hiring process. Organizations should also consider how the designs of their Web sites influence applicant reactions (Cober, Brown, Keeping, & Levy, 2004). It may be that different designs appeal to users with different degrees of experience with computers.

Future Research

Anderson et al. (1999) studied the correspondence between lab and field studies in many research domains such as self-efficacy and leadership style and found a reasonable

correspondence between findings using lab and field designs. As they note, neither is superior to the other as long as researchers keep in mind the complementary pitfalls of too little control over extraneous factors versus overgeneralizing from specific features of a given context. By using a field sample of applicants as well as a lab sample of students, we were able to increase our confidence that personal information privacy concerns matter in understanding applicant reactions to online screening. Future research should continue to employ designs that use such triangulation.

We also see several avenues for future work on applicant perceptions of online screening procedures. First, the present study focused on a process that could best be described as online screening, rather than online testing. In our experience, because online tests are often timed, applicant experience with computers could become even more important, as applicants who have less experience with computers may be penalized for their inability to respond quickly. We suggest that future research look at the relationship between applicant computer and Internet familiarity and applicants' performance, response latencies, and perceptions. Second, research should examine specific methods for reducing the effects of applicant individual differences such as computer familiarity and personal information privacy concerns. For example, organizations could provide a range of support to applicants, such as explanations for the process (e.g., Truxillo et al., 2002), support and training (e.g., Ryan, Ployhart, Greguras, & Schmit, 1998), and secure online processes. Furthermore, future research should examine the role that computer anxiety, computer self-efficacy, Internet self-efficacy, and other measures of computer experience (e.g., Potosky & Bobko, 2004) might play in reactions to online screening. We suggest that the effectiveness of each of these approaches should be examined to help organizational decision makers choose the most appropriate method for overcoming these applicant individual differences. Third, although we could not compare actual applicants taking paper applications versus those taking online screenings, future research could use this approach to test the model used in the present article. Similarly, future research should further examine the role of outcome favorability on applicant reactions in online contexts. As the use of technology in general (Dewett & Jones, 2001) for human resource functions, such as recruiting (e.g., Cober et al., 2004), interviewing (Straus, Miles, & Levesque, 2001), and screening applicants (e.g., Viswesvaran, 2003), continues to grow, reactions to technology are an essential area of research that deserves further study, and applicant reactions models should be adapted to accommodate the key elements of new hiring processes.

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