

Longitudinal Assessment of Applicant Reactions to Employment Testing and Test Outcome Feedback

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Following a justice framework, the present study examined actual candidates taking selection tests to gain full-time employment. The reactions of 144 applicants for an entry-level accounting job were examined in a real employment testing context at 3 time periods: before testing, after testing but before feedback on whether they passed or failed the test, and after test performance feedback. With controls for pretest perceptions, several of the 5 procedural justice measures (information known about the test, chance to perform, treatment at the test site, consistency of the test administration, and job relatedness) predicted applicant evaluations regarding the organization, perceptions of employment testing, and applicant test-taking self-efficacy. Test outcome favorability (passing or failing the employment test) predicted outcomes beyond initial reactions more consistently than procedural justice perceptions. Procedural justice perceptions explained incremental variance in some analyses after the influence of outcome favorability was controlled.

The selection process is a two-way interaction where applicants and organizations gather information about one another and react to this information while making employment decisions. Written employment tests are frequently used to make such decisions. It is estimated that 15–20% of all organizations use written ability tests to help them select applicants (Rowe, Williams, & Day, 1994). Unfortunately, as Schmit and Ryan (1997) pointed out, more than a third of Americans seem to have unfavorable attitudes toward pre-employment testing. This may be because applicants do not believe that paper-and-pencil ability tests capture a person's true ability to do the job

well (Linn, 1982) or because they are otherwise perceived as unfair. This can be a serious concern in industries where fierce competition exists for qualified applicants. Also, with employment lawsuits so prevalent (Bennett-Alexander & Pincus, 1998), perceived testing fairness has the potential to affect an organization's bottom line dramatically. As a result, recent research has begun to help organizations understand the effects of applicant reactions to selection procedures.

For example, some selection procedures are more popular than others. Applicants tend to favor procedures that are seen as job related (e.g., Kluger & Rothstein, 1993; Ployhart & Ryan, 1998; Rynes, 1993; Rynes & Connerley, 1993; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993; Steiner & Gilliland, 1996), and applicant reactions can have an impact on organizational outcomes such as satisfaction with aspects of the selection process, the job, and the organization, job acceptance intentions, and/or turnover intentions (e.g., Bauer, Truxillo, Craig, Sanchez, Ferrara, & Campion, 1998; Cropanzano & Konovsky, 1995; Macan, Avedon, Paese, & Smith, 1994). It is still unclear, however, if applicant reactions influence important outcomes after controlling for initial attitudes toward the hiring organization (Rynes, 1993; Rynes & Connerley, 1993). The present study extends this line of research by (a) addressing several methodological issues, such as a lack of baseline attitudes toward the organization; (b) testing previously theorized but unexplored hypotheses;

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and (c) focusing on commonly used selection procedures (written employment tests) that are often seen as less fair than work samples or simulations (e.g., Cascio & Phillips, 1979; Rynes & Connerley, 1993; Stoffey, Millsap, Smither, & Reilly, 1991).

Prior Research

As is the case with many new research areas, several common methodological themes exist in the current literature. Three such themes are noteworthy. First, many studies have examined hypothetical or simulated hiring situations rather than actual hiring situations (e.g., Chan, Schmitt, DeShon, Clause, & Delbridge, 1997; Gilliland, 1994; Kluger & Rothstein, 1993; Ployhart & Ryan, 1998; Rynes & Connerley, 1993). Although the information gained in these studies is valuable, and they often examine issues that are nearly impossible to assess in field settings, it is also possible that reactions to assessment procedures differ when actual employment consequences exist (Greenberg, 1990). The present study follows an important trend in the applicant reactions research (e.g., Macan et al., 1994; Schmit & Ryan, 1997; Smither et al., 1993) by examining job candidates taking real selection tests.

Second, most prior research has not been conducted longitudinally, instead gathering assessments at one point in time. Typically, reactions are assessed only after testing has occurred. This creates several problems. Perceptions prior to testing are usually not controlled, and it is possible that applicants differ in their predispositions toward tests. For example, in explaining their results, Macan et al. (1994) stated,

It should be noted that this is not a true test of the effect, however, because we do not know what applicants' impressions were before taking the tests. Applicants' impressions of the job and the company were collected after the applicants took the test and are potentially contaminated with these test perceptions (p. 726).

In addition, experience with taking a test may affect reactions to the test. This would only be detectable with a longitudinal design. Further, outcomes are rarely measured again after the applicants get feedback regarding their test performance. Their reactions may change after they find out whether they passed or failed the test. To avoid these previous limitations, the present study assesses applicants' reactions before testing, after testing, and again after feedback regarding whether they have passed or failed the testing hurdle.

Third, research in this area has not been highly theory-driven. We agree with Borman, Hanson, and Hedge (1997) that research in this area might be extended by casting the applicant reaction process more firmly within an appropriate conceptual framework. The theories of or-

ganizational justice in the selection context provide such a framework and will be used in the current study (e.g., Gilliland, 1993; Greenberg, 1990).

Justice in Selection: An Overview

Procedural justice refers to the perceived fairness of the procedures or methods used in making decisions, whereas distributive justice refers to the perceived fairness of the outcomes or consequences of the decisions (Folger & Greenberg, 1985). Presumably, procedural justice is particularly related to attitudes about specific processes, whereas distributive justice relates more to attitudes about specific outcomes (Lind & Tyler, 1988). Thus, justice perceptions may influence evaluations of organizations and intentions toward organizations.

Theorists have suggested that procedural justice dimensions are specifically relevant to the selection context (e.g., Arvey & Sackett, 1993; Gilliland, 1993; Greenberg, 1993). Ten procedural justice rules, if followed during the selection process, are theorized to improve procedural justice perceptions and thereby positively influence organizational outcomes (Gilliland, 1993). Five of these procedural justice factors were salient and appropriate to the current employment testing situation: (a) receiving information about the test and how it is used, (b) having the chance to perform by showing relevant abilities during testing, (c) receiving good treatment at the test site (politeness and freedom to ask questions), (d) having consistency in test administration across people and across time, and (e) using tests that applicants believe are related to the job in question. Of the other five rules, reconsideration opportunity and timeliness of feedback were judged inapplicable to a measurement immediately following the testing process. Honesty, two-way communication, and propriety of questions were also not measured, as personnel at the data site did not want questions that might be misunderstood or arouse unwarranted suspicions among applicants.

The selection outcome, in this case whether the candidate passes or fails the written test, was also studied here. It is important to capture aspects of procedures as well as outcomes, as Greenberg (1986) found evidence that both are important in understanding the reactions that individuals have toward organizations. Applicants may perceive that selection procedures are more fair if they perform well on and "pass" the procedures (Brockner & Wiesenfeld, 1996). By taking into account the pass-fail selection decision, this study was able to address whether procedural justice perceptions truly make a difference. In most selection situations, efforts can be made to enhance procedural justice perceptions, but changes to the pass-fail rate are less possible. Thus, procedural justice perceptions are important to the extent that they have an impact

on dependent variables beyond the effects of successfully passing selection hurdles.

Influence of Procedural Justice on Organization-Related Outcomes, General Attitudes Toward Employment Testing, and Test-Taking Self-Efficacy

The proposal of justice theory in the selection context is that desirable outcomes may occur if applicants perceive the selection process to be fair (Gilliland, 1993; Nevo, 1985). The present study focused on three types of outcomes: organization-related outcomes, general attitudes toward employment testing, and applicant test-taking self-efficacy.

Organization-related outcomes include attractiveness of the organization to applicants and applicant intentions toward the organization, such as recommending other applicants to the company. Organizational attractiveness is an important factor in maximizing selection utility. It has been shown that there can be great economic loss associated with top candidates finding another organization more attractive and turning down an offer (Murphy, 1986). Organizational attractiveness may be an important determinant of job acceptance (Rynes & Barber, 1990). Also, the applicant pool may increase if applicants say positive things to other potential employees following their selection experience (Rynes, 1993) or re-apply for jobs with the company in the future.

The few studies to address applicant reactions in actual selection contexts seem to confirm their effects on such organization-centered outcomes. For example, Smither et al. (1993) found that applicants' reactions to civil service exams were related to their intentions to recommend that organization to other people. Macan et al. (1994) found that applicants who perceived the selection process as more fair had positive job acceptance intentions and saw the organization as more attractive.

As Rynes, Bretz, and Gerhart (1991) explained, under conditions of incomplete information about an organization, early experiences can act as signals of unobservable characteristics, thereby influencing assessments of the organization. Thus, although causation may flow in either direction, perceptions that selection procedures are fair may indicate to an applicant that the organization is a fair place to work, increase attraction to the organization, and positively influence intentions toward the organization.

Hypothesis 1a. Procedural justice perceptions will be positively related to the organization-related outcomes of organizational attractiveness and intentions toward the organization.

Applicant procedural justice perceptions are expected to be related to their general attitudes toward employment testing. Lounsbury, Bobrow, and Jensen (1989) found that

individuals hold different, and more negative, views of testing when a job is at stake than when reporting their general attitude toward testing, and they found that procedural justice factors were related to attitudes toward testing. Herein, it is proposed that procedural justice perceptions will relate positively to general opinions of employment testing.

Hypothesis 1b. Procedural justice perceptions will be positively related to an applicant's general perception of employment testing fairness.

Self-efficacy is the belief that one can be successful in a given context, in this case, taking written employment tests. This is important for many reasons. For example, Bandura's (1997) work would indicate that if the testing process has a long-term negative influence on applicants' self-esteem, it could affect their motivation to continue job search behaviors. Although little past research has been conducted in the applicant reaction context, Gilliland (1994) did find for his sample of undergraduate student short-term employee applicants that self-efficacy was related to the procedural justice rules studied. Specifically, higher perceptions of procedural justice were related to higher self-efficacy. Although causation may flow in either direction with self-efficacy influencing reactions or reactions influencing self-efficacy, we suggest that perceptions of justice may lead to a belief that one can perform well on the test.

Hypothesis 1c. Procedural justice perceptions will be positively related to an applicant's general test-taking self-efficacy.

Influence of Test Outcome Favorability on Study Outcomes

Kluger and Rothstein (1993) found that students in a simulated hiring situation who failed to meet the employer's hiring standard viewed the organization more negatively, and felt that the test was less fair than those who passed. Because respondents were randomly assigned to pass or fail conditions in a laboratory simulation, it is still unclear how outcome favorability affects organizational attractiveness and intentions toward the organization.

The idea that outcome favorability should be related to job attitudes and behavioral intentions comes from studies on justice in other settings. For example, for intentions, Gilliland and Beckstein (1996) found that for inexperienced journal authors, journal submission intentions were positively related to outcome favorability (rejections vs. revisions) during the review process. This did not hold true for experienced co-authors. Magner, Welker, and Johnson (1996) found that the perceived favorability of accounting professors' performance appraisals were related to their intent to remain with the organization.

McFarlin and Sweeney (1992) found that bank employees' perceptions of how fairly they had been rewarded were related to their organizational commitment and job satisfaction. We predict that passing the test will be positively related to the outcomes studied here.

Hypothesis 2a. Outcome favorability will be positively related to the organization-related outcomes of organizational attractiveness and intentions toward the organization.

In Lounsbury et al.'s (1989) study, Americans felt that testing was artificial and an invasion of privacy. Those who received feedback that they had failed an employment test rated testing as less fair, in general, than those who had received feedback that they had passed the test. In addition, Macan et al. (1994) provided evidence that actual candidates who performed poorly on a selection test viewed the entire selection process more negatively than those who performed well. Similarly, Smither et al. (1993) found that test scores were positively correlated with justice ratings. Therefore, it is predicted that outcome favorability will be related to applicants' fairness perceptions in this employment context.

Hypothesis 2b. Outcome favorability will be positively related to the applicant's general perception of employment testing fairness.

Joint Effects of Procedural Justice and Outcome Favorability on Applicant Test-Taking Self-Efficacy

It has been shown that feedback regarding failure tends to lower self-perceptions whereas success tends to raise self-perceptions, but only when performance can be related to ability (e.g., McFarland & Ross, 1982). In this vein, Gilliland (1993) and Brockner and Wiesenfeld (1996) predicted a situation where those who perceive the selection process to be procedurally fair will have lowered self-perceptions if they are not hired, and elevated self-perceptions if they are hired. They base this prediction on attribution theory (e.g., Weiner, 1985), wherein it is predicted that if internal attributions can be made, outcomes will be internalized, but if external attributions can be made, outcomes will not be internalized. In support of this notion, Gilliland (1994) found that for his short-term student employees, job relatedness and outcome favorability interacted with one another such that job relatedness had a negative impact on test-taking self-efficacy for rejected applicants, but a positive impact on self-efficacy for selected applicants. This interaction can only be tested after test performance (pass-fail) feedback is received by applicants.

Hypothesis 2c. An interaction will be observed between outcome favorability and procedural justice perceptions such that procedural justice perceptions will be positively

related to test-taking self-efficacy for those who pass the test and negatively related to test-taking self-efficacy for those who fail the test.

In addition, it is unclear whether or not procedural justice perceptions matter above and beyond outcome favorability. The value of procedural justice in the selection context is dependent on whether these perceptions matter after the applicant receives test feedback. In the mind of the candidate, it may be that nothing else matters beyond passing the test and getting the job. We predict that the five procedural justice perceptions studied here will explain additional variance in the study outcomes above that explained by outcome favorability alone. We base this prediction on studies that show that both procedural justice and outcomes affect respondents' reactions in natural selection situations (e.g., Macan et al., 1994; Smither et al., 1993) and in staged hiring situations (e.g., Gilliland, 1994; Ployhart & Ryan, 1998).

Hypothesis 3. Procedural justice perceptions will be related to the study outcomes of applicants' ratings of organizational attractiveness, intentions toward the organization, general perceptions of testing fairness, and test-taking self-efficacy beyond the effects of outcome favorability.

Finally, it is unclear whether simply going through the testing process leads to changes in applicants' fairness perceptions and associated outcomes. It seems reasonable to believe that experiences with a test would influence reactions to testing. However, the nature and direction of that influence is unclear. Experience with a specific employment test may increase testing fairness perceptions because it decreases uncertainty, or it may decrease testing fairness perceptions if the experience is negative. Therefore, a research question rather than a hypothesis is proposed.

Research question. Does experience with a selection test relate to changes in testing fairness perceptions and other outcomes?

Method

Participants

Participants were applicants for an office position in an accounting department in a large public organization in the Western United States. Data collection occurred at three points in time (Time 1 = pretesting, prefeedback; Time 2 = posttesting, prefeedback; Time 3 = posttesting, postfeedback). A total of 522 participants provided data at Time 1. Of these, 501 had usable data, as 21 did not include critical study information such as initial perceptions or their matching codes. Of these 501, 245 surveys had complete data for Time 2. There was a total of 144 matched surveys across all three data collection times, which was an overall response rate of 29%.

The usable sample consisted of 29% men and 71% women. The sample was primarily Asian (51%) with approximately

equal numbers of Caucasian, African American, and Hispanic/Mexican American applicants. Participants ranged in age between 18 and 51 years ($M = 33.0$, $SD = 8.4$). Forty-two percent held an undergraduate degree, 30% had a high school degree or equivalent, 18% had an associates degree, and 10% had a graduate degree. These sample characteristics were similar to the working population for similar types of positions within this organization (cf. Ollé, 1996).

A power analysis revealed that at the $p < .05$ level, based on a one-tailed test, the sample of 144 applicants yielded 78% power to detect a moderate-sized correlation of .20, which is within the recommended acceptable range for power (Cohen, 1977).

Design and Procedure

Data were gathered during one examination period and in a follow-up survey 3 weeks after taking the test. All of the applicants for an office position at this organization were given an opportunity to participate in this study. Potential participants were asked to provide information about their perceptions and views of the selection process that could help improve the system. They were told that the surveys were to be used for research purposes only, that their participation was voluntary, that their responses would in no way be used in making the selection decisions, and that codes would be used to match data.

Two questionnaires were administered, in person, to applicants at two different times during the 3-hr test-taking portion of the selection process. Time 1 (pretesting, prefeedback) questionnaires were administered immediately prior to a written multiple-choice selection test that measured both cognitive aptitude and knowledge needed on the job. Time 2 (posttest, prefeedback) questionnaires were administered to applicants immediately after they had completed the selection test. The elapsed time between Time 1 ratings and Time 2 ratings was approximately 3 hr. Time 3 (posttesting, postfeedback) questionnaires were mailed to applicants along with the results of their performance on the test approximately 3 weeks after taking the test. An approximately equal number of passers ($n = 61$, or 42% of the total) and failers ($n = 83$, or 58% of the total) returned the Time 3 (postfeedback) surveys.

Measures

Procedural justice perceptions. Scales were developed on the basis of five of Gilliland's (1993) procedural justice rules. The five procedural justice rules were measured at Time 2, immediately after the applicants took the tests. The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Information known about the test was measured with four items (e.g., "I understood how this test would affect hiring"). Chance to perform was measured with four items (e.g., "I think that this test gave me a chance to prove myself"). Treatment at the test site was measured with three items (e.g., "I was treated politely during the testing"). Consistency of test administration was measured with three items (e.g., "All applicants were treated the same during the testing"). Finally, job relatedness of the test was measured with four items (e.g., "The questions on this test are directly related to the job").

Organization-related outcomes. Outcomes were measured at all three points in time. Two organization-related outcomes were included. Organizational attractiveness was measured with four items (e.g., "This organization is one of the best places to work") from Macan et al. (1994) and Smither et al. (1993). Intentions toward the organization comprised three items measuring future intentions toward the company (e.g., "I intend to encourage others to apply for a job with this company" and "I intend to apply for a new job here again if I am not offered a job"), also based on Macan et al. (1994) and Smither et al. (1993).

General attitude toward employment testing. General perceptions of testing fairness were measured at three points in time with four items (e.g., "I think that testing people is a fair way to determine their abilities"). These items were similar to those found in the Belief in Testing subscale developed by Arvey, Strickland, Drauden, and Martin (1990).

Test-taking self-efficacy. Applicant test-taking self-efficacy was measured at three points in time with four items (e.g., "I am confident in my test-taking abilities"). These items were created following descriptions in Gilliland (1993).

Outcome favorability. Pass or fail information for the test was collected from company records. Outcome favorability was coded "2" if the applicant earned a passing score and "1" if the applicant earned a failing score. Applicants who passed the exam (42%) advanced to the job interview phase of the selection process.

Results

Table 1 contains means, standard deviations, correlations, and alpha reliabilities for all study variables at all three time periods. With the exception of treatment at the test site ($\alpha = .58$), internal consistencies were acceptable for each of the scales at each measurement period (range = .73–.92). An exploratory factor analysis was conducted on the five outcomes (at Times 1, 2, and 3) and the justice rule measures (at Time 2). Oblique rotation was used, as correlations among the scales were expected. Analyses of outcomes showed that when the five a priori factors were retained, each item only loaded ($>.40$) on its hypothesized factor across all three time periods, with the exception of one item. At Time 3 one of the intentions items loaded on the Organizational Attractiveness factor as well as on its own factor. When the five procedural justice measures were analyzed, both four- and five-factor solutions were plausible under different extraction criteria (Ford, MacCallum, & Tait, 1986). Perceived Job Relatedness and Chance to Perform items had significant cross-loadings on two different factors, and tended to load on one factor in the four-factor solution. The scales were used as proposed for three reasons, with the understanding that further psychometric development may be necessary. First, the scales with cross-loadings comprised one factor when analyzed separately. Second, the reliabilities of these scales were acceptable. Third, procedural justice theory proposes them as separate factors.

Table 1
Means, Standard Deviations, and Correlations for Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Info. known T2	(.73)																
2. Chance perf. T2	.45*																
3. Treatment T2	.44*	(.77)															
4. Consistency T2	.43*	.31*	(.58)														
5. Job related T2	.56*	.66*	.37*	(.88)													
6. Org. attract. T1	.35*	.22*	.17*	.18*	(.76)												
7. Intentions T1	.33*	.25*	.20*	.21*	.61*	(.79)											
8. Test fairness T1	.40*	.40*	.19*	.16*	.32*	.20*	(.81)										
9. Self-efficacy T1	.28*	.28*	.17*	.11	.16*	.25*	.39*	(.76)									
10. Org. attract. T2	.44*	.30*	.32*	.24*	.36*	.65*	.48*	.16*	(.83)								
11. Intentions T2	.45*	.31*	.41*	.22*	.30*	.45*	.60*	.25*	.27*	(.82)							
12. Test fairness T2	.56*	.51*	.29*	.25*	.56*	.36*	.16*	.52*	.27*	.60*	(.88)						
13. Self-efficacy T2	.32*	.41*	.30*	.18*	.34*	.17*	.15*	.14*	.61*	.27*	.31*	(.81)					
14. Org. attract. T3	.31*	.28*	.22*	.27*	.33*	.45*	.30*	.32*	.17*	.51*	.43*	.31*	(.85)				
15. Intentions T3	.28*	.25*	.36*	.24*	.06	.22*	.27*	.27*	.14	.38*	.41*	.28*	.14	(.87)			
16. Test fairness T3	.29*	.36*	.18*	.26*	.40*	.25*	.25*	.49*	.24*	.25*	.25*	.50*	.27*	.50*	.40*	(.89)	
17. Self-efficacy T3	.01	.27*	.10	.05	.16	.06	.14	.21*	.40*	.02	.02	.18*	.48*	.10	.18*	.38*	(.92)
18. Out. favor. T3	.16	.16	.12	.11	.14	.10	.13	.16	.16	.10	.13	.16	.16	.24*	.28*	.24*	.13

Note. Info. = Information; Perf. = performance; Org. attract. = organizational attractiveness; Out. favor. = outcome favorability. *n* = 253 for Time 1 and 2 (T1 and T2) variables; *n* = 144 for Time 3 (T3) variables. Numbers in parentheses are internal consistency reliabilities.
* *p* < .05.

Procedural Justice and Study Outcomes

Hypotheses were tested by examining correlations and by using multiple regression. Hypotheses 1a-1c posited that procedural justice perceptions will be positively related to organizational attraction, intentions toward the organization, general perceptions of testing fairness, and applicant general test-taking self-efficacy. As Table 1 shows, there was correlational support for all three of these hypotheses at Time 2 and for most hypotheses at Time 3. Results that rely on correlations with measures were collected at Time 2 and should be interpreted with caution, as common method bias may partially inflate the relationships. Table 2 presents the results from the regressions conducted with procedural justice measures using Time 1 controls and Time 2 outcomes. Table 3 presents the same information relating to Time 3 outcomes. Each of the five outcomes studied were related to some procedural justice measures beyond prior reactions, offering support for Hypotheses 1a-1c.

At Time 2, organizational attractiveness and intentions toward the organization were both significantly related to information known about the test and treatment at the test site. General perceptions of testing fairness were significantly predicted by information known about the test, the chance to perform on the test, and the perceived job relatedness of the test. Also, prefeedback general test-taking self-efficacy was predicted by the chance to perform and treatment at the test site.

The data used to test Time 3 outcomes were separated by time. This separation should decrease, but not eliminate, the threat of common method variance (Podsakoff & Organ, 1986). As Table 3 shows, at Time 3, job relatedness was positively related to organizational attractiveness. None of the procedural justice variables predicted intentions toward the organization. Consistency of test administration and job relatedness of the test were positively related to general perceptions of testing fairness. Finally, chance to perform on the test was related to general test-taking self-efficacy.

Test Outcome Favorability and Study Outcomes

Hypotheses 2a and 2b stated that outcome favorability will be positively related to organizational attractiveness, intentions toward the organization, and general perceptions of testing fairness. These hypotheses were tested at Time 3 after pass-fail feedback was given. There was support for both of these hypotheses at the correlational level (Table 1). Table 4 contains the regressions with outcome favorability as a predictor. Passing the test was positively associated with the three outcomes studied. Outcome favorability also accounted for a significant change in *R*² for each of these three dependent variables.

Table 2
Hierarchical Regression Analysis at Time 2

Predicted outcome	B	R ²	ΔR ²	F
Organizational attractiveness				
Step 1: Perception (Time 1)		.43		183.32**
Organizational attractiveness	.57**			
Step 2: Procedural justice (Time 2)		.50	.07	6.67**
Info. known about test	.13*			
Chance to perform	.01			
Treatment	.14*			
Consistency	.00			
Job relatedness	.09			
Overall equation				39.37**
Intentions toward org.				
Step 1: Perception (Time 1)		.36		136.69**
Intentions toward org.	.49**			
Step 2: Procedural justice (Time 2)		.48	.12	10.99**
Info. known about test	.17**			
Chance to perform	.03			
Treatment	.21**			
Consistency	-.03			
Job relatedness	.01			
Overall equation				36.68**
General perceptions of testing fairness				
Step 1: Perception (Time 1)		.27		89.88**
Testing fairness	.27**			
Step 2: Procedural justice (Time 2)		.48	.21	19.22**
Info. known about test	.30**			
Chance to perform	.10*			
Treatment	.03			
Consistency	-.07			
Job relatedness	.24**			
Overall equation				37.18**
Applicant general test-taking self-efficacy				
Step 1: Perception (Time 1)		.37		142.71**
Test-taking self-efficacy	.59**			
Step 2: Procedural justice (Time 2)		.42	.05	4.10**
Info. known about test	-.03			
Chance to perform	.12*			
Treatment	.18**			
Consistency	.01			
Job relatedness	.09			
Overall equation				35.16**

Note. For all *F* tests, *dfs* = 6 and 238. Info. = Information; org. = organization. Coefficients are with all predictors in the equation; *n* = 245.

* *p* < .05 (one-tailed). ** *p* < .01 (one-tailed).

Further, as shown in Table 5, those passing the test exhibited an average increase in all outcomes after receiving feedback. These results support Hypotheses 2a and 2b. It should be noted, however, that those failing the written employment test did not exhibit a significant average drop in outcome levels between Time 2 and Time 3 except for self-efficacy, where an increase was observed. This is inconsistent with Hypotheses 2a and 2b. Thus, partial support was found for these hypotheses.

Hypothesis 2c stated that the relationship between procedural justice perceptions and test-taking self-efficacy will be negative for those who fail the test and positive for those who pass. Five regressions were run, controlling

for Time 1 test-taking self-efficacy and using the two main effects and the interaction as predictors. A significant interaction was observed for two out of the five procedural justice rules and outcome favorability. They were information known about the test, *b* = .48, *t*(139) = 2.21, *p* < .05, and treatment at the test site, *b* = .63, *t*(139) = 2.61, *p* < .01. Figures 1 and 2 depict the significant interactions involving these procedural justice measures. Information known about the test and treatment at the test site were positively related to test-taking self-efficacy for those who passed the test, but were negatively related to test-taking self-efficacy for those who did not pass. Thus, Hypothesis 2c was partially supported.

Table 3
Hierarchical Regression Analysis at Time 3

Predicted outcome	B	R ²	ΔR ²	F
Organizational attractiveness				
Step 1: Perception (Time 1)		.20		35.33**
Organizational attractiveness	.30**			
Step 2: Procedural justice (Time 2)		.26	.06	2.40*
Info. known about test	-.01			
Chance to perform	-.02			
Treatment	.02			
Consistency	.12			
Job relatedness	.19*			
Overall equation				7.84**
Intentions toward org.				
Step 1: Perception (Time 1)		.07		11.33**
Intentions toward org.	.13*			
Step 2: Procedural justice (Time 2)		.15	.08	2.67*
Info. known about test	.02			
Chance to perform	.00			
Treatment	.08			
Consistency	.08			
Job relatedness	.11			
Overall equation				3.91**
General perceptions of testing fairness				
Step 1: Perception (Time 1)		.24		43.94**
Testing fairness	.43**			
Step 2: Procedural justice (Time 2)		.32	.08	3.20**
Info. known about test	-.20			
Chance to perform	.04			
Treatment	.03			
Consistency	.15*			
Job relatedness	.31**			
Overall equation				10.69**
Applicant general test-taking self-efficacy				
Step 1: Perception (Time 1)		.16		27.72**
Test-taking self-efficacy	.52**			
Step 2: Procedural justice (Time 2)		.23	.07	2.33*
Info. known about test	-.44			
Chance to perform	.22*			
Treatment	.03			
Consistency	-.02			
Job relatedness	.14			
Overall equation				6.87**

Note. For all *F* tests, *dfs* = 6 and 137. Info. = Information; org. = organization. Coefficients are with all predictors in the equation; *n* = 144.

* *p* < .05 (one-tailed). ** *p* < .01 (one-tailed).

Table 4
Hierarchical Regression Analysis Controlling for Outcome Favorability (at Time 3)

Predicted outcome	B	R ²	ΔR ²	F
Organizational attractiveness				
Step 1: Perception (Time 1)		.20		35.33**
Organizational attractiveness	.30**			
Step 2: Outcome (Time 3)		.23	.03	5.49**
Outcome favorability	.23*			
Step 3: Procedural justice (Time 2)		.28	.05	1.89
Info. known about test	-.02			
Chance to perform	-.03			
Treatment	.01			
Consistency	.12			
Job relatedness	.18*			
Overall equation				7.63**
Intentions toward org.				
Step 1: Perception (Time 1)		.07		11.33**
Intentions toward org.	.12*			
Step 2: Outcome (Time 3)		.13	.06	9.72**
Outcome favorability	.23**			
Step 3: Procedural justice (Time 2)		.19	.06	2.01
Info. known about test	.01			
Chance to perform	-.01			
Treatment	.08			
Consistency	.08			
Job relatedness	.11			
Overall equation				4.55**
General perceptions of testing fairness				
Step 1: Perception (Time 1)		.24		43.94**
Testing fairness	.42**			
Step 2: Outcome (Time 3)		.26	.02	3.85*
Outcome favorability	.23*			
Step 3: Procedural justice (Time 2)		.34	.08	3.30**
Info. known about test	-.20			
Chance to perform	.03			
Treatment	.02			
Consistency	.15*			
Job relatedness	.30**			
Overall equation				9.91**
Applicant general test-taking self-efficacy				
Step 1: Perception (Time 1)		.08		12.29**
Test-taking self-efficacy	.51**			
Step 2: Outcome (Time 3)		.17	.09	15.25**
Outcome favorability	.13			
Step 2: Procedural justice (Time 2)		.24	.07	2.50*
Info. known about test	-.45			
Chance to perform	.22*			
Treatment	.02			
Consistency	-.02			
Job relatedness	.14			
Overall equation				6.02**

Note. For all F tests, *dfs* = 7 and 136. Info. = Information; org. = organization. Coefficients are with all predictors in the equation; *n* = 144.

p* < .05 (one-tailed). *p* < .01 (one-tailed).

Hypothesis 3 stated that procedural justice perceptions will be related to the outcomes studied beyond the effects of outcome favorability. Tests of change in *R*² shown in Table 4 indicate that the five procedural justice measures contributed incrementally to variance explained for two out of the four dependent variables, general perceptions

Table 5
Mean Changes in Study Outcomes After Test Feedback

Outcome	Mean change Time 2 to Time 3	T value
Passing (<i>n</i> = 60)		
Organizational attractiveness	.31	3.77**
Intentions	.20	3.13**
Testing fairness	.28	2.88**
Test-taking self-efficacy	.52	6.74**
Failing (<i>n</i> = 84)		
Organizational attractiveness	-.09	-1.78
Intentions	-.01	-0.09
Testing fairness	.04	0.50
Test-taking self-efficacy	.51	5.05**

***p* < .01.

of testing fairness and test-taking self-efficacy. Procedural justice perceptions did not contribute beyond outcome favorability to understanding organizational attractiveness or intentions toward the organization.

Our additional research question asked whether experience with the selection test relates to fairness perceptions and other important outcomes. Table 6 reports the mean change within subject on study outcomes occurring between Time 1 (before the employment test) and Time 2 (after taking the employment test). The mean change was significant for two of the four outcomes. General perceptions of testing fairness and test-taking self-efficacy decreased on average after administration of the employment test. This finding may indicate that taking an employment test generally has negative effects on general perceptions of testing fairness and on test-taking self-efficacy. On the other hand, an examination of Table 5 indicates that the negative effects of taking the test at Time 2 dissipated or reversed at Time 3 after feedback. Therefore, the results of our research question remain ambiguous.

Discussion

Our findings are consistent with past research that shows that selection experiences relate to applicants' reac-

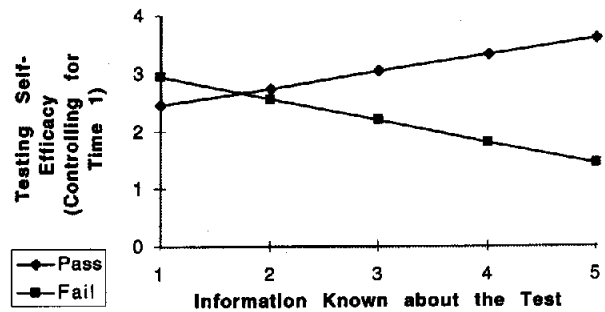


Figure 1. Interaction between information known about the test and outcome favorability on test-taking self-efficacy.

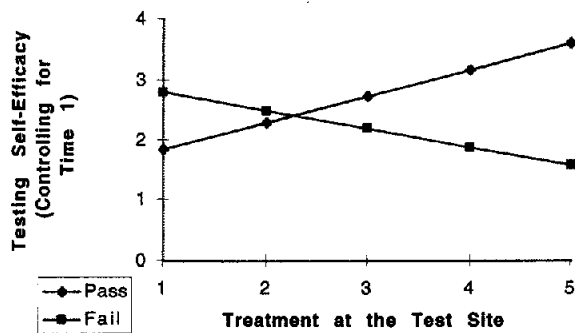


Figure 2. Interaction between treatment at the test site and outcome favorability on test-taking self-efficacy.

tions to the organization. In addition, our findings indicate that experiences at one organization may also relate to general perceptions of the fairness of employment testing and feelings of test-taking self-efficacy.

More specifically, after applicants had taken tests but before they had received feedback regarding their performance, procedural justice perceptions predicted each of the outcomes even after controlling for applicants' prior reactions. Treatment at the test site predicted applicants' evaluations of organizational attractiveness, their intentions toward the company, and their test-taking self-efficacy. In addition, information known about the test was related to organizational attractiveness, intentions toward the company, and testing fairness. A total of 9 out of 20 or 45% of the predicted relationships were significant.

A somewhat different pattern of predictive results emerged for procedural justice after test feedback was given. After accounting for the pass-fail outcome, fewer of the procedural justice perceptions were significantly related to outcomes (4 out of 20 or 20%). Job relatedness was related to organizational attractiveness. Job relatedness and consistency were related to general perceptions of testing fairness. Chance to perform was related to test-taking self-efficacy. Results also indicated that procedural justice measures were related to changes in only two of four study outcomes, beyond the effects of pass-fail. Outcome favorability was related to organizational attractiveness, intentions toward the organization, and general testing fairness, but unrelated to test-taking self-efficacy. As expected, those who passed the test evaluated the organization and employment testing more favorably than those who failed.

Thus, there is still some question as to whether procedural justice perceptions affect organizational attractiveness and applicant intentions when outcome favorability is controlled. From current findings, it appears that passing or failing is a more important determinant of organizational outcomes than procedural justice perceptions of employment testing. However, procedural justice

still seems to have some incremental value. Future research should continue to investigate the relative incremental contribution of procedural justice beyond the influence of the selection decision itself.

To further determine the practical significance of procedural justice in the selection context, important outcomes such as discrimination complaints and lawsuit intentions must also be studied. These outcomes have a potentially great impact on the bottom line (Seymour, 1988). However, the sensitivity of these issues, the low base rate of complaints, and the difficulty in obtaining responses from nonselectees are serious methodological impediments that must be overcome in this and other similar research. These research areas are ones in which the strengths and weaknesses inherent in both laboratory and field research can augment one another. Ideally, information could be gathered in laboratory settings that would be nearly impossible to obtain in field settings and field research could test those aspects of the laboratory findings that would tend to support or refute the findings in actual selection settings. For example, although laboratory simulations are by design artificial, they may provide insight into what applicants really think about procedures in situations where participants do not have personal investments. Clearly both types of research are needed in the future.

Also notable is the fact that the total explained variance in Time 3 regressions is considerably smaller than that at Time 2. One obvious explanation is the possibility of common method variance boosting relationships at Time 2. A second possible explanation is that procedural justice perceptions may lose their salience over time, particularly for those who pass the test. This may happen as the next selection hurdle is anticipated by applicants. Thus, justice perceptions may be less predictive of outcomes when they are measured later in the process. Such a reduction in salience could be similar to recruiter effects that have been found to fade as selection progresses and more is learned about actual job attributes (e.g., Rynes, 1991). However, this latter explanation is only tentative and should be investigated in further research.

Interactions between outcome favorability and proce-

Table 6
Mean Changes in Study Outcomes After Taking the Employment Test

Outcome	Mean change Time 1 to Time 2	T value
Organizational attractiveness	.046	0.78
Intentions	-.039	-0.74
Testing fairness	-.145	-2.36*
Self-efficacy	-.140	-2.66**

Note. $n = 144$.

* $p < .05$. ** $p < .01$.

dural justice were predicted for test-taking self-efficacy, and some supportive evidence was found. It is somewhat logical that greater fairness perceptions might lead to greater test-taking self-efficacy for those who pass the test. Procedural justice makes passers feel even better about their abilities. It may be that those who passed the test made internal attributions that their success was based on their own skill and effort. Greater perceived information about the test and better perceived treatment might have led to lower test-taking self-efficacy for those who failed, yet the opposite finding was observed and self-efficacy was increased for this group as well. These individuals may have attributed their failure to external causes outside their sphere of control. Another possible explanation for this effect is a compensatory effect. Individuals may increase their motivation and resolve to do better in the future in the face of lower outcome favorability. This has been observed in the goal setting literature after failure (e.g., Campion & Lord, 1982). Research that further investigates the nature of interactions between procedural justice and outcome favorability and that further addresses the research questions presented here is clearly needed to better understand candidate reactions.

There are many practical implications of this study. For example, changing perceptions of chance to perform on the test and of job relatedness may require a reworking of the actual selection devices used, whereas treating applicants with greater respect should be more easily manageable. Also, giving applicants more information about the selection device and how it is used may cost very little. When attempting to improve selection systems and candidate reactions, management must evaluate these relative cost considerations, along with the relative benefits of following procedural justice rules (Gilliland, 1993). Future studies should attempt to manipulate procedural justice perceptions to determine if the organization can influence them. For example, a training manipulation that gives the applicants relevant information about a selection procedure may increase perceptions of the organization's fairness and related outcomes. It would also be interesting to look at the effects of procedural justice on more distal outcomes such as on-the-job performance, job attitudes, and other responses to injustice such as retaliation behaviors (Greenberg, 1990; Skarlicki & Folger, 1997). These types of studies would be helpful in further understanding the strength or dissipation of procedural justice over time. And finally, it was noted earlier that general perceptions of testing fairness and test-taking self-efficacy decreased on average after administration of the employment test but that the negative effects of taking the test dissipated or reversed after feedback was given. Future research needs to further examine the effect that time and feedback have on the self-efficacy of applicants.

The current study contributes to, and improves on, ap-

licant reactions research in several ways. First, it examines reactions in an actual selection context, making the generalizability of this study greater than that of many previous studies. Second, the process was examined longitudinally, while controlling for pretest outcome measures, so that the unique value of changes in procedural justice were examined. Third, the study showed the effects of procedural justice when selection outcome favorability was controlled.

Despite these methodological improvements, there still were limitations to the current study. First, although passing or failing the test is one selection outcome, the hire-no hire outcome is of most importance to applicants. Unfortunately, the time between selection events did not permit us to gather this type of data. Future studies should attempt to assess the actual hiring decision as the ultimate selection outcome of interest. Also, only five procedural justice perceptions were determined to be relevant for employment testing in this setting. Thus, this study did not fully test Gilliland's (1993) model. Nevertheless, the study is an improvement on some past research in this regard because it is grounded in an organizational justice theory, which provides a reasonable framework for explaining selection reactions. And although many of the newly created measures showed sound psychometric properties, our measure of the procedural justice rule of interpersonal treatment at the test site had an alpha of .58. Although treatment was a significant predictor of organizational attractiveness, intentions toward the organization, and general test-taking self-efficacy, clearly future work is needed to improve the reliability of this measure. And finally, although the predicted order of events studied was based on Gilliland's (1993) model of applicant reactions to selection, reverse causality is also possible. For example, positive applicant attitudes toward organizations may lead to positive ratings of procedural justice. This concern was mitigated somewhat by controlling initial attitudes toward the organization and controlling data across time, but our study did not establish causality. Future studies should strive to more firmly establish a definite causal order.

Another potentially useful avenue for future research would be to include information about the alternative employment opportunities that applicants have. As Rynes and Barber (1990) pointed out, applicants do not interact with organizations one by one. Many organizations are often considered simultaneously. Candidates with relatively more options and higher potential may be lost by organizations that have lower perceived procedural justice than others. These are exactly the types of candidates that employers are seeking to hire. Although we did not gather this type of information, we do know that the unemployment rate for the area where data were gathered was 7.7% at the time of data collection (Bureau of Labor Statistics,

1998). Unemployment rates are imprecise indicators of alternatives, however, and future research that more specifically addresses this issue by directly measuring applicant perceptions of their alternatives is greatly needed.

Additional research areas are also important. For example, work that continues to examine the influence of selection procedures such as banding (e.g., Truxillo & Bauer, in press) and drug testing (Konovsky & Cropanzano, 1991; Murphy, Thornton, & Reynolds, 1990) may yield results with greater variance than those observed here as they are more controversial than written testing. Individual differences such as test-taking motivation (e.g., Arvey et al., 1990; Chan et al., 1997; Sanchez, Truxillo, & Bauer, 1998) may also be important in understanding different reactions to selection processes. Work in these areas is encouraged as initial evidence indicates that they are potentially fruitful lines of future research for further understanding applicant reactions to selection.

Our results show that outcome favorability (passing or failing the employment test) predicted outcomes beyond initial reactions and more consistently than procedural justice perceptions. Procedural justice perceptions explained incremental variance in some analyses after the influence of outcome favorability was controlled. The findings of the present study suggest that different conclusions may be drawn when studies of applicant reactions to selection are not longitudinal and when they do not control for outcome favorability. For example, studies that do not control for initial perceptions may overestimate the impact of procedural justice factors. Our results indicate that changes in procedural justice are related to organizational outcomes, but less so than many previous studies have indicated. Future research that builds on the outcomes of this study is encouraged.

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