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Applicant Reactions to Selection  
Procedures: An Updated Model and  
Meta-Analysis

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## Abstract

An updated theoretical model of applicant reactions to selection procedures is proposed and tested using meta-analysis. Results from 86 independent samples ( $N = 48,750$ ) indicated that applicants who hold positive perceptions about selection are more likely to view the organization favorably and report stronger intentions to accept job offers and recommend the employer to others. Applicant perceptions were positively correlated with actual and perceived performance on selection tools and with self perceptions. The average correlation between applicant perceptions and gender, age, and ethnic background was near zero. Face validity and perceived predictive validity were strong predictors of many applicant perceptions including procedural justice, distributive justice, attitudes towards tests, and attitudes towards selection. Interviews and work samples were perceived more favorably than cognitive ability tests, which were perceived more favorably than personality inventories, honesty tests, biodata, and graphology. The discussion identifies remaining theoretical and methodological issues as well as directions for future research.

### Applicant Reactions to Selection Procedures: An Updated Model and Meta-Analysis

Research in personnel selection traditionally has focused on understanding the process from the perspective of the organization. Studies concerning the validity and utility of selection techniques have demonstrated how organizations can benefit from using valid selection tools. Researchers have also developed an interest in examining selection from the applicant's perspective, recognizing that not only do companies select employees, but applicants also select the organizations to which they will apply and where they are willing to work (Rynes, 1993). Thus, as research continues with the goal of better estimating the predictive value of selection devices, a related concern is in understanding how applicants perceive and react to the selection process.

Studying applicant reactions is important for at least five reasons. First, applicants who find particular aspects of the selection system invasive may view the company as a less attractive option in the job search process. Maintaining a positive company image during the selection process is of significant importance as there are costs associated with losing top candidates (Murphy, 1986). Second, candidates with negative reactions to a selection experience might dissuade other potential applicants from seeking employment with the organization (Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993). Third, candidates may be less likely to accept an offer from a company with selection practices that are perceived unfavorably (Macan, Avedon, Paese, & Smith, 1994). Fourth, applicant reactions may be related to the filing of legal complaints and court challenges. Applicants who perceive a particular selection technique as invasive or inappropriate may be more likely to bring suit than applicants who perceive the process as fair and face valid (Smither et al., 1993). Finally, although there is little empirical data

on these issues, it is also possible that applicants may be less likely to reapply with an organization or buy the company's products if they feel mistreated during the selection process.

The present study begins with a discussion of conceptual models of applicant reactions and a brief review of relevant research. Next, we offer an updated theoretical framework, suggest several hypotheses, and test the model using meta-analysis. Overall, this research provides empirical answers to questions about the theoretical and practical value of studying selection from the applicants' perspective.

### Theoretical Foundation

The term *applicant reactions* has been used to refer to the growing body of literature that examines "attitudes, affect, or cognitions an individual might have about the hiring process" (Ryan & Ployhart, 2000, p. 566). One of the first theoretical models of applicant reactions was an effort to tie existing research to organizational justice theory in order to explain how applicants' justice perceptions develop and subsequently affect various outcomes in selection settings (Gilliland, 1993). Organizational justice generally involves the perceived fairness of: (a) outcome allocations (*distributive justice*), (b) rules and procedures used to make those decisions (*procedural justice*), (c) sensitivity and respect shown to individuals (*interpersonal justice*), and (d) explanations and accounts given to individuals (*informational justice*) (Greenberg, 1993). The basic premise of organizational justice theory in selection contexts is that applicants view selection procedures in terms these four facets of justice, and these perceptions influence future attitudes, intentions, self-perceptions, and behaviors.

A more recent general model of applicant reactions has emerged that builds upon this initial theoretical framework to include additional antecedent and moderator variables (Ryan & Ployhart, 2000). In addition to justice considerations, the model includes perceptions of one's

affective and cognitive states during the process and general perceptions about testing and selection as possible determinants of various personal and organizational outcomes.

On the basis of these frameworks, an updated model of applicant reactions to selection procedures is proposed as the conceptual foundation for the present study. Figure 1 outlines this model, which is guided by and adapted from earlier models (Gilliland, 1993; Ryan & Ployhart, 2000). Each portion of the framework is described below and a sample of representative research is discussed before turning our attention to empirical tests of the model using meta-analysis.

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Insert Figure 1 about here  
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#### *Model Overview*

The main premise of the model outlined in Figure 1 is that important outcomes can be best predicted by applicant perceptions of the selection process. These outcomes include performance on selection procedures, self-perceptions, and a variety of attitudes and behaviors. Applicant perceptions take into account applicant views concerning the various dimensions of organizational justice, thoughts and feelings about testing, and broader attitudes about tests and selection in general. The model also specifies four broad classes of antecedent variables that are proposed as determinants of applicant perceptions and proposes several moderators of these relationships. Each component of the model is reviewed below along with a brief discussion of studies that have tested portions of the model empirically. Because of their central importance to the model, applicant perceptions are reviewed first, followed by outcomes and antecedents, respectively.

*Applicant perceptions.* A variety of perceptions have been studied to date, including procedural justice (e.g., Bauer, Truxillo, Sanchez, Craig, Ferrara, & Campion, 2001; Ployhart & Ryan, 1998), distributive justice (e.g., Smither et al., 1993), interpersonal justice (e.g., Ryan & Chan, 1999), informational justice (e.g., Bauer, Maertz, Dolen, & Campion, 1998), test motivation (e.g., Sanchez, Truxillo, & Bauer, 2000), test anxiety (e.g., Ryan, Ployhart, Greguras, & Schmit, 1998), attitudes towards tests in general (e.g., Chan, Schmitt, Jennings, Clause, & Delbridge, 1998), and attitudes towards selection in general (e.g., Macan et al., 1994). The justice perspective stems directly from Gilliland (1993) who proposed that applicants' perceptions of fairness directly influence subsequent attitudes and behaviors both during and after hiring. For example, the model predicts that applicants who feel that they were treated unfairly during an interview would be less likely to accept a job offer or recommend the employer to others.

Other constructs included in this portion of the model are derived from research on the internal cognitions held by applicants as they complete selection tools (Arvey, Strickland, Drauden, & Martin, 1990). The basic premise of this line of research is that applicants who are more motivated and less anxious will perform better on selection procedures. In addition, applicants who hold more positive perceptions about testing and selection in general are more likely to view favorably those organizations using such tools.

*Outcomes.* The types of outcomes that have been studied in the context of applicant reactions has grown steadily, although there are still relatively few studies that directly examine behavioral outcomes. More commonly, researchers have found small to moderate positive associations between applicant perceptions and actual and perceived selection procedure performance (e.g., Chan, 1997; Chan & Schmitt, 1997; Macan et al., 1994; Schmit & Ryan,

1997; Smither et al., 1993), self-efficacy (e.g., Bauer et al., 1998), and self-esteem (e.g., Bauer et al., 2001). Actual procedure performance refers to the test scores or ratings earned by applicants on a given selection device, whereas perceived procedure performance refers to self-assessed perceptions about performance on such screening tools. When considering organizational attractiveness (perceptions about the appeal or image that a company or organization maintains), past research generally shows moderate positive relationships with applicant perceptions (e.g., Bauer et al., 1998; Kluger & Rothstein, 1993; Macan et al., 1994; Rynes & Connerley, 1993). Researchers have also found positive relationships with a variety of behavioral intentions such as offer acceptance intentions (e.g., Truxillo, Bauer, Campion, & Paronto, 2002), application intentions (e.g., Rafaeli, 1999), retesting intentions (e.g., Madigan, 2000), product purchase intentions (e.g., Macan et al., 1994), litigation intentions (e.g., Bauer et al., 2001), and recommendation and reapplication intentions (e.g., Ployhart & Ryan, 1998). Finally, although relatively rare, some researchers have studied behavioral outcomes including work performance (Gilliland, 1994; Hunthausen, 2000) and applicant withdrawal (e.g., Ryan, Sacco, McFarland, & Kriska, 2000; Schmit & Ryan, 1997). Results are mixed when considering the behavioral outcomes examined in these few studies.

Note that applicant perceptions have been linked conceptually with additional outcomes including job satisfaction, organizational commitment, turnover, and organizational climate (Gilliland, 1993). Further, because intentions and behaviors tend to be moderately related (Armitage & Conner, 2001), applicant perceptions should be related to actual behaviors such as recommending the employer to others, reapplying, retesting, and bringing litigation claims. However, little research exists to date that tests these propositions.

*Antecedents.* Four classes of antecedent variables have been identified in the applicant reactions literature. These include person characteristics, perceived procedure characteristics, job characteristics, and factors associated with the organizational context. There has been considerable attention given to identifying the person characteristics and perceived procedure characteristics that give rise to the applicant perceptions described above. In particular, person characteristics that have commonly been examined include demographic variables such as gender, age, and race. For example, race has been studied in this context as a possible explanation for the Black-White test score gap (Ryan, 2001). In addition, Chan found that Blacks held less favorable perceptions of cognitive ability tests than Whites (1997). Other researchers have examined personality characteristics including several of the Big 5 dimensions such as conscientiousness and neuroticism (Ostberg, Truxillo, & Bauer, 2001) as possible determinants of applicant perceptions. Finally, some researchers have explored the possibility that prior work experience or familiarity with testing situations could help explain applicant perceptions (Truxillo, Bauer, & Sanchez, 2001).

Perceived procedure characteristics include many of the justice rules identified by Gilliland (1993) such as job relatedness, opportunity to perform, reconsideration opportunity, two-way communication, and propriety of questions (e.g., Bauer et al., 1998; Ryan & Chan, 1999; Truxillo et al., 2001). In particular, job relatedness has been studied extensively in previous research based on the premise that applicants will perceive selection more favorably to the extent that techniques are perceived as face valid and predictive of job performance. Thus, job relatedness is often conceptualized as a two-factor construct comprised of face validity and perceived predictive validity.

*Face validity* has been defined as “the extent to which applicants perceive the content of the selection procedure to be related to the content of the job” (Smither et al., 1993, p. 54). Some researchers have used the term *content validity* to refer to the perceived relevance of the content of the selection procedure. However, most treatments of validity consider content validity as an aspect of test development that is best assessed and influenced by the test developer or other trained experts (AERA, APA, & NCME, 1999). Face validity judgments require no such expertise and simply involve surface-level judgments about the apparent relevance of test content. Thus, content validity is primarily assessed by the test developer, whereas face validity is typically assessed by the test taker. In addition, face validity is not a psychometric property; rather, it is an individual’s judgment about the job relatedness of a selection procedure.

*Perceived predictive validity* has been defined as perceptions about “how well the procedure predicts future job performance, regardless of how it looks” (Smither et al., 1993, p. 54). These assessments are also made from the perspective of the test taker and involve beliefs about whether people who score better on the test also perform better on the job. In the present context of the applicant reactions literature, perceived predictive validity also is not a psychometric property, but an individual’s judgment about the predictive ability of a selection procedure.

As noted by Ryan and Ployhart (2000), other procedure characteristics such as the length of the selection process and actual outcome favorability (e.g., pass/fail information) can influence perceptions such that applicants perceive selection more favorably when procedures are not excessively long and when applicants receive positive outcomes. Providing applicants with an adequate explanation for the use of selection tools and decisions may also foster positive perceptions among applicants. Additionally, researchers have proposed that applicant

perceptions may be positively related to perceived test ease (e.g., Wiechmann & Ryan, 2003) and the transparency of selection procedures (e.g., Madigan, 2000). Perceived procedure characteristics and applicant perceptions have different conceptual meanings in that each of the perceived procedure characteristics is predicted to influence overall judgments of fairness, global test-taking perceptions, and general attitudes towards tests and selection. In other words, applicant perceptions are more general judgments about the process, and perceived procedure characteristics refer to specific factors associated with the selection process or procedures.

Finally, two additional classes of antecedent variables have been proposed. These include job characteristics (e.g., industry norms for selection, job attractiveness, KSA requirements) and the organizational context (e.g., selection ratio, organizational history). With the exception of a handful studies (e.g., Macan et al., 1994; Thorsteinson & Ryan, 1997), there have been few systematic attempts to study these two classes of potential antecedent influences.

### *Main Hypotheses*

According to the theoretical model described above, person characteristics and perceived procedure characteristics should be related to applicants' perceptions of selection procedures, which should in turn be related to a variety of attitudinal and behavioral outcomes.

*Hypothesis 1:* There will be nonzero relationships between person characteristics (i.e., age, gender, ethnic background, conscientiousness, and neuroticism) and applicant perceptions (i.e., procedural justice, distributive justice, and test motivation).

*Hypothesis 2:* There will be positive relationships between perceived procedure characteristics (i.e., consistency, job relatedness, face validity, perceived predictive validity, opportunity to perform, explanations/accounts, outcome favorability, and transparency) and

applicant perceptions (i.e., procedural justice, distributive justice, test motivation, attitude towards tests, and attitudes towards selection).

*Hypothesis 3:* Applicant perceptions will be positively related to the outcomes of actual and perceived procedure performance, organizational attractiveness, recommendation intentions, offer acceptance intentions, self-efficacy, and self-esteem. There will be negative associations for those relationships involving test anxiety.

### *Moderators*

Applicants' prior experience, hiring expectations, perceived alternatives, and the stage in the selection process are among the variables that have been proposed as moderators of the antecedent-perception link (Gilliland, 1993; Ryan & Ployhart, 2000). Overall, the number of occasions in which these variables have been measured is small and there have been even fewer attempts at evaluating them as moderators as opposed to estimating simple bivariate relationships. In this study, selection context and the stage of the selection process are systematically evaluated to help explain potentially heterogeneous relationships contained in the model. In addition, the favorability ratings of selection tools are examined to determine whether perceptions differ based on test type, as suggested in previous research (Gilliland, 1993).

Three levels of selection context are proposed including authentic, hypothetical, and descriptive contexts. Studies conducted in *authentic selection* contexts involve actual job applicants seeking positions with real organizations (e.g., Bauer et al., 1998; Macan et al., 1994; Smither et al., 1993). Typically, applicants are given surveys to complete at one or more points during the selection process to assess their perceptions and attitudes towards the selection tools and the company. The second approach to examining applicant reactions involves *hypothetical selection* scenarios wherein participants (often college undergraduates) assume the role of an

applicant for a particular job or company and complete selection tools and reactions surveys (e.g., Chan, 1997; Ployhart & Ryan, 1998).

Examining the inherent qualitative differences associated with authentic and hypothetical selection research suggests that relationships between applicant reactions variables and various work correlates may differ depending on the study context. There are several plausible patterns of results that might emerge when examining selection context. Effect sizes may be stronger for studies conducted in authentic selection contexts as opposed to those carried out in hypothetical hiring situations since applicants in authentic selection contexts have more at stake and may be more sensitive to the types of selection tools used during the hiring process. On the other hand, relationships drawn from authentic contexts might be attenuated due to range restriction from self-selection into the hiring process. Therefore, the hypothesis regarding selection context was framed to be exploratory in nature.

*Hypothesis 4:* Selection context will moderate the relationship between applicant reactions and organizational outcomes such that correlations drawn from studies involving applicants in authentic selection contexts will differ from those found in studies conducted in hypothetical selection contexts.

Studies conducted in *descriptive selection* contexts present participants with a list of commonly used selection tools and ask respondents to rate the respective job relatedness or fairness of each tool (e.g., Rynes & Connerley, 1993; Steiner & Gilliland, 1996). Unlike authentic or hypothetical selection research, participants in these studies do not actually experience the selection techniques, but instead provide reactions to descriptions of different selection procedures. To summarize these findings empirically, favorability ratings of ten different selection tools are combined across studies (i.e., biodata, cognitive ability tests,

graphology, honesty tests, interviews, personal contacts, personality tests, references, resumes, and work samples). In general, interviews and work samples have been perceived favorably by applicants because there is typically a close relationship between the content of the selection tool and the duties of the job, whereas there is often a smaller relationship between the content of cognitive ability tests and actual job duties. Finally, from an applicant's perspective, the content of most personality inventories, honesty tests, biodata instruments, and graphology techniques bears little relationship to actual job duties.

*Hypothesis 5:* Favorability ratings across selection tools will vary such that employment interviews and work samples will be rated more favorably than cognitive ability tests, and cognitive ability tests will be rated more favorably than personality inventories, biodata, honesty tests, and graphology.

The final moderator evaluated in this study is the stage of the selection process. The selection process is inherently sequential and researchers have typically studied the process at one of three points. The first point is during a pre-application or pre-testing period wherein applicants learn about the job and organization, prepare application materials, and interact with company representatives for the first time. The second point is typically near some form of assessment to determine the fit between applicant characteristics and job requirements, which often includes selection devices such as interviews or tests. Finally, the third point is after information about the outcome of the selection process (e.g., offer/rejection) or feedback regarding performance on any of the selection tools (e.g., pass/fail) has been shared. It is likely that relationships among applicants' perceptions about the selection process, attitudes towards the organization, and critical outcome variables may differ depending on the particular phase applicants are in at the time that applicant reactions variables are measured (Gilliland, 1993).

There is wide variation in the literature as to when critical applicant reactions variables have been assessed, which potentially obscures important differences in the magnitude of observed relationships among variables. Recognizing this fact, some researchers have assessed applicant attitudes at three points during this process, including pre-test, post-test/pre-feedback, and post-test/post-feedback. For example, Bauer et al. (1998) assessed several outcomes at all three points and found that the predictive validity of procedural justice perceptions in explaining outcomes significantly declined once pass/fail information was delivered to job applicants.

There are several possible explanations for these study design effects. One substantive possibility, as discussed above, is that when applicants have outcome favorability information they are more influenced by the direction of the outcome feedback than they are by other perceptions such as the job relatedness or fairness of the selection tools. Put differently, in the presence of outcome information, other perceptions about the selection process are less important and may show smaller relationships with outcomes as a result (Ryan & Ployhart, 2000). A second explanation is more methodological in nature. It is possible that correlations are inflated when respondents provide perceptions of both selection procedures and outcomes on the same occasion. Research has indicated that respondents are influenced by mood, implicit theories about the variables under study, or a general desire to appear consistent across items (Podsakoff & Organ, 1986; Schmitt & Klimoski, 1991). For these reasons, it is important to examine the stage of the selection process as a potential moderator for the most frequently studied relationships in the applicant reactions literature.

*Hypothesis 6:* The stage in the selection process at which perceptions are gathered will moderate the relationships proposed in the model such that relationships will be stronger when

perceptions are measured at the same time as compared to when measurements are separated in time.

## Method

### *Literature Search*

To locate relevant journal articles and dissertations, a search of the *PsycINFO* (1872-December 2003) and *ABI/INFORM* (1970-December 2003) computerized databases was performed using various combinations of the following keywords: *applicant(s)*, *reactions*, *perceptions*, *test attitudes*, *selection*, *fairness*, *justice*, *face validity*. Articles not printed in English and clinical/education studies were eliminated from further consideration. The computerized *Social Science Citation Index* database was used to identify articles that referenced one of the seminal applicant reactions articles (i.e., Gilliland, 1993 or Smither et al., 1993). This search yielded additional articles for potential inclusion, some of which were also contained in the keyword searches. Another search strategy involved scanning the reference lists of applicant reactions articles for other relevant studies. Finally, pertinent conference papers and presentations were sought from authors who presented at the annual *Society for Industrial and Organizational Psychology* (1999-2003) and *Academy of Management* academic conferences (1999-2002).

### *Criteria for Inclusion*

The criteria for inclusion in the meta-analysis were that: (a) the study measured applicant reactions concerning some aspect of the selection process, (b) the reported relationship was examined in at least five studies, and (c) a correlation coefficient was reported or there was sufficient available data to derive a correlation. In defining the research domain of interest, a thorough examination of relevant correlates and outcomes of applicants' perceptions about

selection tools or the selection process was conducted. Because this study was intended to examine attitudes, perceptions, or reactions that job applicants hold regarding hiring and selection systems, three types of studies were excluded from the meta-analysis (cf., Ryan & Ployhart, 2000). These included studies that exclusively examined reactions to preferential treatment or affirmative action programs (for a review, see Kravitz et al., 1997), studies of recruiter effects on applicants (for a review, see Breugh & Starke, 2000), and studies of reactions to drug testing outside of the selection context (e.g., Murphy, Thornton, & Reynolds, 1990).

The decision to exclude relationships that were not found in at least five studies was made to minimize second-order sampling error (Hunter & Schmidt, 1990). This approach limits the extent to which the meta-analysis outcomes are dependent on random variations in study properties across a small number of studies. As such, several important but relatively unstudied relationships were not analyzed. These included studies of applicants' perceptions of individual biodata items (Mael, Connerley, & Morath, 1996), acceptability of drug testing in specific work contexts (Crant & Bateman, 1990; Murphy et al., 1990), and reactions to specific types of interviews (Latham & Finnegan, 1993). Finally, important behavioral outcomes such as work performance (Gilliland, 1994) and applicant withdrawal (Ryan et al., 2000) did not meet the criteria for inclusion and were excluded from further study.

Decisions about the independence of data points were handled as follows. In cases where the same construct was assessed using multiple measures, a single composite correlation was calculated using Fisher's  $r$  to  $z$  formula. However, multiple effect sizes were included when they were drawn from the same sample in response to different types of predictors (e.g., cognitive ability, personality) as there is evidence that reactions vary by test type (Kluger & Rothstein,

1993). Multiple effect sizes were also included when they were drawn from the same sample at different stages of the selection process in order to test for the potential moderating influence of timing. Note that meta-analyses of correlations are reported, which means the analysis could misrepresent real mean differences that may exist across studies due to self-selection or moderators that were not considered. In addition, because average correlations are reported across studies, any one study in the meta-analysis or outside of the meta-analysis may deviate from these averages (Ostroff & Harrison, 1999).

### *Meta-Analysis Approach*

The first and third authors independently coded each article, and differences in coding of article information were discussed and settled by consensus. Once discussed, any discrepancies were resolved and agreement was reached for each coding decision. When possible, effect sizes were corrected for unreliability in both the predictor and criterion based on artifact distributions (Hunter & Schmidt, 1990). As noted in the tables, criterion reliability adjustments were made only when such adjustments were appropriate and not in cases in which background characteristics or other types of nominal data were involved (e.g., gender, age, ethnic background). Mean reliability estimates for variables included in the present study ranged from .75 to .92 ( $M = .83$ ).

Based on previous research, the conceptual model of applicant reactions described above (and depicted in Figure 1) was used to organize the array of constructs examined in primary studies. When original results were reported in terms of correlations involving multiple facets or dimensions, they were averaged using Fisher's  $r$  to  $z$  formula to derive an overall correlation. In instances where a composite correlation was derived by averaging multiple facets or dimensions, a corresponding reliability estimate was computed using the reliabilities for each of the facets in

question along with their intercorrelations and applying a formula for the reliability of linear composites (Nunnally, 1978).

Selection context was coded as a potential moderator variable to denote whether the study was conducted in an authentic, hypothetical, or descriptive selection context. In order to test the moderator hypothesis involving the stage in the selection process (Hypothesis 6), each variable was coded to reflect the stage in the selection process at which the measurement of that particular variable occurred. There are three specific possibilities: (a) pre-test/pre-feedback, (b) post-test/pre-feedback, and (c) post-test/post-feedback. Given that the focal tests of interest were the reported bivariate correlations between measures taken at any combination of (a), (b), and (c), there are nine different possibilities of overall study designs. Of particular interest was comparing effects that were measured concurrently (a-a, b-b, or c-c) with those measured in a more predictive manner (a-b, a-c, or b-c). The other possible combinations are also reported for completeness (b-a, c-a, and c-b).

## Results

### *Description of Primary Studies*

Based on the literature review, we identified 86 samples ( $N = 48,750$ ) that met all criteria for inclusion in the meta-analysis. The median number of participants per study was 206 ( $M = 566.9$ ,  $SD = 2233.7$ ,  $Min = 32$ ,  $Max = 20,491$ ). The average percentage of males reported across samples was 53.3%, and most participants were White ( $M = 71.6\%$ ) and relatively young ( $M = 27.2$  years,  $SD = 7.2$ ,  $Min = 18.8$ ,  $Max = 43.3$ ). Most primary studies reported the modal education of the sample to be “some college” (75.0%). Less common was “bachelor’s degree” (17.2%), “high school or less” (4.7%), or “greater than master’s degree” (3.1%).

About half of the samples involved participants who were not actual applicants (53.5%), while the remainder of studies involved actual applicants (36.0%), or job incumbents (10.5%). Lab studies (51.2%) were slightly more common than field studies (48.8%). More studies involved samples in hypothetical selection contexts (48.8%) than in authentic selection contexts (38.4%), and the remaining samples were drawn from studies that examined reactions in descriptive selection contexts (12.8%). Nearly all of the hypothetical context studies involved college students (90%).

The majority of studies were conducted in university settings (60.5%), while the others were carried out in police or fire organizations (17.4%) and various other private and public organizations (22.1%). Participants were exposed to cognitive ability testing in many of the primary studies (46.0%), although personality testing (19.5%) and interviews (12.6%) were also examined in a number of studies. The remaining studies examined reactions in the context of other selection tools such as integrity tests, biodata, in-basket exercises, or a battery of different procedures.

A number of researchers examined reactions to multiple selection procedures within the same study. Of the 86 independent samples that contributed to the meta-analysis, 62 samples provided reactions to only one type of predictor or to one entire test battery, and 14 of the samples were asked to provide individual reactions to two or more predictors in the same study. As a result, for any given relationship, the same sample may contribute more than one correlation to a given population estimate. We therefore provide “ $K_c$ ” to indicate the number of correlations contributing to the meta-analytic estimate and “ $K_s$ ” to indicate the number of independent samples that is represented by the estimate.

### *Results of Meta-Analyses*

*Person characteristics.* Hypothesis 1 predicted nonzero relationships between person characteristics and applicant perceptions. Table 1 presents the overall meta-analytic correlations between these variables. The average correlation between age, gender, and ethnic background with applicant perceptions such as procedural justice, distributive justice, and test motivation was generally small. The average effect size ranged from  $-.03$  to  $.05$  and confidence intervals included zero in six of the seven analyses. The average correlation between conscientiousness and procedural justice was small ( $r = .08$ ), as was the relationship between neuroticism and procedural justice ( $r = -.04$ ). The average correlation between conscientiousness and test motivation was moderate ( $r = .20$ ). In sum, Hypothesis 1 generally was not supported.

*Perceived procedure characteristics.* Hypothesis 2 predicted that perceived procedure characteristics would be positively related to applicant perceptions. Table 2 provides the results for these analyses and shows clear support for Hypothesis 2. Across the 21 meta-analyses, average effect size estimates ranged from  $.14$  to  $.54$ , and all confidence intervals excluded zero. For example, face validity and perceived predictive validity (the most frequently studied procedure characteristics) showed an average correlation of  $.50$  and  $.54$ , respectively with procedural justice, which was the most commonly researched applicant perception.

*Applicant perceptions and outcomes.* Hypothesis 3 predicted that applicant perceptions would be positively related to a variety of outcomes and that test anxiety would be negatively related to outcomes. Table 3 presents these results, which provides strong support for Hypothesis 3. Test anxiety was negatively related to actual procedure performance, as predicted ( $r = -.28$ ). The remaining applicant perceptions showed average correlations with outcomes ranging from  $.08$  to  $.52$ , with confidence intervals excluding zero for all of the relationships.

*Selection context moderator.* Hypothesis 4 predicted that correlations would differ based on the selection context in which the study was conducted. Tables 1, 2, and 3 report average effect size estimates for authentic and hypothetical selection contexts. Table 1 provides results for the person characteristics-applicant perceptions link and shows non-overlapping confidence intervals for 2 of 8 relationships. Table 2 provides results for the perceived procedure characteristics-applicant perceptions link and shows non-overlapping confidence intervals for 10 of 19 relationships. Table 3 displays results for the applicant perceptions-outcomes link and reveals non-overlapping confidence intervals for 11 of 23 relationships.

In sum, average correlations differed between authentic and hypothetical selection contexts in 23 of 50 relationships examined, providing general support for Hypothesis 4. Overall, there were no consistent patterns concerning which context (authentic or hypothetical) showed higher correlations in those instances where relationships differed. However, in looking more closely at Table 3, average correlations between justice variables (e.g., procedural justice and distributive justice) and outcomes that are related to future behavior (e.g., recommendation intentions, offer acceptance intentions) were stronger in hypothetical contexts in comparison to authentic contexts in all but one instance.

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Insert Tables 1, 2, and 3 about here

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*Favorability ratings.* A different analysis strategy was used to test Hypothesis 5, which proposed that interviews and work samples would be rated more favorably than cognitive ability tests, and cognitive ability tests would be rated more favorably than personality inventories, biodata, honesty tests, and graphology. Recall that these studies asked participants to rate the

favorability (e.g., job relatedness or fairness) of a given set of selection tools, and that participants did not actually experience the selection technique. Such an approach was employed in 12 samples that were identified in nine studies (Hayes, Citera, Brady, & Jenkins, 1995; Marcus, 2003; Phillips & Gully, 2002; Schuler, Frier, & Kaufmann, 1991; Rynes & Connerley, 1993; Scholarios & Lockyer, 1999; Smither et al., 1993, Study 1; Steiner & Gilliland, 1996; Stinglhamber, Vandenberghe, & Brancart, 1999). A unit- and sample-weighted mean favorability rating was computed for each selection technique (e.g., cognitive ability tests, interviews) by taking the average ratings across samples. Because the set of studies involved different measurement scales to assess favorability (e.g., 5-point, 7-point), means were rescaled such that all findings were calibrated on a 5-point scale, in which higher ratings indicate more favorable evaluations of the selection technique. These means were then aggregated across studies for 10 different selection tools. Other selection tools were assessed fewer than five times in the primary studies and thus were excluded from further analysis.

Table 4 presents the results of these analyses for both unit- and sample-weighted aggregation strategies. Results using sample-weighted aggregation indicate that applicants rated interviews ( $M = 3.84$ ) most favorably, followed by work samples ( $M = 3.63$ ), resumes ( $M = 3.57$ ), and references ( $M = 3.33$ ). Cognitive ability testing received moderate favorability ratings ( $M = 3.14$ ), as did personality testing ( $M = 2.88$ ) and biodata ( $M = 2.81$ ). Personal contacts ( $M = 2.51$ ), honesty tests ( $M = 2.47$ ), and graphology (i.e., handwriting analysis;  $M = 1.76$ ) were rated relatively unfavorably. Table 4 also lists results for analyses involving mean ratings that were not adjusted for sample size, which reflect a similar pattern of results.

To test Hypothesis 5, confidence intervals were calculated around the mean favorability ratings for each selection tool. Results demonstrate that confidence intervals did not overlap,

suggesting that interviews ( $M = 3.84$ ) and work samples ( $M = 3.63$ ) were perceived more favorably than cognitive ability tests ( $M = 3.14$ ). In turn, cognitive ability tests were perceived more favorably than personality inventories ( $M = 2.88$ ), biodata ( $M = 2.81$ ), honesty tests ( $M = 2.47$ ), and graphology ( $M = 1.76$ ). Therefore, Hypothesis 5 was supported.

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 Insert Table 4 about here  
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*Selection stage moderator.* Hypothesis 6 predicted that correlations would be different based on the stage of the selection process and further proposed that variables measured concurrently would show higher average correlations than when measurement was separated by time. Tables 5 and 6 present these results. The general pattern that emerges across analyses is that average correlations are higher when both variables are measured simultaneously than when they are separated in time, and results vary widely across possible temporal combinations. For example, the average correlation between procedural justice and organizational attractiveness ranges from .15 to .50. These findings provide support for Hypothesis 6.

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 Insert Tables 5 and 6 about here  
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*Relationships between perceived procedure characteristics.* Table 7 provides intercorrelations between the perceived procedure characteristics contained in the model depicted in Figure 1. In general, there were low to moderate relationships among these variables. One exception is that opportunity to perform and perceived predictive validity showed an

average correlation of .76. Aside from this relationship, all other intercorrelations ranged from .06 to .53.

*Relationships between applicant perceptions.* Table 8 provides intercorrelations between the applicant perceptions contained in the model. In general, there were low to moderate relationships among these variables. The strongest relationship found was between procedural and distributive justice ( $r = .60$ ).

*Relationships between outcomes.* Table 9 provides intercorrelations between the model outcomes. In general, there were moderate to large relationships among these variables. The strongest relationships were between application intentions and offer acceptance intentions ( $r = .74$ ) and between recommendation intentions and product purchase intentions ( $r = .62$ ).

*Additional analyses and file-drawer analyses.* For completeness, relationships between perceived procedure characteristics and outcomes are reported in Table 10. Table 11 provides relationships between perceived procedure characteristics and person characteristics.

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 Insert Tables 7, 8, 9, 10, and 11 about here  
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File-drawer analyses were conducted to determine the number of missing (null) studies that would be required to reduce the obtained effect size to a value that is not practically or theoretically meaningful (Hunter & Schmidt, 1990). Using these guidelines, a critical value of .02 was used to conduct file-drawer analyses. Results show that, for the 24 relationships shown in Table 3, one would need to locate between 8 and 735 additional studies ( $Med = 130$ ) with average null findings in order to reduce the observed correlations to .02.<sup>1</sup> Those relationships in

Table 3 that are based on a small number of studies and that show small average effects are more likely to be affected by potential missing studies.

## Discussion

### *Empirical Findings*

The primary goals of the present study were to provide an updated theoretical model of applicant reactions and to report empirical tests of the framework using meta-analysis. The model presented in Figure 1 builds on previous frameworks and incorporates theoretical and empirical advances since their publication. Three core paths in the model involving person characteristics, perceived procedure characteristics, applicant perceptions, and outcomes were tested in the present study. Further, selection context and stage in the selection process were studied as potential moderators.

*Person characteristics.* Results indicated that person characteristics such as age, gender, and race had an average correlation at or near zero with applicant perceptions. Careful study of the conditions under which diverse populations might react differently to selection is warranted, as some studies have found stronger relationships between demographic variables and applicant perceptions (e.g., Chan, 1997). Conscientiousness and neuroticism also had a small average correlation with procedural justice, and conscientiousness was moderately related to test motivation. Research on other personality variables has been limited but may offers promise for future research. For example, openness to experience could be related to reactions to innovative selection procedures (Ryan & Ployhart, 2000).

*Perceived procedure characteristics.* A number of perceived procedure characteristics such as consistency, job relatedness, face validity, perceived predictive validity, and outcome favorability were investigated in relation to applicant perceptions. Overall, moderate

relationships were found between many of these variables and procedural justice, distributive justice, test motivation, attitudes towards tests, and attitudes towards selection. These findings provide support for a number of the procedural justice rules offered by Gilliland (1993) as predictors of applicant perceptions.

*Outcomes.* Turning to model outcomes, average correlations between applicant perceptions and outcomes such as self-assessed procedure performance, organizational attractiveness, recommendation intentions, and offer acceptance intentions were generally moderate to large. Relationships tended to be smaller with actual procedure performance, self-efficacy, and self-esteem. There was also a negative relationship between test anxiety and actual procedure performance, as predicted. These findings provide initial support for a number of outcomes included in the updated theoretical model.

It is important to note, however, that most of the outcomes studied in this area involve intentions, which leaves many unanswered questions concerning potential relationships with a variety of important behavioral outcomes. In particular, researchers have only begun to study how applicant perceptions might influence applicant withdrawal, actual recommendations to others, and job choice. In addition, applicant perceptions have been hypothesized to relate to a variety of work-related criteria such as job performance, organizational citizenship behaviors, job satisfaction, organizational commitment, and turnover. One important research need in moving forward in the applicant reactions literature forward is to systematically evaluate these post-hire attitudinal and behavioral outcomes.

*Moderators.* With regard to moderator analyses, results showed that correlations differed between authentic and hypothetical contexts in nearly half of the analyses examined. Further, when examining a number of justice-behavioral intentions relationships, correlations tended to

be stronger in hypothetical settings as compared to authentic contexts. These findings suggest that the role of fairness may be overestimated in studies conducted in hypothetical selection contexts. Nonetheless, although there are some differences across settings, meaningful relationships between applicant perceptions and behavioral intentions were found overall.

Several possible explanations for the mixed effects regarding context seem plausible. One possibility is that actual applicants have more invested in the hiring process and are more sensitive to features involved with selection and testing. At the same time, applicants consider many factors when evaluating job opportunities (e.g., economic concerns, competing offers) and these may lessen the potency of reactions in determining applicant behavior. As a result, research from hypothetical selection settings may show stronger relationships since many of these competing forces can be controlled, which could lessen the practical importance of hypothetical research findings since reactions are studied in isolation from these potentially strong influences. A final explanation is methodological in nature. Due to self-selection, participants in authentic selection studies may represent a restricted range of applicants, which could attenuate observed effects. Therefore, researchers must exercise care in choosing the most appropriate context for future applicant reactions research.

The stage in the selection process at which perceptions were measured had a significant impact on the effect sizes observed in this study. Correlations tended to be higher when perceptions were gathered concurrently than when separated by time. Nonetheless, significant relationships were still noted even when studies adopted predictive designs (i.e., measures separated by some time interval). These latter findings help to rule out the possibility that applicant reactions are mainly an artifact of measuring predictors and criteria at the same time. Researchers are beginning to study how relationships might be meaningfully different depending

on the stage of the selection process (Bauer et al., 1998; Truxillo et al., 2002). The present study explored several critical points in the selection process including pre-test, post-test, and post-feedback periods. It is clear that different patterns of results emerged; thus, issues associated with the timing of measurements must be more fully considered and reported in future applicant reactions research in order to continue building a more comprehensive model of how applicant reactions unfold over time. As was demonstrated in the present meta-analysis, it is entirely reasonable to expect different results depending on when reactions are collected.

With regard to specific selection tools, interviews, work samples, resumes, and references were perceived relatively favorably. Cognitive ability tests, personality tests, and biodata received moderate favorability ratings, whereas personal contacts, honesty tests, and graphology were perceived less favorably. It is important to note that none of these studies surveyed participants while they vied for employment with a particular organization, and participants did not actually complete the selection tools that they were evaluating. Therefore, care must be used in generalizing from these descriptive reports to actual applicants who might respond differently to these queries based on their experience with selection tools in the context of actual job search activities. Descriptive studies that lack direct parallels to the typical experiences of applicants might have limited value to organizations. Even if conducted with students, such studies would have greater scientific and practical value if applicants were actually exposed to the selection tools of interest rather than evaluating them in the abstract.

### *Sample Issues*

The nature of the samples included in this study deserves additional attention. As noted, about half of the samples involved participants in hypothetical selection settings, and these were mostly college students. Student participants may differ from typical applicants in terms of their

job-seeking experience, commitment to securing employment with the organization, and exposure to negotiating organizational roles. The remaining samples typically involved police or civil service applicants or applicants for temporary or seasonal positions. Studies involving executives and professionals, older workers, and applicants to private organizations are scarcely represented in the applicant reactions literature. In general, people who are pursuing temporary, part-time, or low-skill positions may be less influenced by selection system factors than those pursuing permanent, full-time employment requiring specialized skills. Future research should explore reactions with samples that are more representative of the applicant population.

### *Theoretical Issues*

It is important to develop stronger theoretical explanations to account for relationships among applicant reactions variables. In particular, a better understanding is needed of how applicant perceptions develop and change over time with respect to various stages of the selection process. Most research has explored outcome favorability as the critical lever in shaping reactions, but relations might vary for other reasons. Perhaps the salience of selection experiences decays over time as applicants “move on” or as justice-related perceptions in other domains take hold. Another reasonable possibility is that applicant mood might account for stronger relationships between variables when they are measured simultaneously. Fairness heuristic theory suggests a mechanism by which to account for the dynamic nature of justice perceptions over time, and should be considered in future research (Lind, 2001).

Even a cursory review of the applicant reactions literature reveals a heavy emphasis on studying applicant reactions from a justice perspective. Although this work has been informative, it may be necessary to expand the theoretical scope of future research to better understand the phenomena of interest. It is logically apparent and fairly well documented that breaches of

fairness have negative effects on the perceptions held by applicants and employees. However, it is less clear if employees always view the selection process through a justice lens. For example, applicants who withstand a particularly lengthy selection process may dislike the process, but may not necessarily view it as unfair. Early researchers proffered the view that applicants perceive the selection process as a preliminary signal of what working for the company would be like. Interestingly, signaling theory (Spence, 1973) has not been fully developed nor sufficiently tested to determine its relative value as a complement or alternative to justice theory. It is recommended that future studies examine its theoretical and empirical value more closely.

More recently, attribution theory has been explored as a complementary approach to understanding applicant reactions to selection (Ployhart & Harold, in press; Ployhart & Ryan, 1997). In particular, Ployhart and Harold proposed the Applicant Attribution-Reaction Theory and suggest that attributions (not justice perceptions) are the primary mechanism by which applicants form reactions to selection procedures. Future studies should consider testing this model and other propositions suggested by attribution frameworks.

The literature on psychological contracts appears relevant to the study of applicant reactions as well. The first opportunity that applicants have to develop a psychological contract with a prospective employer is during the recruitment and selection process. Cross-sectional correlational designs and theoretical grounding solely in organizational justice theory leaves many studies incapable of capturing spillover effects of psychological contract violations onto the job. By adopting this perspective, future researchers might develop a stronger theoretical grounding for linking applicant reactions with job performance and other in-role outcomes.

The study of realistic job previews (RJPs) may also be pertinent since RJPs that are presented during the recruitment and selection process may affect applicant perceptions about

the company and influence the likelihood of accepting job offers. Previous research has demonstrated that RJPs are related to turnover and other meaningful in-role outcomes (Phillips, 1998). Researchers might incorporate this perspective into studies that attempt to link applicant perceptions with more distal outcomes.

Finally, applicant withdrawal and job choice largely involve decision-making processes. For example, the image theory model of decision making (Beach & Mitchell, 1996; Stevens & Beach, 1996) specifies how individuals come to make these important work-related choices. Image theory involves various schematic knowledge structures that aid the individual in organizing and processing information that is available during the selection process. Briefly, the logic of the theory is that individuals hold various values and principles that define how the world should operate, which form the foundation for one's decisions. Applied to selection, decisions to remain in the process depend on the extent to which information gained during the selection processes conforms to those personal goals and values. Various types of screening and choice decisions are then made based on how compatible the process is with an individual's personal principles and values. Overall, the emphasis that the theory places on individual differences in the job search process could help explain reactions to selection, and future research should consider how decision making theories such as image theory help explain applicant attitudes and behaviors.

#### *Methodological Issues*

It is necessary to echo several methodological issues raised by Ryan and Ployhart (2000). For example, studying applicant reactions without specifying whether feedback has been delivered to candidates is misleading and obscures potentially meaningful relationships between variables. Researchers must clearly indicate when reactions were measured (i.e., pre-test, post-

test, post-feedback), when feedback was delivered, and fully describe the nature and medium of the feedback (e.g., actual test score vs. pass/fail information). Several studies that measure reactions at various points in the process empirically confirm the notion that applicants will perceive the process and organization differently depending on the favorability of outcome information provided by the company (e.g., Bauer et al., 1998; Truxillo et al., 2002).

Applicants may also react differently to selection procedures depending on how the different tools are framed by organizational members. For example, applicants who are told that a particular test has been shown to reliably identify top performers might respond more favorably to the instrument than if no explanation is given. Perhaps candidates who are assessed using a structured interview approach would respond more favorably if they are told that the purpose of the format is to enhance consistency across candidates. These contextual features of selection must be carefully reported and directly examined in future work. Although there is an emerging literature on explanations for outcomes in the broader justice realm (Shaw, Wild, & Colquitt, 2003), there is little research aimed at understanding explanations for the use of specific procedures in selection contexts.

#### *Directions for Future Research*

There is still much to be learned in the area of applicant reactions. Although the meta-analysis data helps summarize empirical findings to date, it should not be taken as the final say in this domain. For example, there are a number of areas in this study where meta-analysis results are based on a small number of studies. The effect is especially pronounced when examining measurements separated in time. Thus, there is still little evidence available to support strong conclusions about how applicant reactions influence subsequent behaviors (Ryan

& Ployhart, 2000). Further, there are many areas in which future research can build upon these results to clarify the nature and meaning of the relationships. These directions are outlined next.

It is clear that applicants' perceptions show consistent relationships with various attitudes and intentions, but behavioral outcomes must be carefully studied moving forward. Only a few studies have tracked applicants into the job to examine possible spillover effects on performance (e.g., Gilliland, 1994; Hunthausen, 2000). More research is needed to determine whether there are robust relationships between reactions to selection procedures and subsequent job performance. This work should examine actual applicants whenever possible. Future work should also build on those studies that have examined applicant withdrawal (e.g., Ryan et al., 2000; Truxillo et al., 2002). Organizations that are concerned with applicant retention and, more specifically, losing top applicants (Murphy, 1986), should track how reactions compete with other factors to explain self-selection from the hiring process. Few studies have been able to track perceptions of applicants that self-select out of the hiring process. Understanding the relationship between features of the testing process such as the duration and perceived administrative burden that it places on applicants would be especially useful. Longitudinal studies of perceptions of applicants turned job incumbents would help test Gilliland's (1993) contention that initial impressions formed during the selection process might relate to other attitudes and behaviors once on the job, such as organizational citizenship behaviors, organizational commitment, and turnover.

It would also be informative to study global attitudes towards employment testing more closely to better understand why individuals hold overall positive or negative perceptions towards selection. This stream of research (e.g., Arvey et al., 1990; Lounsbury, Bobrow, & Jensen, 1989) differs from the justice-based perspective that is often adopted, but deserves

additional attention in future studies. As it stands, we know very little about what causes applicants to develop lasting positive or negative impressions towards selection processes. Basic psychological research on impression formation (e.g., Coover & Reeder, 1990) would likely be useful in strengthening the theoretical linkages among the many variables often included in applicant reactions studies.

An additional opportunity for future research involves examining the antecedents of applicant reactions. Gilliland and Steiner (2001) document causes of unfairness, including situation-specific features of the testing environment such as treatment by hiring personnel and particular features of the selection test. Ployhart and Harold (in press) suggest exploring attributions as the causal mechanism by which applicants develop reactions to selection. Finally, Arvey and Sackett (1993) proposed a number of specific selection content features that appear most relevant to understanding the determinants of selection system favorability, many of which have yet to be systematically evaluated.

In order to enhance the generalizability of applicant reactions research, future studies should explore the reactions held by working professionals, older workers, and applicants to private industry. The selection process may be different for individuals who are applying for senior-level and executive positions when compared with reactions of entry-level or public sector personnel. In addition, given the recent technological advances in selection and testing, older workers may hold views toward selection procedures that are different from their younger counterparts.

Future studies concerning applicant reactions to promotion would be beneficial (e.g., Ambrose & Cropanzano, 2003) and may yield different findings due to the preexisting relationship between applicants and the organization. Most of the research to date has examined

the reactions of external applicants, but the stakes are sometimes much higher for applicants and the organization in promotional contexts. Qualitative research in this area and in the applicant reactions literature in general would be especially useful to document the etiology of reactions over the course of the employment relationship.

More research is needed to examine the potential benefits of interventions that could improve applicant reactions. Some of these interventions could be aimed at improving interpersonal and informational justice, such as providing explanations for the use of selection tools (e.g., Ployhart, Ryan, & Bennett, 1999). Other studies might examine how training human resource managers to deliver information about selection procedures influences applicant reactions. Finally, technological advances have made it possible to deliver feedback quickly and provide test information in multiple formats. These areas require additional research to determine how such developments influence applicant perceptions and outcomes.

Lastly, research on applicant reactions should continue to explore cross-cultural differences in reactions to selection. Nearly all of the research to date has been done with North American samples, although several studies exist that directly compared reactions across cultures, (e.g., Phillips & Gully, 2002; Steiner & Gilliland, 1996) or have examined non-US samples (e.g., Stinglhamber et al., 1999).

### *Implications for Practice*

It is important to consider the practical implications of these findings. Applicants who perceive selection tools and processes as procedurally fair and job-related hold more positive image perceptions of the company, report better word-of-mouth intentions with others, and state that they are more likely to accept a job offer from an organization. Furthermore, applicants who hold favorable perceptions are those who tend to perform well on selection tools and who hold

themselves in higher self-regard. Organizations that attend to applicant perceptions can realize numerous benefits. Conversely, organizations using selection tools and procedures that are perceived unfavorably by applicants may find that they are unable to attract top applicants, and may be more likely to face litigation or negative public relations.

Organizations may be reluctant to gather applicant reactions fearing that it will bring unwanted attention or even potential litigation to the selection process. However, these very outcomes might be avoided if organizations better understood the selection features that could be enhanced to avoid negative reactions. Even studies that ask job incumbents how they perceive new or existing procedures would enhance the realism and generalizability of this research.

The findings reported in this study demonstrated that people evaluate the favorability of various selection tools differently. In general, selection tools are perceived more favorably when the relationship between the content of the selection tool and job duties is transparent. Interviews, work samples, resumes, and references were rated most favorably, followed by cognitive ability tests, personality tests, and biodata. Finally, personal contacts, honesty tests, and graphology were perceived the most unfavorably. Reasons for these unfavorable reactions undoubtedly vary, ranging from the perceived invasiveness of test items to the general lack of face validity or perceived predictive validity. More research is certainly needed to better ascertain the specific causes of unfavorable applicant reactions. Selection specialists should choose cautiously among these tools whenever applicant reactions are of concern. In some cases, the relative predictive validity of these tools parallels the relative favorability ratings given by participants (e.g., graphology), but in others the pattern is not so clear (e.g., honesty tests). At least in the abstract, the findings indicate that test type is an important determinant of applicant reactions.

*Limitations*

The present meta-analysis has several limitations that must be noted. For example, some of the relationships reported involved small samples. Although this information helps clarify the nature of the applicant reactions literature, care must be exercised when interpreting the results due to possible second-order sampling error (Hunter & Schmidt, 1990). A related point must be made about potential moderating influences on the relationships reported here. Small sample sizes did not permit separate analyses based on test type (e.g., cognitive ability tests vs. personality inventories) or test medium (e.g., paper vs. computer), which might influence the nature of the relationship between applicant reactions and organizational outcomes. In addition, the stage of the selection process (e.g., pre-feedback vs. post-feedback) could not be meaningfully evaluated for a variety of outcomes even though there is conceptual and empirical evidence that effects will vary depending on timing of measurement. For a more complete treatment of the topic, additional primary studies must be carried out to enhance our understanding of these potential moderators. Conducting additional primary research studies will also enable researchers to combine meta-analysis with path analysis in testing theoretical models of applicant reactions.

Another limitation of the present study and meta-analysis in general, is that estimates of the true bivariate relationship between variables do not permit inferences about causality. For example, the moderate relationship that was found between procedural justice and organizational attractiveness has often been interpreted, even if only implicitly, that perceptions of procedural justice during the selection process cause individuals to perceive the organization more favorably. However, it is plausible that positive company impressions lead individuals to

perceive the selection process more fairly, or that some third variable (e.g., applicant mood) is responsible for the relationship.

### *Conclusion*

The field of applicant reactions developed in the late 1980s and early 1990s in response to business, legal, ethical, technological, and scientific forces. The theoretical and empirical work that followed has broadened our understanding of the value of studying selection from the perspective of the applicant. The present study offered an updated theoretical model of applicant reactions and tested various portions of it using meta-analysis. Results demonstrated that applicant perceptions are related to a number of organizational outcomes, many of which have practical value for organizations.

There is clearly much work to be done in this area, but the available evidence suggests that how applicants perceive the selection process matters. Enhancing the treatment of applicants during the selection process holds promise in attracting and retaining qualified workers from underrepresented backgrounds. Companies that promote fairness and use job-related selection tools may be less likely to become the targets of employment discrimination lawsuits. Finally, attending to the ethical values and psychological well being of applicants makes good business sense and contributes to societal goals of fairness and equality. To this end, it is hoped that future work will provide a deeper understanding of the conceptual and practical significance of applicant reactions research.

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Footnote

<sup>1</sup>Detailed file-drawer analyses are available from the first author.

Table 1

*Relationships between Person Characteristics and Applicant Perceptions*

Person Characteristics	Applicant Perceptions	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Procedural justice</u>							
Conscientiousness <sup>hyp</sup>		6	1,872	.08	.04 to .13	3	.09
Neuroticism <sup>hyp</sup>		6	1,872	-.04	-.09 to .00	3	-.05
Age		7	1,387	-.03	-.09 to .02	5	-.04
	Authentic context	2	469	-.09	-.18 to .00		
	Hypothetical context	5	918	.00	-.07 to .06		
Gender <sup>1</sup>		11	2,306	.05	.01 to .09	8	.05
	Authentic context	3	838	-.04	-.11 to .03		
	Hypothetical context	8	1,468	.10	.05 to .15		
Ethnic background <sup>2</sup>		5	1,094	.04	-.02 to .10	4	.04
	Authentic context	3	722	.05	-.03 to .12		
	Hypothetical context	2	372	.02	-.09 to .12		
<u>Distributive justice</u>							
Age		5	1,077	-.02	-.08 to .04	4	-.02
	Authentic context	1	201	-.13	-.26 to .01		
	Hypothetical context	4	876	.01	-.06 to .08		
Gender <sup>1</sup>		6	1,446	.02	-.03 to .07	5	.02
	Authentic context	2	570	-.04	-.12 to .04		
	Hypothetical context	4	876	.06	-.01 to .13		
<u>Test motivation</u>							
Conscientiousness		7	2,812	.20	.16 to .23	3	.21

Authentic context	1	1,483	.13	.08 to .18		
Hypothetical context	6	1,329	.28	.22 to .32		
Gender <sup>1</sup>	8	1,984	.01	-.04 to .05	4	.01
Authentic context	5	1,297	-.01	-.06 to .05		
Hypothetical context	3	687	.03	-.05 to .11		
Ethnic background <sup>2</sup>	7	1,871	-.02	-.07 to .02	5	-.02
Authentic context	5	1,297	-.01	-.06 to .05		
Hypothetical context	2	574	-.05	-.13 to .03		

Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>hyp</sup>All studies conducted in a hypothetical selection context; <sup>1</sup>Males coded higher; <sup>2</sup>Blacks/minorities coded higher.

Table 2

*Relationships between Perceived Procedure Characteristics and Applicant Perceptions*

Perceived Procedure Characteristics	Applicant Perceptions	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
	<u>Procedural justice</u>						
Consistency		12	2,911	.34	.31 to .37	7	.35
Authentic context		3	1,144	.17	.11 to .22		
Hypothetical context		9	1,767	.44	.40 to .48		
Job relatedness		11	5,830	.51	.49 to .53	8	.61
Authentic context		7	5,170	.50	.48 to .52		
Hypothetical context		4	660	.58	.53 to .63		
Face validity		39	10,719	.50	.48 to .51	19	.58
Authentic context		11	4,751	.60	.58 to .62		
Hypothetical context		28	5,968	.40	.38 to .42		
Perceived predictive validity		31	8,695	.54	.52 to .55	14	.63
Authentic context		9	4,480	.56	.54 to .58		
Hypothetical context		22	4,215	.51	.49 to .53		
Opportunity to perform		7	1,222	.48	.43 to .52	5	.56
Authentic context		1	208	.45	.33 to .55		
Hypothetical context		6	1,014	.48	.43 to .53		
Explanations/accounts		5	1,020	.14	.08 to .20	4	.17
Authentic context		2	468	.04	-.05 to .13		
Hypothetical context		3	552	.23	.15 to .31		
Outcome favorability (actual) <sup>1</sup>		11	2,463	.22	.19 to .26	9	.24
Authentic context		6	1,426	.21	.16 to .26		
Hypothetical context		5	1,037	.24	.18 to .30		

Transparency	6	1,542	.30	.25 to .35	6	.36
Authentic context	5	1,392	.30	.25 to .35		
Hypothetical context	1	150	.30	.15 to .44		

Distributive justice

Face validity	12	2,401	.29	.25 to .32	10	.33
Authentic context	4	1,029	.30	.24 to .36		
Hypothetical context	8	1,372	.27	.22 to .32		
Perceived predictive validity	9	1,898	.34	.30 to .38	7	.39
Authentic context	2	758	.40	.33 to .45		
Hypothetical context	7	1,140	.30	.24 to .35		
Outcome favorability (actual) <sup>1</sup>	8	1,467	.40	.35 to .44	7	.41
Authentic context	3	541	.33	.26 to .41		
Hypothetical context	5	926	.43	.37 to .48		

Test motivation

Face validity	9	2,955	.31	.27 to .34	5	.35
Authentic context	3	1,525	.41	.37 to .45		
Hypothetical context	6	1,430	.18	.13 to .23		
Perceived predictive validity	7	2,381	.16	.12 to .20	3	.18
Authentic context	3	1,525	.18	.13 to .23		
Hypothetical context	4	856	.12	.05 to .18		
Opportunity to perform	6	1,770	.28	.23 to .32	2	.32
Authentic context	2	914	.38	.32 to .43		
Hypothetical context	4	856	.16	.09 to .23		

<u>Attitude towards tests</u>						
Consistency <sup>auth</sup>	5	1,544	.21	.16 to .25	3	.24
Face validity	14	5,254	.45	.42 to .47	7	.54
Authentic context	5	3,404	.52	.50 to .55		
Hypothetical context	9	1,850	.28	.24 to .32		
Perceived predictive validity	14	5,254	.43	.41 to .45	7	.52
Authentic context	5	3,404	.47	.44 to .50		
Hypothetical context	9	1,850	.35	.31 to .39		
Information known	8	4,256	.32	.30 to .35	5	.41
Authentic context	6	3,798	.34	.31 to .37		
Hypothetical context	2	458	.17	.07 to .25		
Interpersonal treatment <sup>auth</sup>	6	3,798	.27	.24 to .30	4	.34
<u>Attitude towards selection</u>						
Face validity	6	1,082	.39	.34 to .44	5	.46
Authentic context	5	951	.42	.37 to .47		
Hypothetical context	1	131	.10	-.07 to .27		
Perceived predictive validity	6	1,082	.36	.30 to .41	5	.41
Authentic context	5	951	.37	.32 to .43		
Hypothetical context	1	131	.23	.06 to .39		

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Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>auth</sup>All studies conducted in an authentic selection context; <sup>1</sup>Reported estimate of population correlation was not adjusted for predictor unreliability.

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Table 3

*Relationships between Applicant Perceptions and Outcomes*

Applicant Perceptions	Outcomes	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Procedure performance (self)</u>							
Procedural justice		12	6,070	.46	.44 to .48	8	.53
Authentic context		8	5,392	.47	.45 to .49		
Hypothetical context		4	678	.34	.27 to .41		
Test motivation		6	2,179	.52	.48 to .55	4	.56
Authentic context		5	2,017	.53	.50 to .56		
Hypothetical context		1	162	.25	.10 to .39		
Attitude towards tests		6	1,243	.23	.18 to .29	4	.27
Authentic context		3	717	.09	.02 to .16		
Hypothetical context		3	526	.41	.34 to .48		
<u>Procedure performance (actual)<sup>1</sup></u>							
Procedural justice		28	11,043	.12	.10 to .14	16	.13
Authentic context		14	8,452	.11	.09 to .13		
Hypothetical context		14	2,591	.13	.09 to .17		
Distributive justice		8	1,513	.20	.15 to .25	7	.21
Authentic context		3	772	.26	.19 to .33		
Hypothetical context		5	741	.14	.07 to .21		
Test anxiety		6	4,531	-.28	-.30 to -.25	6	-.31
Authentic context		3	3,818	-.27	-.30 to -.24		
Hypothetical context		3	713	-.30	-.36 to -.23		
Test motivation		20	8,201	.21	.19 to .23	13	.22
Authentic context		11	6,242	.22	.19 to .24		

Hypothetical context	9	1,959	.19	.15 to .23		
Attitude towards selection	6	4,497	.08	.06 to .11	5	.09
Authentic context	5	4,366	.08	.05 to .11		
Hypothetical context	1	131	.12	-.05 to .29		
Attitude towards tests	14	5,752	.10	.07 to .12	10	.11
Authentic context	7	4,419	.11	.08 to .14		
Hypothetical context	7	1,333	.06	.01 to .11		

Organizational attractiveness

Procedural justice	35	15,033	.44	.42 to .45	20	.49
Authentic context	15	9,008	.39	.37 to .41		
Hypothetical context	20	6,025	.50	.49 to .52		
Distributive justice	13	3,639	.34	.31 to .36	8	.37
Authentic context	4	1,047	.14	.08 to .19		
Hypothetical context	9	2,592	.41	.38 to .44		
Test motivation <sup>hyp</sup>	6	1,374	.45	.40 to .49	1	.51
Attitude towards tests	20	6,561	.31	.29 to .33	7	.37
Authentic context	14	5,250	.34	.32 to .37		
Hypothetical context	6	1,311	.18	.12 to .23		

Recommendation intentions

Procedural justice	27	5,972	.46	.44 to .48	17	.52
Authentic context	12	2,252	.41	.37 to .44		
Hypothetical context	15	3,720	.50	.47 to .52		
Distributive justice	12	3,093	.40	.37 to .43	10	.47
Authentic context	4	974	.33	.27 to .39		

Hypothetical context	8	2,119	.43	.40 to .47		
Attitude towards tests	7	1,461	.35	.31 to .40	4	.40
Authentic context	6	1,261	.28	.23 to .33		
Hypothetical context	1	200	.70	.62 to .76		

Offer acceptance intentions

Procedural justice	26	11,214	.28	.26 to .29	13	.33
Authentic context	12	7,417	.25	.23 to .27		
Hypothetical context	14	3,797	.32	.29 to .35		
Distributive justice	6	1,155	.26	.20 to .31	4	.30
Authentic context	1	80	.44	.24 to .60		
Hypothetical context	5	1,075	.24	.18 to .30		
Attitude towards tests	5	1,050	.27	.22 to .33	3	.34
Authentic context	3	722	.23	.16 to .30		
Hypothetical context	2	328	.36	.26 to .45		

Self-efficacy

Procedural justice	26	5,701	.12	.09 to .15	12	.14
Authentic context	6	1,235	.12	.07 to .18		
Hypothetical context	20	4,466	.12	.09 to .15		
Distributive justice	9	2,233	.08	.04 to .12	5	.10
Authentic context	3	600	.00	-.08 to .08		
Hypothetical context	6	1,633	.11	.06 to .16		
Test motivation	9	3,143	.29	.26 to .33	3	.33
Authentic context	1	1,483	.16	.11 to .21		
Hypothetical context	8	1,660	.41	.36 to .45		

Attitude towards tests	15	2,831	.25	.22 to .28	4	.30
Authentic context	12	2,454	.26	.22 to .30		
Hypothetical context	3	377	.18	.08 to .27		

Self-esteem

Procedural justice	10	2,655	.26	.22 to .30	5	.29
Authentic context	1	80	.04	-.18 to .26		
Hypothetical context	9	2,575	.27	.23 to .30		

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Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>hyp</sup>All studies conducted in a hypothetical selection context; <sup>1</sup>Reported estimate of population correlation was not adjusted for criterion unreliability.

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Table 4

*Favorability Ratings for Ten Different Selection Tools*

Selection Tool	<i>K</i>	<i>N</i>	Mean (SD)	Mean <sub>adj</sub> (SD)	95% CI
Interviews	10	1530	3.70 (0.94)	3.84 (0.83)	3.80 to 3.88
Work Sample	10	1513	3.61 (1.09)	3.63 (1.06)	3.58 to 3.68
Resumes	5	736	3.57 (0.80)	3.57 (0.80)	3.51 to 3.62
References	7	1211	3.29 (0.93)	3.33 (0.93)	3.28 to 3.38
Cognitive Ability	10	1499	3.11 (1.00)	3.14 (1.00)	3.09 to 3.19
Personality Tests	10	1493	2.83 (1.01)	2.88 (0.99)	2.83 to 2.93
Biodata	8	1062	2.81 (1.01)	2.81 (1.01)	2.75 to 2.87
Personal Contacts	6	812	2.51 (1.13)	2.51 (1.13)	2.43 to 2.59
Honesty Tests	6	1126	2.47 (1.07)	2.47 (1.07)	2.41 to 2.53
Graphology	6	1126	1.69 (0.94)	1.76 (0.92)	1.71 to 1.81

Note. All favorability ratings were adjusted to reflect a 5-point scale before aggregation; higher values represent more favorable ratings; *K* = number of ratings; *N* = total sample size; Mean<sub>adj</sub> = sample-weighted mean; CI = confidence interval.

Table 5

*Relationships between Perceived Procedure Characteristics and Applicant Perceptions Grouped by Timing of Measurement*

Perceived Procedure Characteristics	Applicant Perceptions	$K_c$	$N$	$r$	95% CI
<u>Procedural justice</u>					
Face validity		39	10,719	.50	.48 to .51
Pre-test/Pre-test		3	2,648	.65	.63 to .68
Pre-test/Post-test		2	394	.18	.08 to .27
Post-test/Post-test		17	3,685	.47	.45 to .50
Post-test/Post-feedback		4	1,165	.25	.20 to .31
Post-feedback/Post-feedback		8	1,700	.55	.52 to .59
Post-test/Pre-test		2	394	.35	.26 to .43
Post-feedback/Post-test		3	733	.37	.30 to .43
Perceived predictive validity		31	8,695	.54	.52 to .55
Pre-test/Pre-test		3	2,648	.62	.60 to .65
Pre-test/Post-test		2	394	.39	.30 to .47
Post-test/Post-test		16	3,340	.55	.53 to .58
Post-test/Post-feedback		3	820	.24	.18 to .31
Post-feedback/Post-feedback		3	711	.54	.48 to .59
Post-test/Pre-test		2	394	.45	.36 to .52
Post-feedback/Post-test		2	388	.47	.39 to .55

Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval.

Table 6

*Relationships between Applicant Perceptions and Outcomes Grouped by Timing of Measurement*

Applicant Perceptions	Outcomes	$K_c$	$N$	$r$	95% CI
<u>Procedure performance (actual)</u>					
Procedural justice		28	11,043	.12	.10 to .14
Pre-test/Post-test		3	2,011	.11	.07 to .15
Post-test/Post-test		21	8,235	.12	.10 to .14
Post-feedback/Post-test		4	797	.12	.05 to .19
Test motivation		20	8,201	.21	.19 to .23
Pre-test/Pre-test		1	1,724	.14	.09 to .19
Pre-test/Post-test		2	460	.06	-.03 to .15
Post-test/Post-test		16	5,788	.25	.22 to .27
Post-test/Pre-test		1	229	.09	.19 to .23
<u>Organizational attractiveness</u>					
Procedural justice		35	15,033	.44	.42 to .45
Pre-test/Pre-test		2	2,522	.49	.46 to .52
Pre-test/Post-test		1	268	.25	.13 to .36
Pre-test/Post-feedback		1	99	.20	.00 to .38
Post-test/Post-test		15	7,653	.45	.43 to .47
Post-test/Post-feedback		3	1,099	.36	.31 to .41
Post-feedback/Post-feedback		7	1,390	.50	.46 to .54
Post-test/Pre-test		3	847	.15	.08 to .22
Post-feedback/Post-test		3	1,155	.44	.39 to .48

Attitude towards tests	20	6,561	.31	.29 to .33
Pre-test/Pre-test	3	2,736	.40	.37 to .43
Pre-test/Post-test	1	229	.16	.03 to .28
Pre-test/Post-feedback	1	168	.17	.02 to .31
Post-test/Post-test	6	1,587	.24	.19 to .29
Post-feedback/Post-feedback	1	144	.50	.37 to .61
Post-test/Pre-test	4	1,012	.21	.15 to .27
Post-feedback/Post-test	2	288	.28	.17 to .38
Post-feedback/Pre-test	2	397	.30	.20 to .38

Recommendation intentions

Procedural justice	27	5,972	.46	.44 to .48
Pre-test/Pre-test	2	565	.33	.26 to .41
Pre-test/Post-test	1	268	.29	.18 to .40
Pre-test/Post-feedback	1	99	.25	.06 to .43
Post-test/Post-test	7	1190	.51	.47 to .55
Post-test/Post-feedback	2	584	.45	.38 to .51
Post-feedback/Post-feedback	12	2,662	.50	.47 to .52
Post-feedback/Post-test	2	604	.46	.39 to .52

Offer acceptance intentions

Procedural justice	26	11,214	.28	.26 to .29
Pre-test/Pre-test	2	565	.24	.16 to .31
Pre-test/Post-test	1	268	.23	.11 to .34
Pre-test/Post-feedback	1	99	.07	-.13 to .26
Post-test/Post-test	10	6,843	.32	.30 to .34

Post-test/Post-feedback	4	993	.27	.21 to .33
Post-feedback/Post-feedback	5	896	.31	.25 to .37
Post-test/Pre-test	2	1,291	.07	.02 to .13
Post-feedback/Post-test	1	259	.16	.04 to .28

Self-efficacy

Procedural justice	26	5,701	.12	.09 to .15
Pre-test/Pre-test	1	268	.24	.12 to .35
Pre-test/Post-test	1	268	.22	.10 to .33
Pre-test/Post-feedback	1	99	.17	-.03 to .36
Post-test/Post-test	7	1,250	.20	.15 to .25
Post-test/Post-feedback	2	584	.12	.04 to .20
Post-feedback/Post-feedback	5	1,184	.10	.04 to .15
Post-test/Pre-test	4	837	.04	-.03 to .11
Post-feedback/Post-test	3	790	.07	.00 to .14
Post-feedback/Pre-test	2	421	.03	-.07 to .13
Attitude towards tests	15	2,831	.25	.22 to .28
Pre-test/Pre-test	1	253	.29	.17 to .40
Pre-test/Post-feedback	2	312	.13	.02 to .24
Post-test/Post-test	3	583	.28	.20 to .35
Post-test/Post-feedback	1	144	.18	.02 to .33
Post-feedback/Post-feedback	1	144	.38	.23 to .51
Post-test/Pre-test	4	945	.26	.20 to .32
Post-feedback/Post-test	1	144	.27	.11 to .42
Post-feedback/Pre-test	2	306	.20	.09 to .31

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Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval.

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Table 7

*Relationships among Antecedent Perceived Procedure Characteristics*

Perceived Procedure Characteristics	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Consistency</u>						
Opportunity to perform	5	1,103	.18	.13 to .24	4	.21
Interpersonal Treatment	8	2,316	.53	.50 to .55	6	.62
Outcome favorability (actual) <sup>1</sup>	5	824	.06	.00 to .13	4	.07
<u>Job relatedness</u>						
Information known	6	1,355	.44	.40 to .48	4	.55
Outcome favorability (actual) <sup>1</sup>	5	874	.16	.10 to .23	4	.18
<u>Face validity</u>						
Perceived predictive validity	37	10,639	.50	.49 to .52	18	.60
Opportunity to perform	8	2,148	.50	.47 to .53	4	.59
Propriety of questions	5	1,149	.32	.27 to .37	3	.38
Information known	5	3,550	.36	.33 to .39	4	.46
Interpersonal treatment	5	3,682	.32	.29 to .35	3	.39
Outcome favorability (actual) <sup>1</sup>	6	1,143	.04	-.02 to .10	4	.05
<u>Perceived predictive validity</u>						
Opportunity to perform	8	2,148	.76	.74 to .77	4	.86
Propriety of questions	5	1,149	.16	.10 to .21	3	.19
Information known	5	3,550	.29	.26 to .32	4	.36
Interpersonal treatment	5	3,682	.19	.16 to .22	4	.23

Interpersonal treatment

Opportunity to perform	7	1,502	.21	.16 to .26	6	.26
Information known	5	3,720	.37	.34 to .39	4	.47

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Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>1</sup>Reported estimate of population correlation was not adjusted for predictor unreliability.

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Table 8

*Relationships among Applicant Perceptions*

Applicant Perceptions	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Procedural justice</u>						
Distributive justice	27	6,585	.60	.58 to .61	20	.67
Test motivation	9	2,219	.14	.10 to .18	3	.17
Attitude towards selection	6	4,497	.50	.48 to .52	5	.59
Attitude towards tests	17	5,497	.47	.45 to .49	8	.55
<u>Attitude towards tests</u>						
Distributive justice	6	1,549	.36	.32 to .40	3	.43
Test anxiety	5	2,861	-.25	-.28 to -.21	4	-.32
Test motivation	10	4,033	.27	.24 to .30	4	.32
<u>Test motivation</u>						
Test anxiety	5	4,374	-.12	-.15 to -.10	5	-.15

Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion.

Table 9

*Relationships among Outcomes*

Outcomes	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Procedure performance (actual)<sup>1</sup></u>						
Procedure performance (self)	12	6,796	.32	.30 to .34	7	.34
<u>Organizational attractiveness</u>						
Procedure performance (actual) <sup>1</sup>	7	6,301	.14	.12 to .17	5	.15
Self-efficacy	32	6,876	.22	.20 to .24	5	.25
Self-esteem	7	1,821	.33	.29 to .37	4	.36
Offer acceptance intentions	34	12,128	.55	.54 to .56	11	.63
Recommendation intentions	30	6,617	.57	.55 to .59	9	.62
Product purchase intentions	11	5,581	.29	.27 to .32	2	.33
Litigation intentions	6	1,062	-.11	-.17 to -.05	3	-.13
<u>Offer acceptance intentions</u>						
Self-efficacy	29	5,229	.22	.19 to .24	5	.26
Recommendation intentions	30	6,084	.42	.40 to .44	8	.49
Application intentions	5	1,803	.74	.72 to .76	5	.95
Product purchase intentions	12	5,781	.24	.22 to .27	3	.29
<u>Recommendation intentions</u>						
Product purchase intentions	11	2,307	.62	.60 to .65	3	.69
<u>Self-efficacy</u>						
Procedure performance (actual) <sup>1</sup>	5	3,207	.23	.19 to .26	4	.25

Recommendation intentions	32	7,129	.23	.20 to .25	7	.26
Product purchase intentions	9	1,966	.26	.22 to .30	1	.30

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Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>1</sup>Reported estimate of population correlation was not adjusted for unreliability of actual procedure performance.

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Table 10

*Relationships between Perceived Procedure Characteristics and Outcomes*

Perceived Procedure Characteristics	Outcomes	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Procedure performance (self)</u>							
Face validity		8	2,147	.27	.23 to .31	5	.30
Perceived predictive validity		8	2,147	.41	.37 to .44	5	.47
<u>Procedure performance (actual)<sup>2</sup></u>							
Job relatedness		5	4,704	.12	.09 to .15	3	.14
Face validity		27	7,487	.12	.10 to .14	17	.13
Perceived predictive validity		22	6,663	.11	.09 to .13	14	.12
<u>Organizational attractiveness</u>							
Consistency		11	2,232	.21	.17 to .25	5	.24
Job relatedness		24	7,649	.27	.25 to .29	9	.32
Face validity		6	1,009	-.02	-.08 to .05	5	-.02
Opportunity to perform		11	2,210	.24	.20 to .28	5	.27
Information known		12	4,719	.27	.24 to .29	5	.33
Interpersonal treatment		12	4,464	.35	.32 to .37	6	.41
Outcome favorability (actual) <sup>1</sup>		14	3,006	.10	.07 to .14	7	.10
Transparency		5	1,149	.17	.11 to .23	3	.20
<u>Recommendation intentions</u>							
Consistency		9	2,076	.31	.27 to .35	4	.35
Job relatedness		11	2,012	.22	.18 to .26	4	.25

Face validity	12	2,763	.32	.28 to .35	8	.37
Opportunity to perform	6	1,202	.30	.25 to .35	4	.34
Information known	6	1,357	.18	.13 to .23	2	.21
Interpersonal treatment	9	1,733	.42	.38 to .46	7	.49
Outcome favorability (actual) <sup>1</sup>	10	1,792	.09	.05 to .14	6	.10

Offer acceptance intentions

Consistency	11	2,076	.28	.24 to .32	4	.32
Job relatedness	13	5,627	.20	.17 to .22	5	.24
Opportunity to perform	6	1,202	.19	.13 to .24	4	.22
Information known	6	1,357	.11	.06 to .16	2	.14
Interpersonal treatment	6	1,202	.33	.28 to .31	4	.41
Outcome favorability (actual) <sup>1</sup>	9	2,077	.07	.03 to .12	4	.08

Product purchase intentions

Job relatedness	5	4,337	.14	.11 to .17	2	.17
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Litigation intentions

Job relatedness	5	830	-.12	-.18 to -.04	2	-.14
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Self-efficacy

Consistency	17	3,649	.12	.09 to .15	5	.13
Job relatedness	21	4,087	.23	.20 to .26	5	.26
Face validity	11	2,646	.23	.20 to .27	4	.28
Perceived predictive validity	7	1,266	.11	.06 to .17	3	.13
Opportunity to perform	15	3,042	.30	.27 to .34	5	.35

Propriety of questions	8	1,548	.19	.14 to .24	2	.22
Information known	9	2,007	.18	.14 to .23	3	.23
Interpersonal treatment	11	2,186	.24	.20 to .28	4	.29
Outcome favorability (actual) <sup>1</sup>	16	2,451	.18	.14 to .21	6	.19

Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence

interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of

predictor and criterion. <sup>1</sup>Reported estimate of population correlation was not adjusted for predictor unreliability.

<sup>2</sup>Reported estimate of population correlation was not adjusted for criterion unreliability.

Table 11

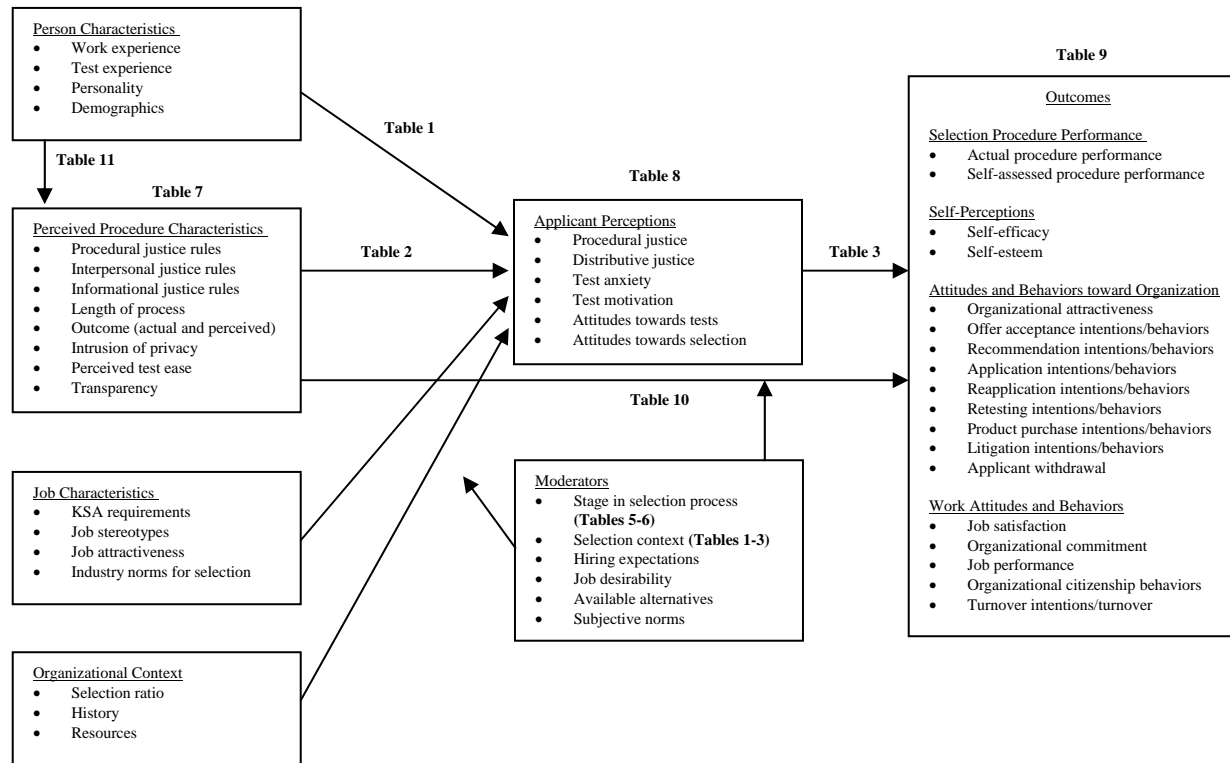
*Relationships between Perceived Procedure Characteristics and Person Characteristics*

Perceived Procedure Characteristics	Person Characteristics	$K_c$	$N$	$r$	95% CI	$K_s$	$\rho$
<u>Age</u>							
Face validity		12	10,434	.03	-.01 to -.05	8	.03
Perceived predictive validity		8	1,636	.06	.01 to .11	4	.06
<u>Gender<sup>1</sup></u>							
Face validity		15	23,067	-.04	-.05 to -.02	9	-.04
Perceived predictive validity		12	2,546	.00	-.04 to .04	6	.00
Opportunity to perform		8	1,633	.04	-.01 to .09	5	.05
Propriety of questions		6	1,378	.03	-.03 to .08	3	.03
Outcome favorability (actual) <sup>3</sup>		6	1,009	-.02	-.08 to .05	5	-.02
<u>Ethnic background<sup>2</sup></u>							
Face validity		7	21,678	-.02	-.04 to -.01	5	-.03

Note.  $K_c$  = number of correlations;  $N$  = total sample size;  $r$  = mean sample-weighted correlation; CI = confidence interval;  $K_s$  = number of independent samples;  $\rho$  = estimated population correlation adjusted for unreliability of predictor and criterion. <sup>1</sup>Males coded higher; <sup>2</sup>Blacks/minorities coded higher. <sup>3</sup>Reported estimate of population correlation was not adjusted for predictor unreliability.

Figure 1

*Updated Theoretical Model of Applicant Reactions to Selection*



Note. Model adapted from Gilliland (1993) and Ryan and Ployhart (2000)