

Application Of Gilliland's Model of Applicants' Reactions To The Field Of Web-Based Selection

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Zusammenfassung

Die vorliegende Dissertation untersucht die Fairness internetbasierter Personalauswahlverfahren aus Sicht der Bewerber – auf Basis der Organizational Justice Theory. Die Organizational Justice Theory betrachtet die Fairness des Handelns von Organisationen aus der Perspektive der davon betroffenen Individuen. Gilliland (1993) wandte in seinem Modell der Bewerberreaktionen diese Theorie auf das Feld der Personalauswahl an und postulierte zehn Regeln der prozeduralen Gerechtigkeit, welche aus Sicht der Bewerber zu einem fairen Auswahlverfahren führen.

Im ersten Jahrzehnt des neuen Jahrtausends wurde das Internet verstärkt zur Anwerbung und Auswahl von Arbeitskräften eingesetzt. Im Vergleich zu konventionellen Auswahlverfahren beinhaltet die internetbasierte Personalauswahl eine Reihe von Besonderheiten wie beispielsweise der fehlende persönliche Kontakt zu den Auswählenden, die hohe Standardisierung der Auswahl, sowie die Übermittlung von vertraulichen Daten über das Internet. Die internetbasierte Personalauswahl stellt somit für die Fairnessforschung einen genuin neuen Untersuchungsgegenstand dar.

Ziel dieser Arbeit ist daher die Untersuchung der wahrgenommenen Fairness internetbasierter Personalauswahlverfahren unter Anwendung von Gillilands Modell der Bewerberreaktionen.

Hierzu wird die bestehende Forschung zur Fairness von Auswahlverfahren dargestellt und diskutiert. Ein besonderer Schwerpunkt liegt dabei auf der internetbasierten Personalauswahl. Aus dem Stand der Forschung werden Empfehlungen für zukünftige Untersuchungen abgeleitet. Ein Teil davon wird in dieser Arbeit in zwei empirischen Studien umgesetzt.

Zunächst wird in einer Feldstudie mit 354 Ausbildungsplatzbewerbern Gillilands (1993) Modell der Bewerberreaktionen auf die internetbasierte Auswahl angewandt. Mittels der Partial Least Squares Methode werden die Anwendbarkeit des Modells auf ein internetbasiertes Auswahlverfahren getestet und relevante Gerechtigkeitsregeln für die internetbasierte Personalauswahl identifiziert. Als ausschlaggebende Gerechtigkeitsregeln in der internetbasierten Personalauswahl werden Behandlung der Bewerber, Gelegenheit zur Selbstpräsentation, Gelegenheit zur Überprüfung der Antworten und Angemessenheit der Fragen ermittelt.

Daraufhin werden in einem Laborexperiment mit einer Stichprobe von 91 Studierenden Design und Inhalt einer Auswahlinternetseite systematisch nach Gillilands (1993) Gerechtigkeitsregeln als fair oder unfair modifiziert. Es kann nachgewiesen werden, dass die Modifikationen Einfluss auf verschiedene Verhaltensintentionen (z. B. Annahme / Ablehnung

Stellenangebot) der Teilnehmer haben und dass dieser Einfluss, wie in Gillilands Modell der Bewerberreaktionen postuliert, durch die wahrgenommene Fairness des Auswahlprozesses mediert wird. Die Bedeutung der Ergebnisse dieser Arbeit für Forschung und Praxis wird diskutiert.

Abstract

This doctoral thesis focuses on the perceived fairness of web-based selection procedures. Fairness in this respect is analyzed from an applicant's perspective utilizing the framework of Organizational Justice Theory. Organizational Justice evaluates organizational behavior from the affected individual's point of view. Gilliland (1993) applied this theory to personnel selection proposing ten rules of procedural justice which make up a fair selection procedure – from an applicant's point of view.

The first decade of the new millennium saw the rise of the internet as a medium for personnel recruitment and selection. Compared to conventional selection methods web-based selection comprises several contingencies like the lack of personal contact, the high degree of standardization, or the transmission of highly confidential data across the data networks. Therefore, web-based selection and recruitment poses a brand new field of research.

This thesis examines the fairness of web-based personnel selection procedures using Gilliland's (1993) model of applicants' reactions.

Research into the fairness of selection is summarized and discussed, focusing especially on studies into the fairness of web-based selection procedures. Based on current research findings propositions for future research are made and partly put into practice.

In a field study with 354 applicants for an apprenticeship program a web-based selection procedure is evaluated using Gilliland's (1993) model of applicants' reactions. Results of Partial Least Squares analysis show that treatment of the applicants, opportunity to perform, reconsideration opportunity, and propriety of questions emerge as the most relevant procedural justice rules.

In a laboratory study surveying a sample of 91 students design and content of a web-based selection form are modified systematically abiding or violating Gilliland's (1993) procedural justice rules. It is shown that these changes influence participants' behavioral intentions (e.g. pursuit intentions) and that this influence is mediated by the perceived fairness of the selection procedure as postulated in Gilliland's model of applicants' reactions. The impact of these findings for research and practice is discussed.

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1 Einleitung

Der demographische Wandel bewirkt einen massiven Rückgang des Gesamterwerbspersonenpotenzials der Bundesrepublik Deutschland von 44,5 Mio. im Jahr 2004 auf etwa 31,5 Mio. im Jahr 2050 (Fuchs & Dörfler, 2005). Insbesondere im Bereich der Hochqualifizierten² macht sich diese Entwicklung in den nächsten 20 Jahren stark bemerkbar (Gramke, Fischer, Schlesinger & Schüssler, 2009). Dadurch wird sich der schon heute in vielen Branchen vorzufindende Fach- und Führungskräfte­mangel weiter verstärken (Adenauer 2005; Plüneck­e, 2004; Rost, 2004; Wilhelm, 2007). Die Rekrutierung und Bindung von Arbeitskräften nimmt daher an Bedeutung für den wirtschaftlichen Erfolg von Organisationen zu (Olesch, 2005; Schobert, 2007).

Für die Rekrutierung und Auswahl von Mitarbeitern wird seit Anfang des Jahrtausends zunehmend das Medium Internet genutzt (Beck, 2002; Cappelli, 2001; Weitzel, König, von Stetten, Eckardt & Laumer, 2010). Zur Wirkung von internetbasierten Auswahlverfahren auf die Bewerber, deren Fairnesswahrnehmung und deren Reaktionen ist allerdings relativ wenig bekannt. Aus der Forschung zu Bewerberreaktionen bezüglich nicht internetbasierter Personalauswahl existieren bereits empirisch untersuchte Modelle und Konzepte, die auf den Bereich der internetbasierten Personalauswahl übertragen werden können. Das am intensivsten genutzte Konzept (vgl. Holtz, Ployhart, Dominguez, 2005; Ryan & Ployhart, 2000) zur Untersuchung von Fairness in der Personalauswahl ist Gillilands Modell der Bewerberreaktionen (Gilliland, 1993).

Ziel dieser Arbeit ist die Untersuchung der subjektiv wahrgenommenen Fairness internetbasierter Personalauswahlverfahren unter Anwendung des von Gilliland (1993) entwickelten Modells der Bewerberreaktionen. Auf Basis eines Reviews der derzeitigen Forschung soll unter Einsatz empirischer Methoden erstens die Gültigkeit des Modells der Bewerberreaktionen für den Bereich der internetbasierten Personalauswahl untersucht werden, zweitens ermittelt werden, welche Gerechtigkeitsregeln in der internetbasierten Personalauswahl von besonderer Bedeutung sind und drittens der Nachweis für einen kausalen Zusammenhang zwischen ausgesuchten Gestaltungsmerkmalen eines internetbasierten Auswahlverfahrens und den Reaktionen der Bewerber erbracht werden. Für die empirischen Untersuchungen wird eine

² Zur besseren Lesbarkeit der Arbeit wird die männliche Form verwendet. Dabei ist stets die weibliche Form eingeschlossen.

Kombination aus Feldstudie und Laboruntersuchung angewandt, um die Stärken beider Methoden zu nutzen und ihre Nachteile entsprechend zu kompensieren.

Das vorliegende Dissertationsvorhaben ist wie folgt gegliedert: Dieses Kapitel gibt einen Überblick über die Arbeit und eine Einführung zur Fairness internetbasierter Personalauswahl. In Kapitel 2 werden ein Überblick über den Stand der Fairness-Forschung, insbesondere im Hinblick auf internetbasierte Personalauswahl, gegeben und Empfehlungen für die zukünftige Forschung abgeleitet. Im Rahmen einer Feldstudie mit einer Stichprobe von Ausbildungsplatzbewerbern wird in Kapitel 3 die Anwendbarkeit von Gillilands (1993) Modell der Bewerberreaktionen auf ein internetbasiertes Auswahlverfahren untersucht. In Kapitel 4 werden in einer Laboruntersuchung systematisch Design und Inhalt eines Online-Bewerbungsformulars variiert und dessen Auswirkungen auf die Bewerberreaktionen ermittelt. Eine übergreifende Diskussion der Forschungsergebnisse in Kapitel 5 schließt die Arbeit ab. Eine inhaltliche Zusammenfassung der einzelnen Kapitel vermittelt Abschnitt 1.4.

1.1 Internetbasierte Personalauswahl

Neben den Einsatzmöglichkeiten im Personalmarketing (Beck, 2002; Kirkbach, Montel, Oenning & Wottawa, 2004; Konradt & Rack, 2006; Moser, Zempel & Göritz, 2003) kann das Internet in erster Linie zur Verbesserung der Bewerbermanagementprozesse und der Personalauswahl beitragen. Der Einsatz von Computer- und Internettechnologie in der Personalauswahl bietet eine Reihe von Vorteilen für auswählende Organisationen: Prozesse werden einfacher, günstiger und schneller (Beulen, 2008; Cappelli, 2001; Hertel, Konradt & Orlikowski, 2003; Parry & Tyson 2008), die Messqualität wird verbessert (Arthur, Glaze, Villado & Taylor, 2010; Bartram & Bayliss, 1984) und es besteht die Möglichkeit, innovative Auswahlmethoden wie Tests nach der Item Response Theory (Drasgow & Hulin, 1990), komplexe Problemlöseszenarien (Funke, 1998) und Multimediaanwendungen (Funke & Schuler, 1998) einzusetzen. Dabei wird die internetbasierte Personalauswahl in der Regel genutzt, um die Vorauswahl der Bewerber, d. h. die Reduzierung des Bewerberpools einhergehend mit der Erhöhung der Geeignetenquote, und Teile der Hauptauswahl, also die Auswahl eines oder mehrerer geeigneter Bewerber für ein Vertragsangebot, abzubilden (z. B. Etzel, Etzel & Bregas, 2007; Kirkbach & Montel, 2007).

Im Vergleich zum konventionellen Rekrutierungsprozess weist die internetbasierte Personalauswahl aus Bewerbersicht einige Besonderheiten auf, die für spätere Betrachtungen der Fairnesswahrnehmung von Bedeutung sind.

(1) Die wohl offensichtlichste Besonderheit ist das Fehlen von persönlichem Kontakt zwischen den Vertretern der auswählenden Organisation und dem Bewerber. Dieser Kontakt wird bei Einsatz internetbasierter Personalauswahlverfahren erst zu einem späteren Zeitpunkt aufgebaut, wenn wichtige Auswahlentscheidungen bereits getroffen worden sind. Bereits im Rahmen der Studie von Schmitt und Coyle (1976) wurden aber empirische Belege dafür erbracht, dass dieser persönliche Kontakt für den Bewerber bedeutend ist und dass das Verhalten der Vertreter der auswählenden Organisation eine wichtige Rolle für die Organisationswahl des Bewerbers spielt.

(2) Weiterhin führt der höhere Standardisierungsgrad von internetbasierter Personalauswahl, beispielsweise über Bewerbungsformulare, möglicherweise zu einer Einschränkung der Selbstpräsentation des Bewerbers (Dineen, Noe & Wang, 2004).

(3) Zusätzlich könnte die Geschwindigkeit des Internets zu gesteigerten Erwartungen der Bewerber im Hinblick auf die Schnelligkeit von Feedback führen, wie Untersuchungen zum Thema Kundenzufriedenheit vermuten lassen (Mattila & Mount, 2003).

(4) Des Weiteren erfolgt die Bearbeitung von internetbasierten Verfahren im Vergleich zu konventionellen Papier- und Bleistifttests über Maus, Tastatur und Bildschirm. Studien haben gezeigt, dass der Modus (Computer vs. Papier-Bleistift) Einfluss auf die Ergebnisse von zeitbezogenen Leistungstests hat (Coyne, Warszta, Beadle & Sheehan, 2005). Das Hardware-Equipment (z. B. Bildschirmgröße, Bildschirmauflösung) kann darüber hinaus Auswirkungen auf die Leistungen des Getesteten zeigen (Bridgeman, Lennon & Jackenthal, 2003).

(5) Die Tatsache, dass internetbasiertes Testen in der Regel ohne Überwachung stattfindet, eröffnet zusätzlich die Möglichkeit für Täuschungsversuche (Carstairs & Myors, 2009; Konradt, Syperek & Hertel, 2011; Naglieri et al., 2004).

(6) Außerdem wird vom Bewerber verlangt, vertrauliche personenbezogene Angaben über unbekannte Datennetzwerke zu schicken (Naglieri et al. 2004), so dass Bedenken zum Thema Datenschutz auftreten können.

1.2 Fairness und das Modell der Bewerberreaktionen

1.2.1 Fairness

Im Kontext der Personalauswahl hat der Begriff Fairness zwei Bedeutungen: Nach der ersten Perspektive ist Fairness eine objektive psychometrische Eigenschaft eines Auswahlverfahrens und kennzeichnet ein Auswahlverfahren als frei von Verzerrungen und Benachteiligungen für bestimmte Bewerbergruppen (Sackett & Wilk, 1994). Die zweite Perspektive charakterisiert Fairness als psychologisches Konstrukt. Gemäß dieser Definition entsteht die Wahrnehmung von Fairness in der Interaktion von Person und Auswahlverfahren (Folger & Cropanzano, 1998). Diese Arbeit legt den Fokus auf die wahrgenommene Fairness.

Eine Reihe von Konzepten und Modellen wurde zur Erklärung und Prädiktion jener Vorgänge entwickelt, welche die Wahrnehmung des Auswahlverfahrens durch den Bewerber bestimmen (vgl. Anderson, 2001; Arvey & Sackett, 1993; Iles & Robertson, 1997; Schuler 1990, 1993). Das in Deutschland bekannteste Modell ist Schulers (1990) Soziale Validität, nach dem die vier Faktoren Information, Transparenz, Partizipation und Urteilskommunikation die Akzeptanz des Auswahlverfahrens auf Bewerberseite beeinflussen.

1.2.2 Organizational Justice Theory

Im angloamerikanischen Sprachraum wurde die Fairness von Personalauswahlverfahren insbesondere unter dem Paradigma der Organizational Justice Theory (Theorie der organisationalen Gerechtigkeit; Byrne & Cropanzano, 2001 für einen Überblick) untersucht. Gemäß der Organizational Justice Theory drückt sich die Fairness einer Organisation gegenüber Gruppen oder Individuen in verschiedenen Formen von Gerechtigkeit aus. Distributive Gerechtigkeit, d. h. die Gerechtigkeit des Ergebnisses, rückte als erstes in den Fokus der Forschung. Beispielsweise formuliert Adams (1965) im Rahmen der Equity Theory, dass Organisationsmitglieder das Verhältnis zwischen ihrem Input (bspw. Arbeitsleistung) und dem erzielten Output (Gehalt, Boni etc.) bewerten, indem sie es mit dem Input/Output-Verhältnis von Kollegen vergleichen. Im Gegensatz zur distributiven Gerechtigkeit betrachtet die prozedurale Gerechtigkeit (Leventhal, 1980; Thibaut & Walker, 1975) nicht das Ergebnis, sondern das Verfahren selbst. Hiernach bewerten Individuen nicht nur, ob das Ergebnis fair oder unfair war, sondern auch, wie das zum Ergebnis führende Verfahren abgelaufen ist.

Als weitere Ergänzung der Organizational Justice Theory wurde der Begriff der interaktionalen Gerechtigkeit (Bies & Moag, 1986; Folger & Cropanzano, 1998) eingeführt. Interaktionale Gerechtigkeit kennzeichnet die Behandlung des Individuums im zwischenmenschlichen Austausch. Sie besteht aus den Facetten interpersonelle und informationelle Gerechtigkeit (Greenberg, 1990). Dabei betont die interpersonelle Gerechtigkeit die soziale Seite der Interaktion, während die informationelle Gerechtigkeit Erläuterungen über die Prozedur selbst darstellt.

In einer Meta-Analyse mit 183 Studien (Colquitt, Conlon, Wesson, Porter & Ng, 2001) fanden sich Korrelationen von $r = .38$ bis $.66$ zwischen den verschiedenen Arten von Gerechtigkeit. Dennoch klärten die unterschiedlichen Arten von Gerechtigkeit inkrementelle Varianz in der Fairnesswahrnehmung auf.

1.2.3 Gillilands Modell der Bewerberreaktionen

Gilliland (1993) entwickelte, basierend auf der Organizational Justice Theory (Greenberg, 1990) und unter Einbezug bestehender Fairnesskonzepte (z. B. Arvey & Sacket, 1993; Iles & Robertson, 1989; Schuler, 1993), das Modell der Bewerberreaktionen. Da der Fokus dieser Arbeit auf der Untersuchung von Prozessen der internetbasierten Personalauswahl liegt, wird im Folgenden jener Teil des Modells betrachtet, welcher sich mit der prozeduralen Gerechtigkeit beschäftigt (vgl. Abb. 1).

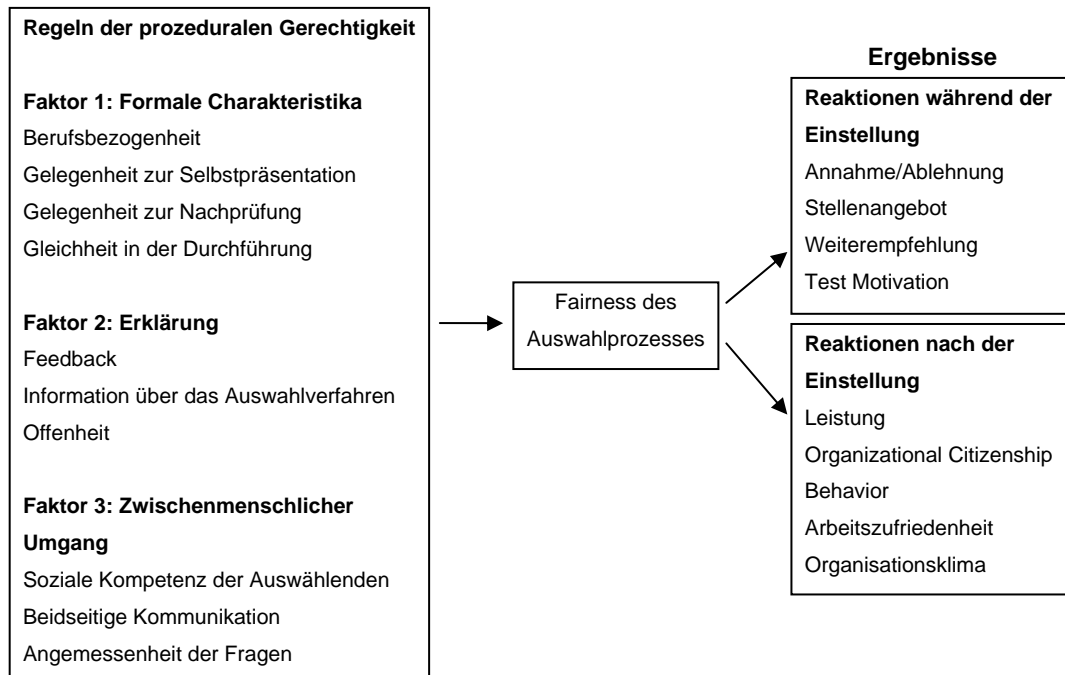


Abbildung 1. Prozedurale Gerechtigkeit (nach Gilliland, 1993, angelehnt an die Übersetzung von Köchling, 2000, S. 18)

Die prozedurale Gerechtigkeit nach Gilliland (1993) wird dargestellt in zehn Regeln (Primärfaktoren), gegliedert in drei Sekundärfaktoren:

Faktor 1 „Formale Charakteristika“: *Berufsbezogenheit, Gelegenheit zur Selbstpräsentation, Gelegenheit zur Nachprüfung, Gleichheit in der Durchführung;*

Faktor 2 „Erklärung“: *Feedback, Information über das Auswahlverfahren, Offenheit*

Faktor 3 „Zwischenmenschlicher Umgang“: *Soziale Kompetenz des Auswählenden, Beidseitige Kommunikation, Angemessenheit der Fragen*

Die Regeln der Faktoren 2 und 3 bilden die oben erwähnte interaktionale Gerechtigkeit mit ihren Facetten informationelle Gerechtigkeit und interpersonelle Gerechtigkeit ab. Die zehn Regeln der prozeduralen Gerechtigkeit wurden als Fragebogen in Form des Selection Procedural Justice Scale (SPJS; Bauer et al., 2001) für die Evaluation von Personalauswahlverfahren aus Bewerbersicht operationalisiert. Als Resultat von faktoranalytischen Untersuchungen wurde die Regel Berufsbezogenheit in zwei Skalen – Berufsbezogenheit Inhalt und Berufsbezogenheit Vorhersagekraft – abgebildet.

Für die Untersuchung internetbasierter Personalauswahl werden im Rahmen dieser Arbeit einige Gerechtigkeitsregeln umformuliert. So werden die Regeln Soziale Kompetenz

der Auswählenden und Beidseitige Kommunikation umformuliert in „Behandlung der Bewerber“ und „Kommunikation mit den Bewerbern“, da in der internetbasierten Personalauswahl in der Regel kein direkter Kontakt zu Vertretern der auswählenden Organisation besteht. Die folgende Tabelle 1 erklärt die Regeln der prozeduralen Gerechtigkeit formuliert für internetbasierte Auswahlverfahren.

Tabelle 1. Die Regeln der prozeduralen Gerechtigkeit für die internetbasierte Personalauswahl (basierend auf Gilliland, 1993)

Regel	Erläuterung zur subjektiven Bewertung durch den Bewerber
Sekundärfaktor 1: Formale Charakteristika	
Berufsbezogenheit – Inhalt Berufsbezogenheit – prädiktiv	Diese Regeln bewerten, ob das Auswahlverfahren von den Bewerbern als inhaltlich bzw. prädiktiv valide wahrgenommen wird.
Gelegenheit zur Selbstpräsentation	Diese Regel bewertet, ob der Bewerber die Gelegenheit hat, seine Qualifikationen und Erfahrungen darzustellen.
Gelegenheit zur Überprüfung der Antworten	Diese Regel bewertet bei der internetbasierten Personalauswahl die Möglichkeit des Bewerbers, seine Antworten vor der Übermittlung zu überprüfen
Gleichheit in der Durchführung	Diese Regel bewertet, ob das Auswahlverfahren für alle Bewerber auf die gleiche Art und Weise durchgeführt wird.
Sekundärfaktor 2: Erklärung	
Feedback	Diese Regel bewertet, ob aus Sicht des Bewerbers ein zeitnahes und informatives Feedback gegeben wird.
Information über das Auswahlverfahren	Diese Regel bewertet, ob dem Bewerber ausreichend Informationen über das Auswahlverfahren gegeben werden.
Offenheit	Diese Regel bewertet, ob der Bewerber sich ehrlich und glaubwürdigen behandelt fühlt.
Sekundärfaktor 3: Zwischenmenschlicher Umgang	
Behandlung der Bewerber	Diese Regel bewertet, ob der Bewerber sich durch die auswählende Organisation respektvoll und höflich behandelt fühlt.
Kommunikation mit den Bewerbern	Diese Regel bewertet, ob für die Bewerber während des Auswahlverfahrens ausreichend Gelegenheit besteht, mit der Organisation zu kommunizieren und insbesondere Fragen zu stellen.
Angemessenheit der Fragen	Diese Regel bewertet, ob die Fragen der Organisation im Rahmen eines Auswahlverfahrens legal und nicht zu persönlich sind.

Die Einhaltung oder Verletzung der Regeln der prozeduralen Gerechtigkeit beeinflusst wiederum die Fairness des Auswahlprozesses (in den folgenden englischsprachigen Teilen

auch als Process Fairness bezeichnet). Als finale Konsequenzen eines fairen oder unfairen Auswahlprozesses postuliert Gilliland (1993) verschiedene Bewerberreaktionen (s. Abb. 1). So hat die Fairness des Auswahlprozesses zu verschiedenen Zeitpunkten unterschiedliche Folgen. Während der Einstellung beeinflusst die Fairness des Auswahlverfahrens die Annahme oder Ablehnung eines Stellenangebots, die Bereitschaft des Bewerbers, die auswählende Organisation weiter zu empfehlen, sowie die Motivation zur Teilnahme an eignungsdiagnostischen Untersuchungen. In Extremfällen kann ein unfaires Auswahlverfahren gemäß dem Modell sogar eine Klage des Bewerbers vor Gericht zur Folge haben. Nach der Einstellung des Bewerbers zeigen sich Auswirkungen auf Leistung, Organizational Citizenship Behavior, d. h. die proaktive Mitarbeit in der Organisation außerhalb der Arbeitsaufgabe (Viswesvaran & Ones, 2000), Arbeitszufriedenheit und Organisationsklima.

1.3 Zentrale Fragestellungen der Arbeit

In dieser Arbeit werden Fairnesswahrnehmung und Bewerberreaktionen gegenüber internetbasierten Verfahren der Personalauswahl untersucht. Insbesondere wird erforscht, wie sich das Modell der Bewerberreaktionen auf den internetbasierten Bereich anwenden lässt. Angesichts der Besonderheiten internetbasierter Personalauswahl stellt sich in diesem Zusammenhang die Frage, welche Gerechtigkeitsregeln ausschlaggebend für die Fairness eines internetbasierten Auswahlverfahrens sind. Es werden also jene Regeln der prozeduralen Gerechtigkeit identifiziert, welche die Fairness in der internetbasierten Personalauswahl erklären. Da Studien auf rein korrelativer Basis keine Aussagen über die Richtung und Kausalität von Zusammenhängen zulassen, werden in einem Laborexperiment Designelemente einer Auswahlinternetseite modifiziert und deren Wirkung auf die Fairness und die Reaktionen der Teilnehmer erhoben.

1.4 Überblick über die Kapitel der Arbeit

1.4.1 Kapitel 2

Kapitel 2 präsentiert eine Literaturübersicht zur Fairness internetbasierter Personalauswahl. Im ersten Schritt wird dazu Gillilands Modell der Bewerberreaktionen vorgestellt,

anschließend wird ein Überblick über die umfangreiche Forschung für die nicht-internetbasierte Personalauswahl gegeben.

Im Vergleich zur nicht-internetbasierten Personalauswahl werden eine Reihe von Besonderheiten der internetbasierten Personalauswahl vorgestellt, welche die internetbasierte Personalauswahl als eigenes Forschungsgebiet rechtfertigen. Als Unterschiede zwischen nicht-internetbasierter und internetbasierter Personalauswahl, die einen möglichen Einfluss auf die Fairnesswahrnehmung haben, werden folgende Faktoren identifiziert: das Fehlen eines persönlichen Kontakts, die ausgeprägte Standardisierung internetbasierter Auswahl, die hohe Geschwindigkeit der Informationsübermittlung im Web, die Nutzung von Computerhardware, das Fehlen einer Überwachung der Testdurchführung und die Übermittlung von Informationen über Datennetzwerke.

Vor diesem Hintergrund werden die Forschungsergebnisse zur internetbasierten Personalauswahl zusammengetragen und diskutiert. Die frühe Forschung zur Fairness von internetbasierter Personalauswahl bezog sich auf Vergleiche von Papier-Bleistift- und internetbasierter Testverfahren (Potosky & Bobko, 2004; Salgado & Moscoso, 2003). Versuchsteilnehmer bevorzugten hier die internetbasierten Testversionen. Ferner beschäftigten sich verschiedene Untersuchungen mit den Einflussgrößen auf Bewerberreaktionen zu internetbasierter Personalauswahl wie Sorge um Computer- und Datenschutzprobleme (Bauer et al. 2006; Harris, van Hove & Lievens, 2003; Wasko, 2008); Systemgeschwindigkeit und Benutzerfreundlichkeit (Sinar, Reynolds & Paquet; 2003; Sylva & Mol; 2009).

Eine differenzierte Betrachtung von Gillilands Regeln der prozeduralen Gerechtigkeit für die internetbasierte Personalauswahl erfolgte bisher in nur wenigen Studien. In einer Policy-Capturing Designstudie identifizierten Dineen und Kollegen (2004) die Regel Gleichheit in der Durchführung als wichtigste Gerechtigkeitsregel. In einer jüngeren Feldstudie wurden Gelegenheit zur Selbstdarstellung, Information über das Auswahlverfahren, Angemessenheit der Fragen die wichtigsten prozeduralen Gerechtigkeitsregeln identifiziert (Brünn, 2010).

Als Empfehlung für die weitere Forschung zur Fairness internetbasierter Personalauswahl werden folgende Vorschläge unterbreitet: (a) Überprüfung der bedeutsamsten Gerechtigkeitsregeln für die internetbasierte Personalauswahl (b), Experimentelle Forschung zur Richtung von Wirkbeziehungen und kausalen Abhängigkeiten zwischen prozeduralen Gerechtigkeitsregeln und Bewerberreaktionen, (c) Untersuchung der Zusammenhänge zwischen technischen Variablen wie beispielsweise Usability-Kriterien und Gerechtigkeitsregeln (d) Vergleich der Fairness verschiedener internetbasierter Auswahlinstrumente (z. B. Bewer-

bungsformulare, Fähigkeitstests, Persönlichkeitsinventare), (e) Detaillierter Vergleich der Papier-Bleistift- und der internetbasierten Version eines Testverfahrens anhand der Gerechtigkeitsregeln.

1.4.2 Kapitel 3

In Kapitel 3 werden die Durchführung und die Ergebnisse einer empirischen Feldstudie dargestellt. Im Fokus steht die Struktur von Gillilands Modell der Bewerberreaktionen. Die von Gilliland postulierten Faktoren und Wirkzusammenhänge werden anhand einer Stichprobe aus der internetbasierten Personalauswahl mittels eines Partial Least Squares (PLS; Wold, 1985) Modells empirisch überprüft. Es wird die Frage geklärt, welche der Gerechtigkeitsregeln in der internetbasierten Personalauswahl den größten Einfluss auf die Fairness und die Reaktionen der Bewerber haben.

Zu diesem Zweck werden 354 Bewerber, die an einem internetbasierten Auswahlverfahren um einen kaufmännischen Ausbildungsplatz teilnahmen, per Online-Erhebung befragt. Als Messinstrumente werden (a) der nach der Methode der Rückübersetzung ins Deutsche transferierte und für den Online-Bereich adaptierte SPJS (Bauer et al., 2001) verwendet, (b) Skalen aus einer Untersuchung von Konradt und Rack (2006) zu Annahmeintentionen eines Stellenangebotes und Weiterempfehlungsintentionen eingesetzt und (c) eine für diese Studie eigens entwickelte 3-Item-Skala zu Wiederbewerbungsintentionen genutzt. Alle Skalen weisen gute Reliabilitäten auf. Für den deutschen SPJS kann die Faktorenstruktur der englischen Version per konfirmatorischer Faktorenanalyse repliziert werden.

In Kapitel 3 wird folgendes Modell untersucht: Die mithilfe des deutschen SPJS gemessenen elf Gerechtigkeitsregeln erklären die Fairness des Auswahlprozesses, welche wiederum verschiedene Verhaltensintentionen (Annahme Stellenangebot, Empfehlung, Wiederbewerbung) erklärt. Die Ergebnisse der Feldstudie werden mithilfe der PLS Methode untersucht. Mit PLS können standardisierte Regressionskoeffizienten in komplexen Pfad-Modellen berechnet werden. Im Vergleich zu kovarianzbasierten Methoden kann die PLS Methode auch bei Verletzung der Normalverteilung sowie bei kleinen und mittleren Stichproben eingesetzt werden.

Die im Forschungsmodell postulierten Zusammenhänge werden empirisch weitgehend bestätigt. Weiterhin wird untersucht, welche einzelnen Gerechtigkeitsregeln die Fairness eines internetbasierten Auswahlprozesses erklären. Die wichtigste Gerechtigkeitsregel ist die Behandlung der Bewerber gefolgt von der Gelegenheit zur Selbstdarstellung, der Angemessen-

heit der Fragen und der Gelegenheit zur Überprüfung der eigenen Antworten. Kapitel 3 schließt mit einer Diskussion der Ergebnisse im Hinblick auf ihre Bedeutung für Forschung und Praxis ab.

1.4.3 Kapitel 4

Kapitel 4 berichtet über ein Laborexperiment zur Fairness internetbasierter Personalauswahl. Verfolgt wird die Fragestellung, ob durch gezielte Veränderung von Inhalt und Funktionalitäten einer Personalauswahlinternetseite direkter Einfluss auf Bewerberreaktionen genommen werden kann. Bisherige Studien wurden auf rein korrelativer Basis durchgeführt. Die vorgelegte experimentelle Studie kann hier einen Beitrag leisten, um Wirkzusammenhänge und deren Richtung zu bestimmen.

Für das Experiment werden 91 Studierende einer Universität rekrutiert. Die Versuchsteilnehmer werden per Zufallsprinzip in zwei Gruppen aufgeteilt und betrachten eine von zwei Auswahlinternetseiten. Bei der Gestaltung der einen Website (Versuchsbedingung „fair“) werden ausgewählte Regeln der prozeduralen Gerechtigkeit eingehalten, bei der anderen (Versuchsbedingung „unfair“) werden die Regeln bewusst missachtet. Beispielsweise bietet die unfaire Website in Anlehnung an die Regel Gelegenheit zur Selbstpräsentation keine Möglichkeit, zusätzliche Informationen und Dokumente hochzuladen (vgl. Dineen et al., 2004). Im Anschluss an die Betrachtung der Auswahlinternetseite füllen die Teilnehmer internetbasierte Fragebögen (deutscher SPJS, Skala zur Wahrnehmung der Fairness, Verhaltensintentionen und soziodemographische Daten) aus.

Als Kontrolle der experimentellen Manipulation (fair vs. unfair) wird die Bewertung der Gerechtigkeitsregeln mittels SPJS für die Internetseiten verglichen. Signifikante Unterschiede zeigen sich für die manipulierten Regeln. Einige nicht manipulierte Regeln zeigen ebenfalls Unterschiede, wenn auch mit geringerer Effektstärke. Per Regressionsanalyse und Bootstrap Analyse wird gezeigt, dass die experimentelle Manipulation direkten Einfluss auf die Verhaltensintentionen (Annahme Stellenangebot, Weiterempfehlung, Wiederbewerbung) der Teilnehmer hat und dass dieser Einfluss durch die Wahrnehmung der Fairness des Auswahlprozesses mediiert wird.

Die Ergebnisse der Untersuchung zeigen, dass Organisationen durch die Gestaltung ihrer Auswahlinternetseiten aktiv die Fairnesswahrnehmung und die Verhaltensintentionen der Bewerber beeinflussen können. Es werden die Bedeutung der Ergebnisse für Forschung und Praxis diskutiert und Empfehlungen für weitere Forschung gegeben.

1.4.4 Kapitel 5

Kapitel 5 beinhaltet eine Diskussion der gesamten Arbeit. Hier werden kapitelübergreifend die Ergebnisse und Methoden der Arbeit kritisch betrachtet. Es werden Empfehlungen für die weitere Forschung und für die Praxis der internetbasierten Personalauswahl gegeben.

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2 Fairness in Web-Based Personnel Selection – A Literature Review and Suggestions

2.1 Summary

The Internet has developed into an important platform for recruitment and selection. Yet, little is known about how applicants perceive the fairness of web-based selection. Therefore, the empirical literature on fairness in selection is reviewed, especially focusing on web-based selection procedures. Gilliland's (1993) model of applicants' reactions is described as the predominant fairness model in selection and research into the model is summarized. While a wealth of studies examined conventional selection systems, relatively little research investigated the fairness of web-based selection procedures. In this piece the specifics of web-based selection in comparison to conventional selection methods are highlighted, characterizing web-based selection as a whole new area of research. The research on the fairness of web-based selection procedures is reviewed and discussed. Propositions for future research are made.

2.2 Introduction

Researchers and theorists have pointed out the detrimental effects of an unfair process in personnel selection. On the one hand there are impacts for the applicant such as negative self-perceptions and decreased test motivation (Gilliland, 1993; Hausknecht, Day, & Thomas, 2004; Ryan & Ployhart, 2000). On the other hand, there are consequences for the hiring organization including negative reputation in terms of intention of recommendation (Gilliland, 1993, 1994; Gilliland, Groth, Baker IV, Dew, Polly, & Langdon, 2001; Hausknecht et al., 2004; Holtz, Ployhart, & Dominguez, 2005; Ployhart & Ryan, 1997), and willingness to reject job offers (Chapman, Uggerslev, & Webster, 2003; Gilliland, 1993; Hausknecht et al. 2004; LaHuis, 2005).

Treating applicants fairly is important for a variety of reasons. With respect to the labor market, demographic change in many industrialized European nations causes a decline in work force (Fuchs & Dörfler, 2005; Tivig, Frosch, & Kühntopf, 2008). Especially for highly-qualified individuals the labor market has turned into a buyer's market forcing organizations to face an increasing competition for qualified employees. Consequently, organizations need to make greater efforts to represent themselves in the best way towards qualified applicants. Moreover, as research has shown that the perceived fairness of the selection process is a key factor in the intention to accept or reject a job offer (e.g., Macan, Avedon, Paese, & Smith, 1994), it is crucial for organizations to conduct personnel selection in an applicant-oriented way. Fairness, in this respect, represents the perceived fairness of a selection procedure from an applicant's perspective (Gilliland, 1993). Research on applicants' perceptions of selection procedures boomed through the application of justice theory to personnel selection (Gilliland, 1993) and many approaches were taken to study the fairness of selection procedures and instruments (see Hausknecht et al., 2004, for a review).

In the 1990s web technologies caused a second digital revolution (e.g., Andriole, 2005). During the 2000s the Internet also became the dominant medium for recruitment in many industrialized countries like for example Germany (Weitzel, König, von Stetten, Eckardt, & Laumer, 2010) and many paper-pencil selection devices were transferred into the WWW. Researchers have also acknowledged the importance of technology in selection (see Viswesvaran & Ones, 2010, for a review). Web-based selection and recruitment offers organizations huge savings in terms of time and costs. It allows presenting the organization to the world-wide labor market and coping with an enormous number of applications (Beulen, 2008; Cappelli, 2001; Parry & Tyson, 2008). It enables using technology-based selection instru-

ments and innovative item formats like Item Response Theory applications such as adaptive testing (Drasgow & Hulin, 1990), complex problem solving (Funke, 1998) and multimedia (Funke & Schuler, 1998), therefore gathering relevant diagnostic data in an early stage of the selection process. Yet, little is known about how applicants perceive the fairness of web-based selection procedures. While the fairness of conventional selection methods has been the subject of research (see Hausknecht et al., 2004; Ryan & Ployhart, 2000; Truxillo, Bodner, Bertolino, Bauer, & Yonce, 2009, for a review), according to Sylva and Mol (2009) only little research was conducted regarding the fairness of web-based selection. The purpose of this paper is therefore to review the empirical and theoretical literature on fairness in conventional and web-based selection, synthesize, and draw inferences. Finally, recommendations for future research are provided.

In the following sections, the paper first introduces the concepts of fairness and applicants' reactions in personnel selection. Second, the application of justice theory to personnel selection is described putting an emphasis on Gilliland's (1993) model of applicants' reactions and the research launched by this model is reviewed. Third, a closer look is taken at web-based selection pointing out the differences to conventional selection settings that may affect fairness perceptions. Fourth, research into the perceived fairness of web-based selection is reviewed and discussed. Finally, propositions for future research are given.

2.3 Fairness in Personnel Selection: Psychometric Property vs. Psychological Construct

Research into personnel selection from the applicant's point of view can be traced back to the 1970s. Schmitt and Coyle (1976) surveyed a sample of 273 students applying for jobs through the university's placement service. Regression analysis yielded that the interviewer's behavior influences the applicant's job acceptance intentions. This area of research has been termed applicant perceptions, applicant reactions (e.g., Anderson, 2003), or fairness perceptions (e.g., Schmitt, Oswald, Kim, Gillespie, & Ramsay, 2004; Singer, 1990).

In a selection context the term fairness has two meanings. First, fairness is considered a psychometric property of a selection system which is objectively measurable (Sackett & Wilk, 1994). Second, fairness refers to a psychological construct representing an individual's perception of a selection procedure which develops in the interaction between applicant and selection procedure (Folger & Cropanzano, 1998). Fairness as a psychometric property characterizes the absence of bias in a selection system (Sackett & Wilk, 1994). This area of research is concerned with the analysis of mean differences between subgroups of applicants on

different predictors and the development of methods to deal with these differences. Depending on the paradigm of selection different actions are taken. Selecting on the base of meritocracy, i.e. choosing the best candidate for a job (Roe & Van den Berg, 2003), the goal would be to tackle the differential validity of a selection instrument for diverse subgroups of applicants. The principles of employment and career opportunity, and a fair chance for everyone (Roe & Van den Berg, 2003) imply that different groups of applicants from diverse social and ethnic backgrounds as well as applicants of diverse sexual identity and diverse conditions have the same chance to be selected in. Actions taken in this respect to diminish adverse impact are giving bonus points to applicants of diverse subgroups, using different cut-off scores for diverse subgroups or using quotas that guarantee the admission of a minimum percentage of applicants from a certain subgroup. Another way to diminish adverse impact is using predictors that show less subgroup score differences. The problem with these actions is that they may reduce the validity of a selection procedure leading to a tradeoff between predictive validity and avoiding adverse impact (Sackett & Lievens, 2008). Depending on the composition of the criterion (task behavior, organizational citizenship behavior and counterproductive work behavior; cf. Viswesvaran & Ones, 2000) an addition of non-cognitive predictors that show less adverse impact than cognitive predictors is possible, thereby not only reducing adverse impact but also increasing validity (Sackett, Schmitt, Ellingson, & Kabin, 2001). Another way to tackle adverse impact is using test score bands. According to classical test theory each test score includes a constant measurement error. Based on this assumption score bands comprise scores that can be seen as equally high. Applicants from stipulated subgroups can preferably be selected if their score falls in the same score band with applicants from other groups. Notably, these concepts have been intensively discussed in the United States where laws against adverse impact have a strong influence on selection systems, and employers have to be able to justify their selection decisions before law (see Sackett & Lievens, 2008, for a review).

The above described fairness concepts have in common that they define fairness as an objective psychometric property of a selection procedure. In contrast to this, other authors have defined fairness as a psychological construct that develops in the interaction between the applicant and the selection procedure. In this respect fairness is in the eye of the beholder, the applicant respectively. In this paper the term “fairness” characterizes the perceived fairness, the applicant’s perception, of a selection procedure, whereas the term applicants’ reactions comprises all reactions towards a selection procedure, including fairness perceptions, but also behavior like job-offer acceptance, and recommendation of the hiring organization.

Research has been concerned with the antecedents and outcomes of perceived fairness in selection (see Ryan & Ployhart, 2000, for a review). Besides studying the impact of various selection instruments on applicants' perceptions researchers have proposed various models depicting how applicants perceive selection procedures. Schuler's (1993) concept of social validity states that the four factors information, transparency, participation, and feedback make a selection procedure acceptable for the applicants. Arvey and Sackett (1993) propose several possible determinants that influence the fairness of a selection system. They define the five domains selection system content, selection system development process, selection system administration process, selection system context, and selection system outcomes that each contains several variables. As consequences of perceptions of unfairness the authors suggest different individual outcomes (feelings of inequity, negative attitude towards tests) and organizational outcomes (negative word of mouth, legal consequences). Iles and Robertson (1997) argue that two factors impact on candidate's reactions: First, the selection decision itself and how it is communicated and second, the assessment method's influence on cognitive and affective reactions of the applicant. According to Iles and Robertson these lead to potential outcomes concerning organizational commitment, self-esteem, as well as job and career withdrawal. Anderson (2001) neglects the assumption that selection methods are neutral predictors that deliver diagnostic data, but have no effect on the applicant, and proposes a model of socialization impact. He argues that the organizational socialization of a new employee already begins with the selection procedure. The method of selection and the information provided by the organization impact on the applicants' preferences, attitudes, and behavior. Therefore, the selection process influences the relationship between hiring organization and future employee.

The above-described fairness concepts provide important insights into applicants' perceptions and reactions. They lack, however, the integration into a larger theoretical framework.

2.4 Application of Justice Theory to Applicants' Reactions

A larger theoretical framework for research into applicants' reactions towards selection is provided by Organizational Justice Theory. Organizational Justice Theory (see Byrne & Cropanzano, 2001, for an overview) considers the perceived fairness of the organization's behavior from the perspective of concerned groups and individuals, depicted in several forms of justice. Distributive justice refers to the fairness of the outcome (cf. Adams, 1965), whereas

procedural justice refers to the fairness of the process (Leventhal, 1980; Thibaut & Walker, 1975).

Justice research started with the aspect of distributive justice focusing on the individual outcome of social exchanges (e. g., a decision or a procedure). A prototypical theory for the distributive aspect of organizational justice is Equity Theory (Adams, 1965). In later years researchers have argued that apart from the outcome, the justice of the process itself is an important determinant of individual perceptions and reactions (Leventhal, 1980; Thibaut & Walker, 1975). An interaction between procedural and distributive justice is proposed by Brockner and Wiesenfeld (1996). They review 45 studies concluding that in case of relatively low outcome fairness or valence the level of procedural justice is more positively related to individuals' reactions and in case of relatively low procedural justice the level of outcome fairness or valence is more positively related to individuals' reactions.

A further addition to the justice framework is the term of interactional justice (Bies & Moag, 1986; Folger & Cropanzano, 1998). It is characterized as an important aspect of procedural justice and highlights the importance of communication. Interactional justice comprises the sub dimensions interpersonal justice, reflecting a fair treatment, and informational justice, reflecting the explanation given to the individual (Greenberg, 1990). Colquitt, Conlon, Wesson, Porter, and Ng (2001) conduct a meta-analytic review of 183 justice studies. They distinguish between distributive, procedural, interpersonal, and informational justice. In their review they find uncorrected correlations ranging from $r = .38$ to $r = .66$ between the four justice concepts. Yet, despite these correlations the different justice dimensions explain incremental variance in perceived fairness. Other researchers support the idea that individuals aggregate these dimensions forming an overall justice, and that this overall justice is a better predictor of outcomes than single justice dimensions (Greenberg, 2001; Jones & Martens, 2009). In a recent review Rupp (2011) summarizes the organizational justice literature, pointing out three perspectives on justice: (a) looking in: how the individual feels treated by the organization, (b) looking around: how the individual perceives the treatment of its group, and (c) looking out: the individual's perception of the treatment of third parties. Rupp also highlights the relevance of emotions in the formation of justice perceptions, describing the formation of justice perceptions after experiencing or witnessing events as a complex process involving emotions, cognitions, the question of accountability, and social exchange.

The Organizational Justice framework has been applied to various objects of research like computer surveillance (Alge, 2001), strategic decision making (Korsgaard, Sapienza, & Schweiger, 2001), workplace conflicts (Folger & Cropanzano, 1998), and how justice percep-

tions influence individual decision making (Gilliland, Benson, & Schepers, 1998). Organizational justice research has also examined the effects that organizational decisions have on psychological states of the affected parties, for example, the effects of procedural justice context (i.e., performance appraisal, raises, benefits, and working conditions) on outcome variables like employee job satisfaction (Mossholder, Bennett, & Martin, 1998). Relations were found between justice and outcome variables like commitment, organizational citizenship behavior (Liao & Rupp, 2005), organizational identification (Olkkonen & Lipponen, 2006), and health (Elovainio et al., 2005).

A theory-driven approach to the application of Organizational Justice Theory to personnel selection contexts is made by Gilliland (1993), who puts an emphasis on the procedural justice of selection. He derives the term procedural justice from Folger and Greenberg (1985) and defines it as the “perceived fairness of procedures used in making decisions” (Gilliland, 1993, p. 696). Gilliland presents a model of applicants’ reactions (see Figure 2), depicting how applicants perceive the selection procedure as fair or unfair and showing how different characteristics of the selection procedure are related to these fairness perceptions.

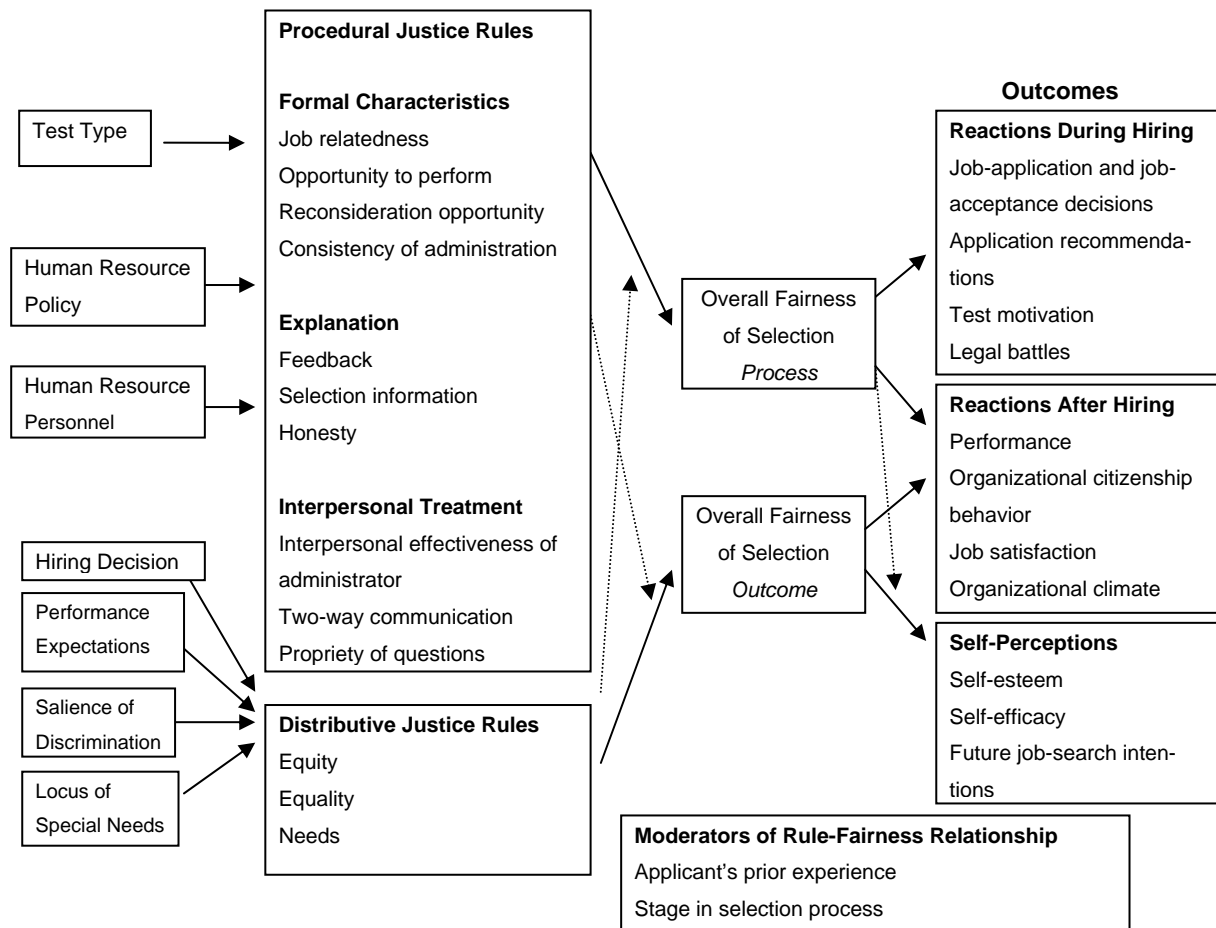


Figure 2. Model of Applicants' Reactions to Employment Selection Systems (from Gilliland, 1993, p. 700)

Note. Dotted lines indicate moderator relations.

In his model, Gilliland (1993) distinguishes between procedural and distributive justice, characterizing the way the selection decision was made and the outcome of the selection decision, respectively. Adapting justice concepts and research findings (e.g., Bies & Moag, 1986; Leventhal, 1980) as well as integrating earlier models of applicants' reactions (Arvey & Sackett, 1993; Iles & Robertson, 1989; Schuler, 1993), Gilliland formulates ten rules of procedural justice in selection as primary factors. These rules are grouped into the three secondary factors: (1) formal characteristics comprising *job relatedness*, *opportunity to perform*, *reconsideration opportunity*, and *consistency of administration*; (2) explanation including *feedback*, *selection information*, *honesty*; (3) interpersonal treatment consisting of *interpersonal effectiveness of administrator*, *two-way communication*, *propriety of questions* (see Table 2).

Table 2. Procedural Justice Rules (after Gilliland, 1993)

Rule	Description
Secondary Factor 1: Formal Characteristics	
Job relatedness	Job relatedness depicts whether the selection device appears to (a) measure relevant job behaviors and (b) predict job performance.
Opportunity to perform	Opportunity to perform reflects the applicant's perceived chance of showing his/her abilities and influencing the hiring decision.
Reconsideration opportunity	Reconsideration opportunity describes the applicant's ability to challenge the selection making process.
Consistency of administration	Consistency illustrates the degree of standardization of a selection procedure across applicants and over time.
Secondary Factor 2: Explanation	
Feedback	The feedback rule emphasizes the importance of a timely and informative feedback for the applicant.
Selection information	Selection information depicts the information and justification given concerning a selection decision and a selection device.
Honesty	Honesty, in most research studies referred to as openness, evaluates the truthfulness and credibility of the hiring organization's representatives.
Secondary Factor 3: Interpersonal Treatment	
Interpersonal effectiveness of administrator	Interpersonal effectiveness is determined by the selection administrator's way of treating the applicants.
Two-way communication	Two-way communication refers to the interaction between applicants and administrators. It also comprises the applicant's ability to ask questions during the selection procedure.
Propriety of questions	Propriety of questions reflects the appropriateness, non-invasiveness and legality of questions asked.

In addition, by applying the concepts of equity (Adams, 1965), equality (Hartigan & Wigdor, 1989), and needs (Arvey & Sackett, 1993; Hartigan & Wigdor, 1989) Gilliland (1993) proposes three rules of distributive justice summarized in Table 3.

Table 3. Distributive Justice Rules (after Gilliland, 1993)

Rule	Explanation
Equity	Equity implies that the individual input/outcome ratio should be consistent with other input/outcome ratios. In a selection situation the outcome is conceptualized as receiving a job offer or not receiving a job offer. Input is conceptualized as subjectively perceived qualifications. The input/outcome ratio of the current selection situation is compared with past selection situations.
Equality	In a selection context equality means that every applicant has the same chance of obtaining a job offer. Violations of the equality rule resulting from job-relevant characteristics (e.g. qualification) will be tolerated, whereas violations resulting from job-irrelevant characteristics (e. g. gender or ethnic background) will not be tolerated by the applicants.
Needs	Needs reflects the idea that certain groups of applicants (e.g. handicapped people) should be preferred in selection. Fulfillment of this rule obviously violates the equality rule. Gilliland argues that, the more salient the needs appear to all applicants the stronger the fulfillment of this rule impacts on fairness perceptions over the equality rule.

According to the model of applicants' reactions test type, human resource policy, and human resource personnel impact the fulfillment of the ten procedural justice rules which determine the overall fairness of the selection process (process fairness). Hiring decision, performance expectations, salience of discrimination, and locus of special needs determine whether the three rules of distributive justice are observed, which determine the overall fairness perception of the selection outcome (outcome fairness). Furthermore, Gilliland's model assumes that procedural justice rules moderate the impact of the distributive justice rules on outcome fairness, whereas distributive justice rules in turn moderate the impact of the procedural justice rules on process fairness. As additional moderators of the rule fairness relationship he mentions the applicant's prior experience as well as the stage in the selection process.

Theoretically, one of the assets of Gilliland's model is that it includes outcomes (i.e., reactions during hiring, reactions after hiring, and self-perceptions) of abiding or not abiding procedural and distributive justice rules, mediated by process fairness and outcome fairness. Both, process fairness and outcome fairness are proposed to have impact on various outcomes that are divided into the three groups: reactions during hiring, reactions after hiring, and self-perceptions. While process fairness impacts on reactions during hiring and reactions after hiring, outcome fairness impacts on reactions after hiring and self-perceptions. The impact of outcome fairness on self-perceptions is moderated by process fairness.

2.5 Research Into Gilliland's Model of Applicants' Reactions

Research into applicants' reactions guided by Gilliland's model of applicants' reactions used different instruments to capture single justice rules. Yet, an instrument that measures all of the ten procedural justice rules was first published in 2001. Bauer et al. (2001) present the Selection Procedural Justice Scale (SPJS) operationalizing Gilliland's (1993) procedural justice rules in a 39-item questionnaire. They depict Gilliland's ten procedural justice rules in eleven scales. The justice rule "job relatedness" is split into the two scales "job relatedness – predictive" and "job relatedness – content".

Gilliland's (1993) model of applicants' reactions has launched a number of empirical studies into various aspects of fairness in personnel selection including the salience of justice rules, experimental studies on justice rules, applicant perceptions of selection instruments, and some conceptual modifications of Gilliland's model of applicants' reactions. The following paragraphs summarize research.

2.5.1 *Salience of Justice Rules*

Gilliland (1993) assumes that the ten procedural justice rules show differential salience depending on the selection procedure. Several studies examine the salience of various justice rules.

In a longitudinal field study Bauer, Maertz, Dolen, and Campion (1998) examine the reactions of 144 applicants for an entry level accounting job before testing, after testing and after feedback. Based on theoretical considerations concerning the salience of Gilliland's justice rules for a written employment test, they capture five procedural justice measures, including information known about the test, chance to perform, treatment at the test site, consistency of test administration, and job relatedness, as well as test outcome favorability (passing or failing), and as dependent variables applicants' reactions like perception of the organization, perceptions of employment testing, and self-efficacy. Results suggest that the test outcome favorability predicts applicant reactions more consistently than procedural justice perceptions. Yet, procedural justice perceptions explain incremental variance over and above the influence of test outcome favorability. Among the procedural justice rules job relatedness is the strongest predictor of testing fairness after test outcome favorability is controlled for. In different studies other justice rules are examined as well. Schleicher, Venkataramani, Morgeson, and

Campion (2006) examine the salience of the opportunity to perform justice rule. In a longitudinal study they survey a sample of 754 applicants to a US government agency, who completed written exercises as well as different interviews. Data concerning the fairness of the selection procedure is collected after the selection procedure was completed and after the selection decision was communicated. They regressed overall procedural fairness as the dependent variable onto the four procedural justice rules job relevance, opportunity to perform, communication, and interpersonal treatment. Results demonstrate that opportunity to perform is significantly related to overall procedural fairness. This relationship is stronger when data is collected after the selection decision is communicated and applicants had received a negative selection decision. Further meta-analyses provide evidence for the salience of the job relatedness and the opportunity to perform rule. In a meta-analysis of 86 studies face validity, predictive validity and opportunity to perform expose strong correlations with applicants' perceptions, whereas consistency and transparency show medium correlations (Hausknecht et al., 2004).

Consistent with Gilliland's assumption it can be concluded that different procedural justice rules emerge as predictors of fairness for different selection procedures. Opportunity to perform and job relatedness appear as strong fairness predictors across various selection procedures.

2.5.2 Experimental Studies on Justice Rules

Researchers have tried to identify the impact of the procedural justice rules by experimentally modifying these rules and analyzing the effect on various outcomes. In a between-subjects 3×2×2-design experimental study, Gilliland (1994) examines the effect of modifying aspects of procedural justice and distributive justice on dependent measures using a sample of 260 undergraduate students that applied for paid employment. The independent variables are job relatedness of the selection device (work sample test, cognitive ability test, or overt integrity test), explanation (explanation of validity and decision making or no explanation), and selection decision (hired or not hired). Dependent variables are procedural fairness, distributive fairness, recommendation intentions, self-efficacy, and actual work performance. Consistent with Gilliland's (1993) model of applicants' reactions, job relatedness is positively related to procedural fairness and distributive fairness. Hiring expectations show a positive effect on procedural fairness and also distributive fairness for selected individuals and expose a negative relationship for rejected individuals.

Further evidence is provided by an experimental study of Ployhart and Ryan (1998) who research violations of procedural justice rules. Examining a sample of 283 students they randomly assign participants to three administrative conditions (consistent, positively inconsistent, or negatively inconsistent) and two outcomes (hired or rejected). Consistency is manipulated by changing the administrative conditions (time amount, and different test forms). Perceived consistency, hiring expectations, process and outcome fairness, intentions and self-perceptions are collected via questionnaire. Results indicate that violations of rules leading to an advantage for the applicant (positively inconsistent) are perceived similar positively to rule abidance.

In two scenario-based studies and a field experiment, Gilliland and colleagues (2001) explore how different types of explaining a negative selection decision impact on applicants' reactions like fairness perceptions, recommendation intentions, and reapplication behavior. In the first study with 119 professionals in a 2x2-design they systematically modify rejection letters giving or not giving (a) explanations referring to the qualifications of the individual that was hired and (b) explanations that state the appropriateness of the selection procedure. Fairness perceptions are highest for rejection letters giving both explanations. In the second study with 254 applicants for a position at a university rejection letters stating a hiring freeze as an explanation for rejection are modified in how detailed they explain the situation and how appreciative they were written. Detailed and appreciatively written letters receive higher fairness ratings than the less detailed letters. In the third study with 380 students of business they combine the three explanations (appropriate selection procedure, hiring freeze, and quality of selected individuals) in a 2x2x2-design. The explanation that combines the hiring freeze and the quality of the individuals taken into account for the position receives the highest fairness ratings.

Based on these studies it can be concluded that manipulating aspects of a selection procedure and thereby fulfilling or violating procedural justice rules causally impacts on applicants' fairness perceptions.

2.5.3 Applicants' Perceptions of Selection Instruments

Additional research focuses on applicants' perceptions of selection instruments. Smither, Reilly, Millsap, Pearlman, and Stoffey (1993) capture reactions of 110 applicants for an entry-level position and 44 managers of recruiting and employment units to several tests administered in a non-selection context. They find that simulations, interviews, and cognitive

tests with relatively concrete item types like vocabulary, standard written English, mathematical and word problems are judged significantly more job-related compared to personality, biodata, and cognitive tests which include abstract item-types of quantitative comparisons or letter sets. Macan, Avedon, Paese, and Smith (1994) examine applicants' perceptions of and applicants' reactions towards a cognitive ability test and an assessment center in a selection context with applicants for a manufacturing job. In their research they study face validity, a concept similar to Gilliland's (1993) job relatedness rule. Face validity, fairness, control and self performance are captured by questionnaire as well as satisfaction with the selection procedure, liking of the job and the organization. Furthermore, the intentions to accept a job offer and intentions to buy products from the hiring organization are collected as outcomes. Results demonstrate that assessment centers are appraised as more face valid by participants than the ability test. Applicants' perceptions are related to job acceptance intentions, but applicants' liking of the job and the organization explains most of the variance in job acceptance intentions. Hausknecht et al. (2004) provide similar findings in their meta-analysis. Interviews and work samples are perceived more favorably than cognitive ability tests, which in turn are perceived more favorably than personality inventories, honesty tests, bio data, and graphology. Finally, Steiner and Gilliland (1996) examine cultural differences in the fairness perceptions of selection procedures. They compare attitudes towards ten different selection procedures in France and the USA. They find that interviews, work-sample tests, and resumes are accepted in both cultures, whereas graphology is perceived more positive in France than in the USA. Steiner and Gilliland (2001) report additional studies with students from Germany, Spain, Portugal, and South Africa. In all countries interviews, Curriculum Vitae (CVs), and work sample tests receive good favorability perceptions. Ability tests, personal references, and personality tests receive medium to good perceptions. Whereas honesty tests are perceived as medium to poor and personal contacts and graphology are perceived as poor. Findings for bio data are indistinct ranging from good with American and South African students to poor with German students.

Research findings consistently indicate that applicants prefer selection procedures like interviews and work-sample tests. The finding for work sample tests is consistent with the above mentioned results that job-relatedness and opportunity to perform are crucial procedural justice rules. Based on the findings regarding interviews it can be hypothesized that interpersonal contact is also important for the perception of fairness (cf. Schmitt & Coyle, 1976).

2.5.4 Conceptual Modifications of Gilliland's Model of Applicants' Reactions

Several researchers propose conceptual expansions of Gilliland's (1993) model of applicants' reactions. Chan, Schmitt, Jennings, Clause, and Delbridge (1998) combine elements of attribution theory (i.e., self-serving bias) and organizational justice theory by proposing a model in which perceived performance in an assessment influences job-relevance perceptions which in turn impact on fairness perceptions. Their model is tested using data from a study with 494 applicants to an entry-level police trooper position, who completed a reading comprehension test and a video-based procedures test developed to assess applicant's ability to learn and apply standard procedures. Results from structural equation modeling provide evidence for the proposed model, indicating that the relationship between perceived performance and fairness perceptions is mediated by job-relevance perceptions. Other approaches are made through literature research. Ryan and Ployhart (2000) review the pertaining literature from 1985 to 1999 and propose a heuristic model of applicants' perceptions. They suggest four groups of predictors including person characteristics, job characteristics, procedure characteristics, and organizational context. These predictors influence various perceptions (e.g., of the procedure, of the procedure's outcome, of selection procedures in general) which in turn lead to different kinds of outcomes (e.g., procedure performance, perceptions of the job and the organization, behavioral intentions). The relationships between predictors and perceptions as well as between perceptions and outcomes are moderated by different factors like job type and stage in the selection process. Chambers (2002) summarizes the research on applicants' reactions and proposes a complex "heuristic model of applicant reactions to personnel selection procedures" (p. 327). According to Chambers' model, four classes of variables (person characteristics, job characteristics, procedure characteristics, and organizational context factors, based on Ryan & Ployhart, 2000) lead to specific applicant reactions and perceptions. Moreover, these relationships are moderated by environmental and individual factors. Applicants' reactions and perceptions lead to two types of outcomes. Proximal outcomes come into effect shortly after the selection procedure. They mediate the relationship between applicants' reactions / perceptions and so-called distal outcomes which have a longer lasting effect on the applicant, the organization, and their relationship.

Based on the theoretical considerations of Gilliland (1993) and Ryan and Ployhart (2000) and on meta-analytic evidence, Hausknecht et al. (2004) propose a model of applicants' reactions to selection. Their model includes Ryan and Ployhart's (2000) four groups of predictors which lead to different applicants' perceptions and outcomes. Yet, a difference is

that they propose a direct relationship between perceived procedure characteristics and outcomes. Chapman and Webster (2006) present an integrated model of applicants' reactions which incorporates procedural justice, signal theory, and expectancy theory as determinants of the applicant's post-interview intentions. According to their model the applicant's post interview intentions are influenced by interviewer friendliness (signals), expectancy of job offer, and procedural justice partly mediated by post-interview organizational attractiveness. Surveying a sample of 588 applicants who applied for jobs in 215 organizations Chapman and Webster (2006) provide evidence that hypothesized signals (e.g., interviewer friendliness) and expectancy mechanisms are positively related to applicants' post interview intentions. However, contrarily to the model's predictions, procedural justice did not impact on post interview intentions.

Gilliland's (1993) model of applicants' reactions and its conceptual expansions have launched a considerable amount of empirical and conceptual research concerning conventional selection procedures. Findings on web-based selection, however, are mostly missing. This is of practical significance, because web technologies do not only provide a new platform for recruitment and selection but change the ways in which selection is conducted. In the following section, the new technological possibilities of web-based recruitment and selection are briefly presented and implications for applicants' reactions are acknowledged.

2.6 Web-Based Selection

To illustrate the way the Internet influences recruitment practices, recruitment shall be described as a five-step process comprising job advertising, application, pre-selection, selection, and hiring. Several parts of this process can be carried out with web-based tools. This paper's definition of web-based recruitment includes job advertising, application, pre-selection and parts of the selection stage.

Web-based job advertising comprises a broad range of possibilities, from more passive ways like displaying job adds on the organization's website, job advertisements in online job markets or search engines (Weitzel et al., 2010), job newsletters via email, banners, posting advertisements in newsgroups and bulletin boards to actively searching for candidates in online databases and social networks (Stamper, 2010). *Applications* can be made by attaching conventional application documents like, CVs and written references to an email or by filling in highly standardized online application forms, which most hiring organizations prefer (Weitzel et al., 2010). *Pre-selection* is conducted by reviewing the application data and doc-

uments received. In case of application via online selection forms, it is possible to process large numbers of applications (Beulen, 2008) and set up own candidate pools (Parry & Tyson, 2008). *Selection* itself changed rapidly through evolving technologies. Information technology and especially the Internet services open a whole new dimension of personnel selection and testing. The advantages of technology in selection are threefold: (a) increased handiness and practicality (Bartram, 2000; Bennett et al., 1999; Hertel, Konradt, & Orlikowski, 2003), (b) improved measurement quality by avoiding scoring and transcription errors and providing exact timing (Bartram & Bayliss, 1984), (c) possibility of innovative item formats like Item Response Theory applications (Drasgow & Hulin, 1990), complex problem solving (Funke, 1998) and multimedia (Funke & Schuler, 1998). Computers have also been used to collect data on latency times in order to measure attitudes and self-concepts (Greenwald & Farnham, 2000). The implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) offers a form of measurement that cannot be influenced consciously and directly by the person that is being tested. So far it has mainly been used in scientific and market research. But also applications in personnel selection are imaginable.

With the classical recruitment process (newspaper add, application send via snail mail, reviewing the application, interviewing and testing the candidate face-to-face, hiring the candidate) it is easy to distinguish the different phases of the recruitment process. In web-based selection and recruitment different phases can merge. For example, when an application is affected via online application form, it is easy to add a web-based psychometric test, resulting in a merger between the application, preselection and selection phase (e.g., Sinar, Reynolds, & Paquet, 2003). Therefore, this paper's definition of web-based selection includes the application, the preselection as well as the selection phase and comprises different instruments like online application forms, online ability tests, online personality inventories, situational judgment tests, simulations, and adaptive testing. Considering the broad variety of phenomena studied, it would be more adequate to talk about different web-based selection tools than about web-based selection in general.

2.6.1 Studying Issues and Problems in Web-Based Selection

As it was stated above the Internet opens up a whole new recruitment platform and changes the ways in which selection is conducted. With this new platform new research questions arise and old issues need to be covered for this new medium (Naglieri et al., 2004). Among the research issues to be addressed are (a) equivalence of paper pencil and web-based

testing (e.g., Anderson, 2003; Carstairs & Myors, 2009; Coyne, Warszta, Beadle, & Sheehan, 2005), (b) adverse impact of web-based selection (Anderson, 2003; Naglieri et al., 2004), (c) issues of test practice like test faking, test security, data security, quality of testing materials and standardized procedures, informed consent and feedback (Naglieri et al., 2004), and (d) applicants' reactions towards and perceived fairness of web-based selection (Anderson, 2003; Lievens & Harris, 2003). In the following, the specifics of web-based selection impacting fairness perceptions are discussed.

2.6.2 Specifics of Web-Based Selection Affecting Fairness Perceptions

Interest in studying the fairness, particularly of web-based selection, arises from several differences between conventional selection and web-based selection, which may likely impact applicants' fairness perceptions and reactions. These differences are (1) lack of interpersonal contact, (2) high standardization, (3) speed of the web-based interaction, (4) use of computer hardware, (5) lack of supervision, (6) data transmission via networks:

(1) The most obvious fact in web-based selection is the lack of direct interpersonal contact. In conventional selection settings there are always human representatives of the hiring organization. Schmitt and Coyle (1976) mention the importance of these representatives for the applicant. In conventional selection settings interaction between applicants and organizational representatives varies with the selection method used from very high for interviews to relatively low for standardized tests. But even when highly standardized methods like tests are employed, organizational representatives are still present in conventional selection settings.

(2) The second difference lies in the degree of standardization. With conventional applications the applicant has conceptual freedom to present himself. With an online application form the applicant is required to fill in stipulated information. The degree of freedom offered by these application forms in providing information about oneself influences fairness perceptions (Dineen et al., 2004).

(3) Third, with the speed of the Internet applicants may expect a quicker response rate than with conventional selection settings i.e. speed of the Internet leads to different feedback expectations. Research into customer satisfaction found response time to complaint emails to be related to customers' satisfaction with problem handling and repurchase intentions (Mattila & Mount, 2003).

(4) Fourth, web-based selection procedures (like tests) require the use of mouse, keyboard and screen. For equivalence research between paper pencil and web-based tests, im-

pacts of the mode on test results were found for timed ability tests (Coyne et. al, 2005). The conditions (mouse vs. touch pad, screen size and screen resolution) of the test taker's equipment may have an influence on test performance (Bridgeman, Lennon, & Jackenthal, 2003). The fact that equipment can influence test scores may impact fairness perceptions.

(5) An issue that is mentioned by Naglieri et al. (2004) is the problem of test faking. Evidence was found that in unsupervised high-stakes cognitive testing test-takers may try to cheat to improve their test scores, resulting in an inflation of test scores (Carstairs & Myers, 2009). The possibility of cheating may not only influence test validity but also fairness perceptions.

(6) The final issue that distinguishes web-based selection from conventional selection methods is data transmission via networks. The issue of data security again was raised by Naglieri et al. (2004) as in web-based selection highly confidential personal data is sent across the Internet. This fact, though not directly related to justice may influence applicants' perceptions of web-based selection.

2.7 Research Into the Fairness of Web-Based Selection

The study of applicants' reactions to media in selection started with research about the reactions of applicants and clinical examinees to computer-based testing. Burke and Normand (1987) report various studies that found favorable reactions of clients towards computer-based testing in a clinical context. Shermis and Lombard (1998) measure computer anxiety and performance in three computer-based placement tests (mathematics, reading and written English). They find that computer anxiety predicted performance in mathematics and reading. Wiechmann and Ryan (2003) examine the effects of mode (paper vs. computerized), technical level of the jobs (high technical job vs. low technical job) and selection decision (rejected vs. selected) on the participants' perception of the selection procedure. Even though they find no significant effects of the mode on the test-takers' perceptions, results reveal that computer anxiety and experience with computers are important factors in performing successfully.

In the 2000s research into the effects of media in testing concentrated on the Internet. Anderson (2003) describes findings as "varied and diffuse" (p. 125). Anderson reviews several studies conducted into applicants' reactions towards technology-based selection and criticizes four major points in research. First, he characterizes research as rather a-theoretical and calls for the inclusion of antecedent variables like past exposure to computer and past experience with new technology in selection, computer phobic reactions, and personality traits like

openness to new experience, which he considers to be all likely to influence applicants' perceptions. Second, Anderson describes research as short-sighted in terms of the type and longevity of the outcomes it analyzes. He proposes to collect data like the intention to remain in the selection procedure, organizational commitment, and applicant decision making. Third, Anderson criticizes that many results are gained from designs that use highly-educated student samples that apply for mock vacancies which makes it more likely that rather people with positive attitudes towards technology-based selection are captured. Fourth, he states that research in some areas like applicants' perceptions was conducted intensively whereas in other areas it lags behind what is already done by practitioners.

Lievens and Harris (2003) also reviewing the international literature suggest to base future research into web-based selection on psychological theories. In particular they propose applying organizational privacy theory (Stone & Stone, 1990) and organizational justice theory (Gilliland, 1993; Greenberg, 1990) to the field of applicants' perceptions of web-based selection. Organizational privacy theory contains important aspects for predicting applicant reactions towards web-based selection since (a) web-based testing applications are as a rule non-anonymous, (b) personal and sensitive information is provided, which is (c) captured in electronic format and therefore virtually transferable everywhere, and (d) during Internet use the user is confronted with security messages (probes for secure connections, cookies etc.) that may increase security concerns. Further on, Lievens and Harris (2003) suggest applying organizational justice theory to web-based selection. Truxillo, Steiner, and Gilliland (2004) also suggest high tech selection (computer-based and web-based selection procedures) as an area for future justice research. They propose that individual differences with the familiarity of technology moderate justice perceptions. In addition, they suggest that the use of technology will impact negatively on some justice rules like the interpersonal treatment rules, whereas other justice rules like consistency of administration are likely to benefit. They encourage research to investigate how high tech selection methods can be made more accessible and acceptable for applicants.

In comparison to the larger number of fairness studies for conventional selection, little research deals with the impact of web-based selection on applicants' perceptions. Scanning psychological and business related databases (PSYINFO, EBSCO) 11 studies are identified in the years between 1985 and 2011 that touch the field of fairness in web-based selection. Among these are six field studies (Bauer et al. 2006; Brünn, 2010; Chapman, Uggerslev, & Webster, 2003; Sinar, Reynolds, & Paquet, 2003; Sylva & Mol, 2009; Wasko, 2008), two laboratory studies (Potosky & Bobko, 2004; Salgado & Moscoso, 2003), two hypothetical

questionnaire studies (Dineen, Noe, & Wang, 2004; Harris, Van Hoya, & Lievens, 2003), and one case study without reported empirical quantitative data (Shotland, Alliger, & Sales, 1998). Table 4 provides an overview over these studies.

Table 4. Studies of Fairness in Web-Based Personnel Selection

Study	Sample	Design	Research Aspects	Findings
Bauer, Truxillo, Tucker, Weather, Bertolino, Erdogan, & Campion (2006).	Study 1: N=117 students; Study 2: N=396 job applicants	Study 1: longitudinal laboratory study; Study 2: cross-sectional field study	Relations between information privacy concerns, procedural justice, and dependent variables (test-taking motivation, organizational attraction, organizational intentions)	Procedural justice mediates relations between information privacy concerns and dependent variables. In the field study experience with computers moderates the relationship between procedural justice and test-taking motivation as well as organizational intentions.
Brünn (2010)	N=103 applicants	Field study, cross-sectional, between-subjects design	Predictors (procedural justice rules) and outcomes of the fairness of a web-based selection procedure	Opportunity to perform, selection information, propriety of questions, and ease of faking (negatively coded) predict process fairness, which in turn predicts organizational attractiveness. Organizational attractiveness predicts job attractiveness, which predicts job acceptance intentions, reapplication intentions, and recommendation intentions.
Chapman, Uggerslev, & Webster (2003)	N= 802 applicants	Field study, cross-sectional, between-subjects design	Comparison of face-to-face vs. technology-mediated interviews and effects on fairness perceptions and job acceptance intentions	Face-to-face interviews are perceived as fairer than video-conferencing or telephone interviews and lead to higher job acceptance intentions.
Dineen, Noe, & Wang (2004)	N= 94 undergraduate students	Laboratory study, policy-capturing design	The impact of four justice rules and a human vs. automated selection decision on fairness perception	Consistency, ability to provide additional information, ability to appeal, decision agent, and timelines of feedback predict fairness perceptions.
Harris, Van Hoyer, & Lievens (2003)	N=64 US undergraduate students, N = 56 Belgian undergraduate students	Cross-sectional questionnaire study by paper-based survey	Privacy concerns in web-based testing and effects on reluctance to submit employment-relevant data over the Internet	Concern for computer problems is associated with reluctance to submit information on the web.

Potosky & Bobko (2004)	<i>N</i> =65 individuals, mostly employed professionals	Cross-sectional laboratory study, supervised within-subject design	Reactions to paper pencil vs. Internet-based ability testing, captured as ratings of enjoyment, time-pressure, satisfaction with own effort, feeling of being monitored	Participants report that they enjoy the Internet-based test better and feel less time pressure than for the paper pencil version.
Salgado & Moscoso (2003)	<i>N</i> =123 undergraduate students, + <i>N</i> = 42 managers	Cross-sectional laboratory study, supervised within-subject design	Reactions to paper pencil vs. Internet-based personality testing	Participants perceive the Internet-based version more positively.
Shotland, Alliger, & Sales (1998)	<i>N</i> =68 employees	Case study	Face validity of a multimedia-based test	The authors report positive reactions from the participants, yet no written data is presented.
Sinar, Reynolds, & Paquet (2003)	<i>N</i> =23,789 applicants	Cross-sectional field study	Applicants' reactions towards an online selection form	Applicants' perceptions of the speed and ease of the application process are related to their opinion about the image of organizations using web-based selection.
Sylva & Mol (2009)	<i>N</i> =1,360 applicants	Cross-sectional field study	Applicants' perceptions of a web-based selection procedure. Impact of user-friendliness, perceived efficiency, and procedural fairness on overall process satisfaction	User-friendliness and perceived efficiency are the most important determinants of applicants' overall process satisfaction.
Wasko (2008)	<i>N</i> =5,675 applicants	Cross-sectional field study	Effects of test taking conditions, perceived procedure characteristics and initial applicants' perceptions on applicants' scores in a web-based testing battery	Test-taking conditions, perceived test procedure characteristics, and initial applicant perceptions influence score results on the test battery.

Positive effects of using web-based technology and multimedia technology for selection purposes are reported by Shotland, Alliger, and Sales (1998). They present a case study where a multimedia-based selection device is developed and tested with a sample of 64 working professionals. Face validity is pointed out as the main factor for the participants' favorable reaction. However, as results were not gathered systematically, they need to be considered with caution.

Early research into applicants' reactions to web-based selection is conducted in the course of comparisons of paper pencil and web-based testing. These studies (Potosky & Bobko, 2004; Salgado & Moscoso, 2003) report that participants react more favorably to web-based test versions. A general prediction of favorable applicants' reactions from these results is problematic since results are obtained under supervised laboratory conditions with low stakes. In real-life web-based application settings participants are using PC equipments of different quality, submitting personal data across the WWW, and test results are vital for their future careers.

Other research addresses general issues of the Internet like privacy considerations. Harris, Van Hoye, and Lievens (2003) conduct a questionnaire study surveying Belgian and US students. Results indicate relations between participants' concerns for computer problems and their reluctance to submit information on the web with low to moderate effect strengths. Higher self-rated Internet knowledge is associated with less concern for organizations passing confidential information on to third parties in the Belgian sample and higher concern in the US sample, reflecting differences in the legal systems. A connection between privacy concerns and procedural justice is provided by Bauer et al. (2006). In two studies they examine the relations between information privacy concerns as the independent variable, procedural justice as a mediator and dependent variables like test-taking motivation, organizational attraction, and organizational intentions. Experience with computers is included as a moderator variable. Study 1 uses a longitudinal laboratory-based design with a sample of ($N = 117$) students. Study 2 cross-sectionally surveys a field sample of ($N = 396$) job applicants. In both studies procedural justice mediates the relationship between informational privacy concerns and the dependent variables. In the field study experience with computers moderates the relations between procedural justice and the dependent variables test-taking motivation and organizational intentions.

Different research approaches are taken to find potential determinants of fairness in web-based selection. Chapman, Uggerslev, and Webster (2003) compare in a between-subjects design face-to-face interviews with telephone interviews as well as video-

conferencing interviews. Fairness reactions are captured by questionnaire. Face-to-face interviews are perceived as fairer than telephone interviews and video-conferencing interviews. Transferring these results to the field of web-based selection it could be hypothesized that the lack of interpersonal contact impacts the perceived fairness of web-based selection procedures as, for example, Truxillo et al. (2004) propose.

Technical characteristics of a selection system as potential determinants of applicants' perceptions in web-based selection are studied by Sinar, Reynolds, and Paquet (2003) who survey a large sample of applicants. As technical variables system speed and user friendliness are examined. Besides demographic variables like work experience and Internet experience they capture job-relatedness (one of Gilliland's procedural justice rules). Internet selection image, representing a general judgment of web-based selection, is used as a dependent variable. Results indicate strong correlations between job-relatedness, system speed and user friendliness and Internet selection image (ranging from $r = .52$ to $.57$). Correlations between Internet selection image and system speed and user friendliness remain substantial ($r = .39$ to $.41$) when controlled for job-relatedness. In addition moderated regression analysis indicates that the relationship between technical variables and Internet selection image is stronger for applicants with lower Internet experience.

The findings of Sinar et al. (2003) are supported in a study from Sylva and Mol (2009). They examine a sample of applicants in a web-based selection context applying for positions within a finance organization in three different countries (Great Britain, Netherlands, and Belgium). In their study they capture demographic variables (gender, age, ethnic group, education level, prior experience with online selection, Internet-familiarity) as well as technical variables (perceived efficiency and user friendliness), process fairness (as a two-item measure), and Internet selection image (cf. Sinar et al., 2003) as determinants of overall process satisfaction. Again, the technical variables show strongest relations (above process fairness and Internet selection image) to overall process satisfaction. While other demographic variables show little effect, self-rated Internet familiarity is positively associated with predictor and outcome variables. Due to the cross-sectional design in these studies, the direction of the relationships between the variables cannot be determined. Yet, these results indicate that in a web-based selection context technical characteristics of the selection procedure may explain substantial variance in applicants' perceptions.

To examine causal effects of Gilliland's (1993) procedural justice rules on perceived fairness of web-based selection procedures, Dineen et al. (2004) employ a policy-capturing design. Using short written scenarios (i.e. vignettes), the effects of violation or fulfillment of

the justice rules consistency, opportunity to perform, reconsideration opportunity, feedback timeliness, and the effect of an automated (as opposed to a human) decision making agent on participants' fairness perceptions are examined. Each vignette describes a web-based selection procedure in accordance with these five features. Results of multilevel analysis indicate that consistency is the most important feature followed by opportunity to perform, reconsideration opportunity, decision making agent, and feedback timeliness. The study of Dineen et al. (2004) uses a policy-capturing design which allows drawing a causal relationship between justice rules and fairness perceptions. Yet, immanent to the policy capturing design results may lack external validity. For example, an inconsistent administration during a highly standardized web-based selection procedure is not very likely to occur (cf. Truxillo et al., 2004).

Wasko (2008) conducts a large field study involving a background information form, a personality inventory, and a situational judgment test. Test-taking conditions (e.g., supervised vs. unsupervised), perceived test procedure characteristics (e.g., user friendliness), and initial applicant perceptions like privacy concerns influence score results of the test battery. In a recent field study Brünn (2010) examines the predictors and outcomes of process fairness of a web-based selection procedure. Opportunity to perform, selection information, propriety of questions, and ease of faking (negatively coded) predict process fairness. Process fairness predicts organizational attractiveness which predicts job attractiveness. Job attractiveness predicts behavioral intentions like job acceptance intentions, reapplication intentions, and recommendation intentions. Unfortunately the sample size ($N = 103$) is rather small to have confidence into the robustness of these complex relationships. Notably the interpersonal effectiveness rule is not included in the analysis. This approach therefore neglects the relevance of interpersonal justice in web-based selection.

2.8 Propositions for Future Research

It can be concluded that the fairness of web-based selection procedures mainly remains a terra incognita in applicants' reactions research. The Demographic shift's labor market shortage calling for applicant-oriented selection and the fast growing market for online selection emphasize the need for thorough knowledge in this field. Present status can best be described as first steps into a new research area. More field as well as laboratory research is needed to fill the blanks in the knowledge of applicants' reactions to the field of web-based selection. In the following some propositions for future research are given.

Following Gilliland's (1993) idea that different rules apply in different selection settings, the relevant procedural justice rules for web-based selection need to be identified. As stated above there are several conditions that distinguish web-based selection procedures from conventional selection processes. The high standardization of web-based selection may affect the applicant's opportunity to perform negatively as found in past research (Brünn, 2010; Dineen et al., 2004). The fact that data is transmitted via Internet to an unknown third party may raise privacy concerns (Bauer et al., 2006; Lievens & Harris, 2003). This explains the importance of the propriety of questions rule for the fairness of a web-based selection process as found by Brünn (2010). It also highlights another aspect of web-based selection, which is the applicants' opportunity to check entered data and results before submission. This ability can be formulated as an aspect of the reconsideration opportunity rule. The most obvious fact about web-based selection, however, is the lack of interpersonal contact. It was proposed by Truxillo et al. (2004) that due to this lack the rules of Gilliland's secondary factor interpersonal treatment may suffer in web-based selection. The rule interpersonal effectiveness of administrator, representing the treatment of the applicants by the organization's representatives, was completely neglected by research into web-based selection (cf. Brünn, 2010). However, if hiring organizations manage to establish an applicant-oriented communication during web-based selection, applicants may despite the lack of interpersonal contact feel treated well and even warmly by the hiring organization. The interpersonal effectiveness of administrator rule, reformulated as "treatment of the applicants" may play a pivotal role in web-based selection. Therefore, the first proposition for future research is:

Proposition 1: *The procedural justice rules reconsideration opportunity and treatment of the applicants will predict the fairness of a web-based selection procedure besides opportunity to perform and propriety of questions.*

While field studies have pointed out the impact of procedural justice for applicants' reactions in web-based selection (Sylva & Mol, 2009) and even managed to identify some procedural justice rules that are related to fairness perceptions and applicants' reactions (Brünn, 2010), research so far has failed to establish prove for causal relationships through experimental research. Apart from the policy-capturing study from Dineen et al. (2004) little research into applicants' reactions in web-based selection incorporated experimental designs. Findings about relationships in field studies often remain on a correlative basis. Where field studies in real-life selection settings enhance external validity of results, experimental labora-

tory research, like Wiechmann and Ryan (2003) used for computer-based testing, could be employed to obtain a deeper understanding of the relationships between the different variables in web-based selection. Thoms, Chinn, Goodrich, and Howard (2004) found that the experimentally varied design of organization recruitment websites impacted on participants perceptions of organizational attractiveness. In web-based selection manipulations of experimental conditions could also be used to establish causal relationships and enhance knowledge about directional pathways. Thus, the second proposition is:

Proposition 2: *By varying the design of a web-based selection website in accordance with Gilliland's procedural justice rules applicants' reactions can actively be influenced.*

Research has acknowledged the importance of technical aspects like system speed (Sinar et al., 2003), user friendliness and efficiency (Sinar et al., 2003; Sylva & Mol, 2009) in web-based selection. It has been proposed that user-friendliness and efficiency impact on fairness perceptions (Wasko, 2008).

However, technical aspects like the usability criteria of Nielsen (1993) of learnability, efficiency, memorability, errors, and satisfaction so far have not been related to individual procedural justice rules. Gilliland (1993) proposes that test type impacts on the rules of the secondary factor formal characteristics. For example, the opportunity to perform rule is likely to be influenced by usability criteria like learnability and efficiency. An in-depth investigation of relationships or even conceptual overlaps between usability criteria and procedural justice rules may provide an insight into the nature of fairness in web-based selection. The third proposition is:

Proposition 3: *Procedural justice rules in web-based selection are related to criteria of ergonomics and usability.*

Most studies focused on single instruments or evaluated whole batteries of instruments. The instruments researched in web-based selection include online application forms (Dineen et al. 2004; Wasko, 2008), cognitive ability tests (Brünn, 2010; Potosky & Bobko, 2004), personality inventories (Salgado & Moscoso, 2003; Wasko, 2008), situational judgment tests (Wasko, 2008), and technology-mediated interviews (Chapman et al., 2003). Yet, no web-based selection study has so far compared different instruments of web-based selection in terms of fairness and applicants' reactions. Applicants' preferences and their reactions

towards certain instruments in comparison would provide a welcome guideline for hiring organizations. Research into applicants' preferences concerning conventional selection instruments (Hausknecht et al., 2004; Steiner & Gilliland, 1996, 2001) found that interviews, CVs and work sample tests were perceived more favorable than ability tests, and these were perceived as more favorable than personality inventories and honesty tests. Whether these findings may be transferred to web-based selection needs to be researched. With the special conditions of web-based selection some selection instruments may receive different ratings. For example the popularity of CVs may not necessarily apply for online application forms. A CV can be designed freely and creatively by the applicant, whereas an online application form requires stipulated information in a highly-standardized format. So the perceived fairness may vary with the applicant's freedom to present himself that is the opportunity to perform. A cognitive ability test, known as a highly objective diagnostic instrument may become prone to faking when it is administered online. Therefore the perceived fairness of a web-based ability test may be influenced by the difficulty of faking (cf. Brünn, 2010). Since no administrator is present in web-based selection the wording of web-based personality inventories and integrity tests may be even more important than for the paper-based versions used in on-site testing. Therefore, the propriety of questions rule may impact strongly on the perceived fairness of these instruments. The fourth proposition is:

Proposition 4: *Web-based application forms are perceived more fairly than web-based ability tests which in turn are perceived more fairly than web-based personality inventories. The fairness of web-based application forms is strongly determined by the fulfillment or violation of the opportunity to perform rule. The fairness of web-based ability tests is strongly determined by the difficulty of faking. The fairness of web-based personality inventories and integrity tests is strongly determined by the fulfillment of the propriety of questions rule.*

Early research (Potosky & Bobko, 2004; Salgado & Moscoso, 2003) compared paper-based and web-based tests. It was reported that participants reacted more favorably to the web-based versions of tests. Little attention was paid to detailed analysis concerning the aspects in which paper-based and web-based versions differed.

By applying Gilliland's (1993) procedural justice rules an insight could be gained into how the transformation of paper-based tests into web-based tests affects applicants' reactions. Truxillo et al. (2004) proposed that some procedural justice rules might benefit, while other

rules might suffer from this process. Due to the high standardization of web-based tests the consistency of administration rule is likely to benefit from the process of computerization. The lack of direct interpersonal contact probably impacts the rules of interpersonal effectiveness of the administrator and two-way communication. Taking the results of Schmitt and Coyle (1976) concerning the relevance of an organizational representative into account, it is likely that the absence of an organizational representative will impact negatively on these rules. To control for inter-individual differences both versions should be compared in a within-subjects design.

An additional question is which person variables influence the perceptions of web-based and paper-based tests. In the research of Sylva and Mol (2009) self-rated Internet familiarity was associated with higher favorability ratings for the web-based selection procedure. Anderson (2003) proposes to examine the impact of personality traits like openness to new experience on the perceptions of web-based tests. Deliberations based on these findings lead to the assumption that the relationship between test type (web-based vs. paper-based) and the perception of justice rules is moderated by Internet familiarity and openness to new experience. Therefore the fifth proposition is:

Proposition 5: *The procedural justice rule consistency of administration will receive higher ratings for the web-based version of a test than for the paper-based version. The procedural justice rules interpersonal effectiveness of the administrator and two-way communication will receive lower ratings for the web-based version of a test than for the paper-based version. The relationship between test type and ratings of the procedural justice rules will be moderated by Internet familiarity and openness to new experience.*

2.9 Conclusion

For hiring organizations a fair treatment of applicants in the application of efficient web-based selection procedures is crucial in winning the best applicants in today's dynamically transforming labor markets. Scientific guidance concerning the design of web-based selection based on empirical research is needed. Yet, scientists are only about to explore this whole new area of research. By following the propositions of this piece the knowledge of applicants' reactions towards web-based selection can be broadened and deepened.

2.10 References Chapter 2

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3 Procedural Justice Rules in Web-Based Selection and the Path from Fairness to Applicants' Intentions – A Field Study

3.1 Summary

Gilliland's (1993) model of applicants' reactions is applied to the field of web-based selection. A sample of 354 web-based applicants for an apprenticeship position is surveyed via web-based questionnaire. It is tested which procedural justice rules are related to the perceived process fairness of a web-based selection procedure, and how the process fairness is related to different applicants' intentions. Partial least squares analysis reveals that treatment of the applicants, opportunity to perform, propriety of questions, and reconsideration opportunity are related to perceptions of process fairness in web-based selection. Furthermore, process fairness is related to applicants' intentions like pursuit intentions, recommendation intentions, and intentions to reapply. Implications for theory and practice are discussed.

3.2 Introduction

During the dawn of the new millennium, it became clear that the Internet was emerging as a major medium for recruitment and selection (Cappelli, 2001; Lievens & Harris, 2003). Nonetheless, still little is known about how applicants perceive the fairness of web-based selection procedures and how they react to them (Sylva & Mol, 2009). This is important since an unfair selection procedure may lead to detrimental outcomes for the hiring organization like gaining a negative reputation regarding the intention of recommendation (Hausknecht, Day, & Thomas, 2004; Holtz, Ployhart, & Dominguez, 2005) and increasing an applicant's willingness to reject job offers (Chapman, Uggerslev, & Webster, 2003; Hausknecht et al., 2004; LaHuis, 2005).

Gilliland's (1993) model of applicants' reactions is the predominant model in research into the perceived fairness of selection procedures (Holtz et al., 2005; Ryan & Ployhart, 2000). The purpose of this study is to apply Gilliland's model of applicants' reactions to the field of web-based selection and to identify the pivotal justice rules in web-based selection. In particular, the importance of the procedural justice rule treatment of the applicants is highlighted in this study. In addition, the path from fairness to intended applicants' reactions is explored.

3.3 Theory and Hypotheses

3.3.1 *Web-Based Recruitment and Selection*

Web-based recruitment and selection enables organizations to carry out important components of the recruitment process online. This results in increased cost-savings for advertising, mail, and travel expenses. In addition, through the automation of data processing, testing, and scoring, organizations are able to handle larger applicant populations more quickly and efficiently (Beulen, 2008; Parry & Tyson 2008; Viswesvaran & Ones, 2010). Web-based selection, in this respect, comprises the pre-selection phase and parts of the selection phase. It enables diagnostic instruments such as online application forms to collect biographic data, web-based ability tests, and personality inventories as well as complex problem solving tasks (e.g., Arthur, Glaze, Villado, & Taylor, 2010; Dineen, Noe, & Wang, 2004; Tippins,

2009), and therefore allows organizations to gather important diagnostic data at a rather early stage in the selection process.

Compared with conventional selection methods (e.g., paper-based application, reviewing of the application, on-site test, interview, hiring), web-based selection, perceived from an applicant's perspective, reveals several important differences. First, selecting applicants via web-based devices inhibits personal contact between the representatives of the hiring organization and the applicant, and rather this contact is established at a later stage, if at all. Schmitt and Coyle (1976), however, point out the importance of representatives of the hiring organization for the applicant's decision making. Second, highly standardized online application forms, tests, and inventories may result in the applicant having the lack of freedom to present himself. The degree of freedom offered by these application forms in providing information about oneself may influence fairness perceptions (Dineen et al., 2004). Third, since the speed of web-based interaction is so much faster than paper-based exchange, applicants are more likely to expect much shorter response times, which may influence their perceptions. Findings for customer satisfaction indicate that response time is related to satisfaction with the handling of complaint emails (Mattila & Mount, 2003). Fourth, in web-based selection, applicants use their own hardware equipment. The differences in equipment (e.g., screen size, mouse-speed) may impact the performance on speeded ability tests. For equivalence research between paper pencil and web-based tests, impacts of the mode on test results were found for timed ability tests (Coyne, Warszta, Beadle & Sheenan, 2005). Fifth, with the lack of supervision in web-based selection, some applicants may try to cheat in testing (Arthur et al. 2010; Carstairs & Myers, 2009; Naglieri et al., 2004). Finally, transmitting highly confidential personal data via the Internet may raise confidentiality concerns (Bauer et al., 2006; Lievens & Harris, 2003; Harris, van Hove and Lievens, 2003).

3.3.2 Gilliland's Model of Applicants' Reactions

The terms *applicants' perceptions* and *applicants' reactions* refer to different outcomes of a selection procedure. Applicants' perceptions characterize how applicants view the selection process, including attitudinal, affective and cognitive aspects (Ryan & Ployhart, 2000). The term applicants' reactions comprises perceptions as well as behaviors (Gilliland, 1993).

Gilliland (1993) proposes a complex model of applicants' reactions. He suggests that ten procedural justice rules, divided into the three secondary factors formal characteristics,

explanation, and interpersonal treatment, impact on the perceived fairness of a selection procedure.

An instrument for evaluating these procedural justice rules was developed by Bauer et al. (2001). The Selection Procedural Justice Scale (SPJS) captures Gilliland's (1993) procedural justice rules in a 39-item questionnaire. Using confirmatory factor analysis Bauer et al. depicted the ten procedural justice rules in eleven scales. The justice rule job relatedness was split into the two scales job relatedness – predictive and job relatedness – content. Table 5 gives an overview on Gilliland's procedural justice rules adapted to web-based selection.

Table 5. Gilliland's Procedural Justice Rules Adapted to Web-Based Selection (after Gilliland, 1993)

Factor 1: Formal Characteristics

1	Job relatedness — content	The content validity of a selection device
2	Job relatedness — predictive	The predictive validity of a selection device
3	Opportunity to perform	The chance of the applicants to present themselves
4	Reconsideration opportunity	The opportunity to review data, scores, and scoring
5	Consistency of administration	Constant procedures across people and over time

Factor 2: Explanation

6	Feedback	Timely and informative feedback about performance and selection decision
7	Information known	Information on the selection process
8	Openness	Truthfulness in communication with the applicants

Factor 3: Interpersonal Treatment

9	Treatment of the applicants	Respectful and warm treatment of the applicants
10	Communication with the applicants	Applicants' opportunity to give input and ask questions during the selection process
11	Propriety of questions	The degree to which questions asked by the hiring organization do not interfere with privacy or legal aspects

3.3.3 Fairness Perceptions in Web-Based Selection

A substantial body of research examined the relationships proposed in Gilliland's (1993) model of applicants' reactions. A couple of studies focused on the effects of manipulations of different justice rules (Bauer, Maertz, Dolen, & Campion, 1998; Gilliland, 1994; Ployhart & Ryan, 1998; Gilliland et al., 2001) other studies compared the impact of different selection instruments on applicant perceptions (Macan, Avedon, Paese, & Smith, 1994; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993; Steiner & Gilliland, 1996). Other research was concerned with finding the most salient procedural justice rules. Hausknecht et al. (2004) meta-analyzed 86 studies and found that face validity and predictive validity, which comprise the justice rules of job relatedness (content) and job relatedness (predictive) as well as opportunity to perform and consistency of administration, were positively associated with applicants' fairness perceptions.

Despite the strong interest in the model of applicants' reactions relatively little research has focused the fairness of web-based selection procedures (Anderson, 2003; Lievens & Harris, 2003; Sylva & Mol, 2009). One of the few studies into web-based selection was conducted by Dineen et al. (2004). They used a policy-capturing design to investigate the impact of four of Gilliland's procedural justice rules, ability to provide additional information (opportunity to perform), consistency, ability to appeal to a decision (reconsideration opportunity), and timelines of feedback as well as the use of a human or an automated decision-making agent on the perceived fairness of a web-based selection procedure. Participants were given 32 vignettes which described different selection scenarios. In each scenario procedural justice rules were modified systematically. Each rule was either fulfilled or violated. Participants were asked to rate the fairness of each selection scenario. Regression analysis revealed that consistency and ability to provide additional information were strongest predictors of fairness in this research, reconsideration opportunity, decision agent, and timeliness of feedback came next. Yet, it is possible that the high impact of the consistency rule is an artifact of the research design. As automated selection procedures are normally highly standardized it can be questioned whether this rule would play an important role in field studies.

In a field experiment Sylva and Mol (2009) examined applicants' perceptions of a web-based selection procedure. Process satisfaction was conceptualized as the dependent variable. Regression analyses of different independent variables revealed that efficiency was the strongest predictor of process satisfaction, followed by user-friendliness, process fairness, and internet selection image (capturing a general opinion about online selection). Process fairness

was captured by a two-item measure, allowing only a global overview on the fairness of the web-based selection procedure. The question remains, how process satisfaction is related to applicants' reactions. In addition, the level of specificity is not high enough to give selection designers an advice on designing applicant-oriented selection procedures as for example Ryan and Huth (2008) demand. More recently, Brünn (2010) used large parts of Gilliland's model of applicants' reactions to examine a sample of $N=103$ applicants who completed a web-based cognitive ability test and a work sample test. Results demonstrated that opportunity to perform, propriety of questions, selection information, and ease of faking, as an additional rule, predicted process fairness. However, the small sample size in this study casts doubts on the robustness of the results.

Truxillo, Steiner, and Gilliland (2004) suggest high-tech selection (computer-based and web-based selection procedures) as an area for future justice research. They suggest that the use of technology will impact negatively on some justice rules like the interpersonal treatment rules, whereas other justice rules like consistency of administration are likely to benefit.

3.3.4 Procedural Justice Rules in Web-Based Selection

Gilliland proposed that the importance of the justice rules may vary based on selection settings. Past research findings as well as theoretical and technical deliberations are taken into account in proposing the most salient procedural justice rules in web-based selection. Studies of Dineen et al. (2004) and Brünn (2010) demonstrated opportunity to perform, i.e. the chance for applicants to express themselves, to be an essential procedural justice rule in web-based selection. In addition, Schleicher, Venkataramani, Morgeson, and Campion (2006) found evidence for its significance in conventional selection settings, which is consistent with meta-analytic findings (Hausknecht et al., 2004). Due to the restrictions of high standardization in web-based settings, this procedural justice rule may be even more important. With web-based application forms, applicants are forced to enter required data in a restricted format and limited level of detail, instead of being able to creatively design a paper application and CV or present themselves individually as in a face-to-face interview. Thus, it is proposed that the way in which applicants judge the opportunity to perform will be related to process fairness.

An additional justice rule which might play a key role in web-based selection is reconsideration opportunity, which refers to two related construct types: (1) to have one's results checked; and (2) to appeal a decision. In web-based selection, this justice rule is represented

by the applicant's facility to check the data entered before submission. With online application forms this poses no problem. Yet, time-based online ability tests, for example, allow little opportunity to check data before submission. Since data submitted is crucial to the applicants' future careers, it is assumed that applicants will associate the facility to review data before submission with their perception of process fairness.

Truxillo et al. (2004) suggest that the use of technology in personnel selection will negatively impact the interpersonal treatment rules. The justice rule thus far neglected in web-based research is treatment of the applicants. Originally conceptualized as "interpersonal effectiveness of the administrator", treatment of the applicants captures how respectful and warm applicants are treated during the selection process. Since there is no interpersonal communication in web-based settings, it is proposed here that the manner in which applicants are addressed in emails and during the web-based selection procedure is related to perceptions of process fairness.

Propriety of questions has been identified as a pivotal justice rule in the research of Brünn (2010). In comparison to conventional selection settings, its importance in a web-based setting may be enhanced by the fact that there is no organizational representative who articulates the questions and can also communicate non-verbally (tone of voice, measure of politeness, etc.) or immediately explain the purpose of questions that might be considered intrusive by the applicants. As data is submitted via Internet, inappropriate-perceived questions may also raise privacy concerns (Bauer et al, 2006; Harris, van Hove, & Lievens, 2003; Lievens & Harris, 2003). Therefore, it is proposed that propriety of questions is associated with process fairness.

There are some other justice rules which merit consideration. In the policy-capturing study of Dineen et al. (2004), consistency of administration emerged as the strongest justice rule. Yet, this result of their vignette study needs to be viewed critically in the context of web-based selection procedures. Because procedures in web-based selection are often standardized and automated, consistency of administration is very high (Truxillo et al., 2004). Therefore, variance is unlikely to occur in real-life web-based selection. Consequently, it is not assumed that this procedural justice rule will explain significant variance in process fairness. Additionally, rules of feedback (Dineen et al., 2004) and selection information (Brünn, 2010) have also been examined for web-based selection procedures. Both rules were positively related to process fairness but had only weak impact. Given this weak evidence, it is not assumed that these justice rules will explain significant variance in process fairness. Based on these deliberations it is hypothesized that:

Hypothesis 1: Process fairness is explained by the following procedural justice rules: opportunity to perform (H1a), reconsideration opportunity (H1b), treatment of the applicants (H1c), and propriety of questions (H1d).

3.3.5 The Relationship between Fairness and Outcomes in Web-Based Selection

In addition to finding relevant predictors of fairness in different selection systems and methods, research has focused on the path from applicants' fairness perceptions to applicants' behavior. In their Meta analysis Hausknecht et al. (2004) report empirical evidence for the relationship between *procedural justice* (i.e. process fairness) and *organizational attractiveness* ($r = .44$), *job acceptance intentions* ($r = .28$), and *recommendation intentions* ($r = .46$). Truxillo, Steiner and Gilliland (2004) suggest that in field studies only moderate relations may appear, because rule violations in empirical studies have not been strong enough to cause actions, because organizations that commit strong rule violations would not be willing to let their procedures be researched. Concerning the relation between process fairness and intended reactions it is hypothesized that:

Hypothesis 2: Process fairness is related to pursuit intentions (H2a), recommendation intentions (H2b) and intention to reapply (H2c).

The hypotheses are depicted and summarized in Figure 3 after Gilliland's model of applicants' reactions. As confounders age, gender and selection outcome (rejected or not rejected) are included in the research model.



Figure 3. Research Model

3.4 Method

3.4.1 Participants

An invitation to participate in this study was sent to 1,200 German applicants applying for a commercial apprenticeship, all of whom were in their last year in schooling for a general certificate in secondary education or a university entrance diploma. From these, 366 participated in the study, equaling a response rate of 30.5%. Data were screened for inadvertent re-

sponses, resulting in removing inappropriate cases (3.3%).³ The final sample consisted of 354 participants, 42.9 % of whom were male. The age of the participants ranged from 15 to 23 years with a mean of 18.4 years ($SD = 1.73$).

3.4.2 Measures

Unless stated otherwise, items were rated on a 5-point rating scale, ranging from 1 = *completely disagree* to 5 = *completely agree*.

Procedural justice rules. To capture Gilliland's procedural justice rules the Selection Procedural Justice Scale [SPJS] from Bauer et al. (2001) was translated into German. Three aspects guided the development of the German SPJS (1) equivalent translation of the original into German, (2) adaptation of the instrument to the German culture (i.e. the current German selection practice), and (3) adaptation of the instrument to the field of web-based selection.

(1) The aspect of equivalence, i.e. the comparableness of measures, plays a crucial role in cross-cultural psychology (Harkness, Mohler, & Van de Vijver, 2003). Back translation (Brislin, 1980; Van de Vijver & Hambleton, 1996) was used to transfer the English items into German.

(2) In addition to the translation of the English items minor changes were made to adapt the instrument to German recruitment and selection practice. As the aspect of questioning recruiting decisions is rather unusual in Germany, this could lead to a lack of conceptual equivalence between the two questionnaire forms (Geisinger, 2003), reconsideration opportunity was formulated as the ability to check one's own answers.

(3) Besides the translation from English into German and the transfer from the US-American to the German culture, the measurement instrument was adapted to fit to the context of web-based selection, reformulating some items like "The test administrators treated applicants with respect during today's testing process." into passive. With the modification of the items also two rules were renamed into treatment of the applicants, communication with the applicants (see Chapter Appendix A for a table showing how all items were adapted).

³ Data were screened for individual subject responses not fully completed (9 datasets), (2) by participants younger than 15 years (3 datasets), and (3) with uniform response style (i.e., the same score across 90% of items) (no datasets), resulting in removing suspect cases (3.3%).

The German SPJS was tested for normality, dimensionality, and reliability⁴. Test for normality indicated no deviations from normality⁵ (cf. Ghiselli, Campbell, & Zedeck, 1981; Kendall & Stuart, 1958). Confirmatory factor analysis (Maximum Likelihood Method) was conducted via structural equation modeling using the AMOS 5.01 software package (Arbuckle, 2003) to establish evidence for the factorial validity of the German SPJS. Following the approach of Bauer et al. (2001) three different factorial solutions were tested: The 11-factor solution complies with the dimensions of the English SPJS depicting Gilliland's (1993) 10 procedural justice rules, with the rule job relatedness spread into perceived content validity and perceived predictive validity. The 10-factor solution is in accordance with the model of applicants' reactions as it was proposed by Gilliland. The 3-factor solution depicts the three secondary factors of Gilliland's model of applicants' reactions (formal characteristics, explanation and interpersonal treatment). Chi-square index values for the 11-factors solution, 10-factor solution, and the 3-factor solution are 1103.07 ($df = 610$; $p < .001$), 2061.70 ($df = 620$; $p < .001$), and 5796.98 ($df = 622$; $p < .001$), respectively. For all three models Chi-square index values indicate significant deviation from the data. However, as the Chi-square index is sensitive, especially when large samples are involved (Joreskog & Sorbom, 1993), additional indices were used to evaluate fit of model and data. Table 6 shows the selection of indices. The goodness of fit index (GFI) measures the relative amount of variance and covariance in the sample data that is explained by the hypothesized model (Byrne, 2010). The adjusted goodness of fit index (AGFI) is adjusted for the degrees of freedom in the model, penalizing a high number of degrees of freedom. Both indices range from 0 to 1, whereas a value close to 1 indicates good fit. In addition to the GFI, the parsimony goodness of fit index (PGFI; James, Mulaik, & Brett, 1982) incorporates the number of estimated parameters in the model as a measure of parsimony. Mulaik, James, Van Alstine, Bennett, Lind, & Stilwell (1989) report that PGFI values of .50 are not unusual.

⁴ Analyses of the 5-item scale "treatment of the applicants" revealed that deletion of one of the five items ("I felt a decreasing tension when I took the web-based tests.") would increase the reliability coefficient to an acceptable level ($\alpha = .92$). Hence, the revised 4-item scale was used to assess treatment of the applicants.

⁵ To examine the variables included in this research the following criteria after Ghiselli, Campbell, and Zedeck (1981) and Kendall and Stuart (1958) were taken into consideration: (1) mean and median of one variable should be similar, (2) the skewness of a variable should be less than 2, and (3) the kurtosis of a variable should be less than 5. All questionnaire scales meet these criteria.

The root mean square error of approximation (RMSEA) is expressed per degrees of freedom taking into account the complexity of the model. It examines how well the model would fit the population covariance matrix (Browne & Cudeck, 1993). A value of less than .05 indicates good fit (Byrne, 2010). As it can be seen from Table 6 the 11-factor solution shows best fit with the data. Both GFI and AGFI are above .80, which matches the demand of being “close to 1”. PGFI is well above .50 and the RMSEA is .05 with a 90 per cent confidence interval ranging from .04 to .05.

Table 6. Fit Indices (GFI, AGF, PGFI, RMSEA)

Model	GFI	AGFI	PGFI	RMSEA	CI for RMSEA
11-factor solution	.86	.83	.71	.05	.04, .05
10-factor solution	.77	.72	.64	.08	.08, .09
3-factor solution	.48	.42	.43	.15	.15, .15
Saturated model	1.000				
Independence model	.25	.21	.24	.20	.19, .20

Note. $N = 354$. GFI: goodness of fit index, AGFI: adjusted goodness of fit index, PGFI: parsimony goodness of fit index, RMSEA: root-mean-square error of approximation, CI: confidence interval.

Process fairness. Process fairness was measured with the three-item scale from Bauer et al. (2001). A sample item is “I think that the web-based selection procedure itself was fair”. In the current study, the reliability was $\alpha = .87$.

Pursuit intentions. Pursuit intentions were assessed by Konradt and Rack’s (2006) German adoption of Turban and Keon’s (1993) three-item measure. A sample item is “I would like to work for this company” ($\alpha = .93$).

Recommendation intentions. Recommendation intentions were captured by a German adaptation of Smither et al.’s (1993) three-item scale by Konradt and Rack (2006), e.g., “I would recommend this company to others”. Cronbach’s alpha was .73.

Intentions to reapply. Intentions to reapply was measured by four items (“I would apply again with this company”, “Should there be suitable vacancies in the future, I would apply again with this company”, “If it doesn’t work out this time, I will apply for other jobs with this company”, and “I would also apply for other positions in this company”). Cronbach’s alpha was .84.

Controls. The Study also examined the potential role of other factors that could influence applicants’ reactions. Due to the continuous selection process, 167 participants had already received negative feedback on their results and were rejected before answering the

questionnaire. The decision of rejection (1 = rejected, 0 = not rejected) was captured by matching participants' email addresses with processing records. As past research (e. g. Bauer, Maertz, Dolen, & Campion, 1998) found impacts of test outcomes on applicants' reactions, it was considered to have potentially contributed to the level of an applicants' reactions and was, therefore, used as a control. Also, age (in years) and gender (0 = male, 1 = female) were included as potential control variables (cf. Hausknecht et al., 2004; Viswesvaran & Ones, 2004). However, as age and gender did not change the path coefficients, these variables were omitted from further analyses.

3.4.3 Procedure

This study was conducted in cooperation with a large German retail bank. The selection procedure comprised collecting biographic data, personality scales, and a cognitive ability test. A website was set up as a platform for communication with the participants. On the one hand, the separate internet-address communicated independence from the selecting organization, on the other hand, it provided the participants with detailed information about the research project and it gave them the opportunity to ask questions. The intention of setting up the independent website was to encourage the participants to answer honestly and to avoid social desirable answering.

Applicants received an email inviting them to take part in the study for the evaluation of the web-based part of the selection procedure. Participants were informed that their contribution would be confidential and that it would be used to improve fairness and attractiveness of the selection procedure to benefit future applicants. As an additional incentive for participating, soccer balls and mp3-players were raffled off to participants. The email included a link to the data collection webpage. On the data collection page, participants logged in with their email address. After logging in, they were presented with the different scales of the questionnaire. The items were shown scale wise with one or two scales per page depending on the number of items. With the contingencies of a data collection in the field, some restrictions had to be taken into account. First, the study was conducted in the beginning of March. Due to the timing of data collection, all applicants received the invitation to participate at the same time. Some participants had already completed the web-based selection procedure in August. Second, some participants had already received feedback on their results of the online selection procedure, i.e., they were rejected or accepted to different stages of the main selection procedure. By capturing participants' email addresses it was possible to match the questionnaire

data with the data collected in the web-based selection procedure. Therefore, whether the participant was rejected or not was included in the analysis as a control variable. After the matching process, datasets were made anonymous.

3.4.4 Analyses

Data was analyzed using SPSS 20 (IBM Inc., USA) and SmartPLS (Ringle, Wende, & Will, 2005). Partial least squares (PLS, Wold, 1985) is a robust method that generates estimates of standardized regression coefficients for model paths. PLS is not based on the assumption of multivariate normality. It is also recommended for analyzing small to mid-sized samples. Bootstrap technique using 2,000 subsamples was used to enhance the robustness of results.

Test for Common Method Variance. As with all questionnaire-based research common method variance (i.e., a “variance that is attributable to the measurement method rather than to the constructs the measures represent”, Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879) could have influenced the results of this study. Harman’s single factor test (Podsakoff et al., 2003) was conducted. This test is proposed as an indicator of common method bias. If in the unrotated solution of an exploratory factor analysis one factor emerges, it is a sign of common method variance. In this research, exploratory factor analysis revealed 13 factors explaining 74.53% variance.

Measurement Model. PLS models generally comprise two model parts, the inner model, i.e. the path model, and the outer model, i.e. the measurement model (Chin, 1998). While the path model is generally evaluated in terms of explained variances of endogenous constructs and predictions (see results), the fit of the measurement model is characterized by reliability (composite reliability and Cronbach’s Alpha), convergent validity in terms of average variance extracted (AVE), and discriminant validity (Henseler, Ringle, & Sinkovics, 2009). Similar to Cronbach’s Alpha composite reliability assesses internal consistency but takes into account that indicators (i.e. items) have different loadings on the latent variable. Therefore, it may provide a more exact estimate of internal consistency in PLS models than Cronbach’s Alpha. Cronbach’s Alpha as well as composite reliability should show values above .70, whereas a value below .60 points towards poor reliability (Götz, Liehr-Gobbers, & Krafft, 2009; Nunnally & Bernstein, 1994). As Table 7 indicates all variables fulfill this criterion. Convergent validity can be estimated through the AVE. An AVE value of above .50 indicates that a latent variable explains more than half of the variance of its indicators showing suffi-

cient convergent validity (e.g., Götz et al., 2009). As can be obtained from Table 7 all variables match this criterion. Discriminant validity can be assessed by checking the cross-loadings of each indicator. If an indicator of a variable shows a higher cross-loading on any other variable, discriminant validity is violated. As can be seen from the cross-loadings matrix in Chapter Appendix B all indicators expose higher loadings than cross-loadings. In summary, it can be concluded that the measurement model is reliable and valid.

3.5 Results

Descriptive statistics and correlations can be obtained from Table 7. It is shown that, apart from the scale for selection information, all procedural justice rules reveal substantial correlations with the dependent variable process fairness. Results for the PLS path model are displayed in Figure 4.

Hypotheses 1a to 1d, which predicted that opportunity to perform, reconsideration opportunity, treatment, and propriety of questions, would be positively associated with process fairness, were supported. The justice rules of opportunity to perform ($\beta = .17, p < .01$), reconsideration opportunity ($\beta = .15, p < .01$), treatment of the applicants ($\beta = .28, p < .001$), and propriety of questions ($\beta = .16, p < .01$) were significantly positively related to process fairness, providing support for Hypotheses 1a to 1d. Together with the control variable, these procedural justice rules explained 37% of the variance in process fairness.

Hypothesis 2 was supported. Relationships between process fairness and various behavioral intentions were found. Strongest relations were revealed for pursuit intentions ($\beta = .37$) and weakest for intentions to reapply ($\beta = .33$). Additionally, it is notable that while PLS analysis fails to support a relation between the control variable rejected or not rejected and process fairness, it shows that the control variable is related to participants behavioral intentions.

Table 7. Correlation Matrix, Reliabilities, Average Variance Extracted, and Descriptive Statistics

	<i>M</i>	<i>SD</i>	Composite Reliability	Cronbach's Alpha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 Age	18.40	1.73	--	--	--																		
2 Gender	--	--	--	--	-.05	--																	
3 Decision of rejection	--	--	--	--	.01	.09	--																
4 Process fairness	3.72	0.95	.92	.87	-.02	-.05	<i>-.13</i>	(.80)															
5 Pursuit intentions	4.37	0.83	.96	.93	.00	-.06	<i>-.34</i>	<i>.40</i>	(.88)														
6 Recommendation intentions	3.70	0.81	.84	.73	-.04	-.01	<i>-.15</i>	<i>.33</i>	<i>.50</i>	(.65)													
7 Intention to reapply	3.77	0.95	.89	.84	-.02	-.03	<i>-.24</i>	<i>.35</i>	<i>.60</i>	<i>.50</i>	(.68)												
8 Job relatedness – Content	4.05	1.04	.98	.97	<i>-.12</i>	.03	<i>-.10</i>	<i>.22</i>	<i>.27</i>	<i>.21</i>	<i>.21</i>	(.88)											
9 Job relatedness – Predictive	2.74	0.91	.95	.92	<i>-.15</i>	<i>-.07</i>	<i>-.10</i>	<i>.27</i>	<i>.26</i>	<i>.24</i>	<i>.32</i>	<i>.20</i>	(.87)										
10 Opportunity to perform	2.82	0.93	.95	.93	<i>-.13</i>	<i>-.04</i>	<i>-.05</i>	<i>.37</i>	<i>.21</i>	<i>.27</i>	<i>.34</i>	<i>.22</i>	<i>.52</i>	(.82)									
11 Reconsideration opportunity	3.35	1.01	.95	.94	<i>-.05</i>	<i>-.02</i>	<i>-.11</i>	<i>.33</i>	<i>.17</i>	<i>.23</i>	<i>.24</i>	<i>.28</i>	<i>.18</i>	<i>.37</i>	(.81)								
12 Consistency of administration	4.17	0.82	.90	.84	<i>-.01</i>	<i>.13</i>	<i>-.15</i>	<i>.29</i>	<i>.23</i>	<i>.19</i>	<i>.15</i>	<i>.21</i>	<i>-.04</i>	<i>.08</i>	<i>.15</i>	(.76)							
13 Feedback	2.85	1.00	.85	.77	.00	<i>-.02</i>	<i>-.02</i>	<i>.25</i>	<i>.07</i>	<i>.18</i>	<i>.11</i>	<i>.16</i>	<i>.21</i>	<i>.34</i>	<i>.26</i>	<i>.16</i>	(.66)						
14 Selection information	2.22	1.01	.86	.89	<i>-.03</i>	<i>-.06</i>	<i>-.07</i>	<i>-.01</i>	<i>-.08</i>	<i>.09</i>	<i>.10</i>	<i>-.01</i>	<i>.17</i>	<i>.21</i>	<i>.18</i>	<i>-.01</i>	<i>.32</i>	(.68)					
15 Openness	4.09	0.80	.88	.79	.01	<i>-.01</i>	<i>-.18</i>	<i>.42</i>	<i>.45</i>	<i>.32</i>	<i>.38</i>	<i>.28</i>	<i>.19</i>	<i>.29</i>	<i>.32</i>	<i>.40</i>	<i>.30</i>	<i>.06</i>	(.71)				
16 Treatment of applicants	4.20	0.81	.94	.92	<i>-.05</i>	<i>.04</i>	<i>-.20</i>	<i>.49</i>	<i>.47</i>	<i>.35</i>	<i>.36</i>	<i>.34</i>	<i>.24</i>	<i>.21</i>	<i>.24</i>	<i>.39</i>	<i>.25</i>	<i>-.05</i>	<i>.68</i>	(.80)			
17 Communication with applicants	3.46	0.87	.84	.72	<i>-.01</i>	<i>.04</i>	<i>-.14</i>	<i>.33</i>	<i>.31</i>	<i>.26</i>	<i>.28</i>	<i>.32</i>	<i>.26</i>	<i>.27</i>	<i>.31</i>	<i>.22</i>	<i>.29</i>	<i>.03</i>	<i>.52</i>	<i>.61</i>	(.64)		
18 Propriety of questions	4.05	0.75	.83	.72	<i>-.02</i>	<i>.05</i>	<i>-.19</i>	<i>.40</i>	<i>.34</i>	<i>.22</i>	<i>.27</i>	<i>.29</i>	<i>.12</i>	<i>.20</i>	<i>.24</i>	<i>.38</i>	<i>.14</i>	<i>-.03</i>	<i>.43</i>	<i>.50</i>	<i>.36</i>	(.63)	

Note. Average variance extracted (AVE) values are shown in the matrix diagonal. All correlations statistically reliable at $p < .05$ are italicized.

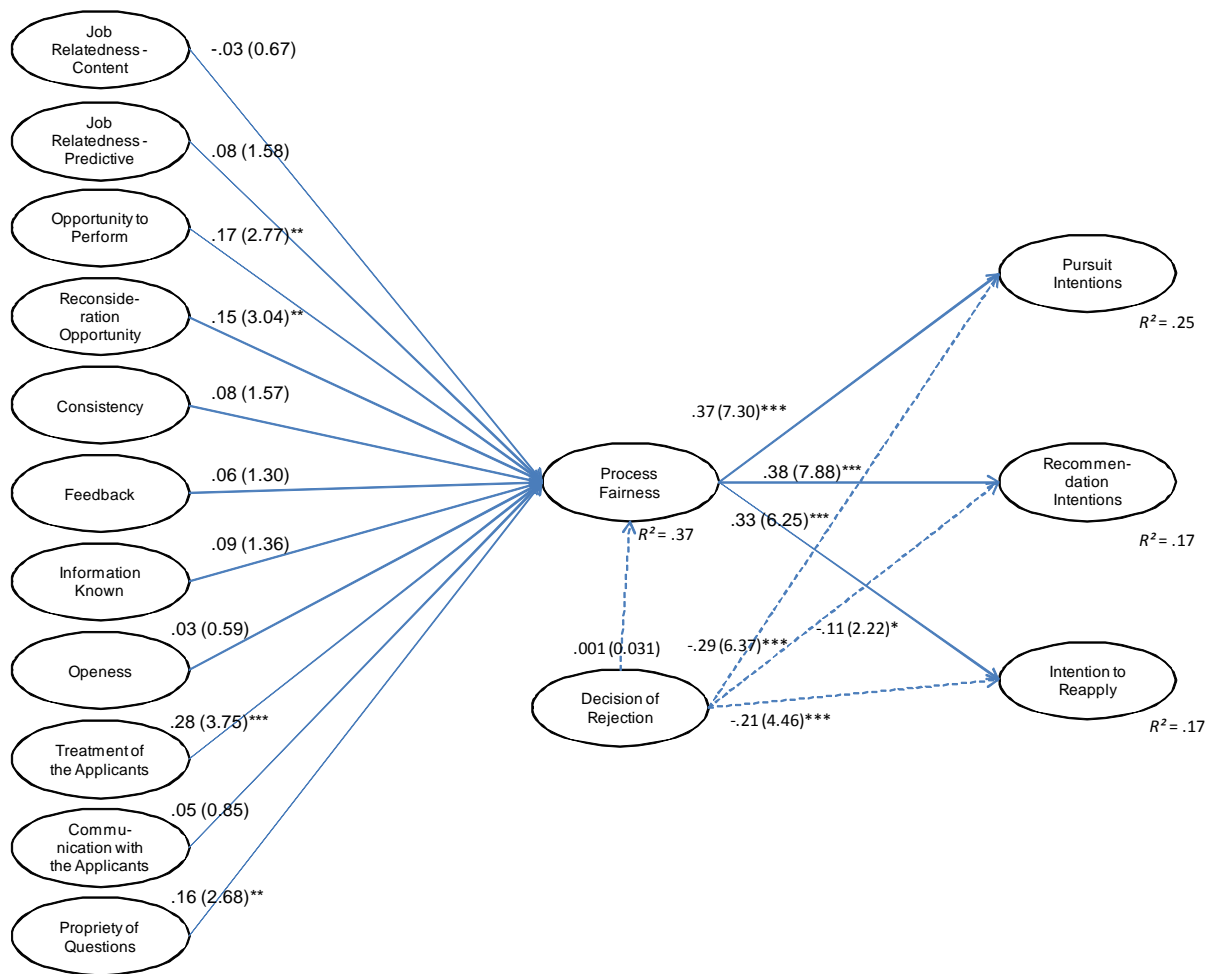


Figure 4. PLS Results.

Note. The path coefficients and corresponding t -values (in parentheses) are presented. The dotted lines represent controls. As a control the decision outcome (rejected or not rejected) is included in the model. * $p < .05$, ** $p < .01$, *** $p < .001$.

3.6 Discussion

The purpose of this study was to apply Gilliland's model of applicants' reactions to the field of web-based selection and to identify the pivotal procedural justice rules in web-based selection. The major contribution of this study is that it applies Gilliland's procedural justice rules in detail and with an ample sample size to a real-life web-based selection scenario. In particular, the importance of the procedural justice rule treatment of the applicants is highlighted by this study. It was also shown that process fairness is related to intended applicants' reactions. Moreover, a reliable and factorial valid German version of the SPJS is provided.

Consistent with hypothesis 1a to 1d, the justice rules opportunity to perform, reconsideration opportunity, treatment of the applicants, and propriety of questions were positively associated with process fairness in the PLS analysis. Treatment of the applicants reveals the strongest relations with process fairness. The suggestion of Truxillo et al. (2004) that interpersonal treatment suffers from web-based selection was not supported; the study revealed that it is an important factor in web-based selection. Originally conceptualized as interpersonal effectiveness of the administrator by Gilliland (1993) and Bauer et al. (2001), treatment of the applicants captured how the applicant was addressed during the web-based selection procedure. Besides treatment of the applicants, opportunity to perform was identified as the most influential procedural justice rule. This finding is consistent with the results of previous studies in web-based selection (Brünn, 2010; Dineen et al., 2004) as well as with the results for conventional selection (Hausknecht et al., 2004; Schleicher et al., 2006). It is conceptualized as the applicant's freedom to show his or her knowledge, skills, and abilities. It is comprehensible that for an applicant this procedural justice rule is crucial. Especially, in a web-based selection context, where the computer interface provides for a relatively low opportunity to interact (in comparison to conventional selection methods like interviews or assessment centers); it is important that the applicant still perceives the possibility to present himself as an individual. Consistent with hypothesis 1 and previous research (Brünn, 2010), propriety of questions is associated with process fairness. It comprises that the questions of the selection procedure are acceptable and do not interfere with the applicant's privacy. As expected, this procedural justice rule is significantly related to process fairness in web-based selection. The wording of questions could be of special significance in web-based selection, because no representatives of the hiring organization are present to explain the purpose of questions or tests. Adapted to the field of web-based selection, reconsideration opportunity captures the applicant's ability to check his or her answers. As applicants submit data that could influence their future career, applicants could associate the ability to review data before submission with their perception of process fairness. The web-based selection procedure that was researched in this study comprised a biographic data form, a personality inventory, and a cognitive ability test. Especially, during a cognitive ability test, it is not possible to check one's results, which some applicants may have considered unfair.

As proposed in hypothesis 2a to 2c relatively small yet significant relations of process fairness with various behavioral intentions were found. Strongest relationship was found between process fairness and pursuit intentions and weakest for process fairness and recommen-

dation intentions. Consistent with Gilliland's model of applicants' reactions this indicates that the process fairness is related to applicants' reactions in web-based selection.

The relatively low relationship of process fairness with intended applicants' reactions is consistent with findings of past research (e.g., Hausknecht et al., 2004). A reason for this could be that as Truxillo et al. (2004) propose the justice rule violations were not strong enough to induce negative reactions. The mean of the process fairness scale was 3.72 indicating a slightly positive skew. Therefore, it can be assumed that all in all the participants did perceive the selection procedure quite positively so that there was not a sufficient amount of unfairness to induce negative reactions. As Gilliland (2008) suggests that extreme forms of fairness or unfairness are necessary to induce reactions future studies could model different web-based selection procedures in laboratory research that expose strong rule violations. The impact of fairness on applicants' reactions could then be analyzed again to see, whether a stronger effect emerges. In addition other confounding factors like alternative job offers could have influenced applicants' reactions. Finally, as German apprenticeship programs mostly start on an annual basis the scale intention to reapply may not fit with a sample of school leavers, because applicants needed to find a place in an apprenticeship program now and not in a year.

As an additional result PLS analysis revealed that the control variable rejected/not rejected did not affect process fairness, yet exposed a moderate negative relationship with applicants' behavioral intentions. This finding indicates that applicants distinguish between the process and the outcome. A negative hiring decision does not necessarily affect applicants' fairness perceptions. Yet, the outcome of a selection process affects applicants' behavioral intentions, for example a negative hiring decision may prevent applicants from future applications. This finding is consistent with the results of Bauer et al. (1998) who found that test outcome favorability (passed/failed) explained applicants' reactions more consistently than process fairness. Further research is needed in this area to identify possible mediators in order to obtain a better insight into the way in which the hiring decision affects behavioral intentions.

3.6.1 Limitations and Future Research

In the following paragraphs some limitations to the present study are discussed and recommendations for future research are derived. First, as the participation in this study was on a voluntary basis and the response rate was 30.5 % effects of self-selection must be con-

sidered. Another issue closely linked could be social desirable answering. As the participants of the study were applicants whose careers partly depended on the decisions of the hiring organization, social desirable answering is an issue to be discussed. When designing the study different actions (like setting up an independent website and guaranteeing confidentiality) were taken to avoid participants thinking that their survey results could influence the hiring decision. It can be seen from the descriptive statistics that all scales show sufficient variance indicating that participants used the full range to express their opinion. Therefore, a restriction of range due to self-selection or social desirability likely did not occur. Second, when filling in the questionnaire participants were on different stages of the selection procedure. Some had participated in the web-based selection procedure up to five months ago. Some had received a rejection, others had passed on to further stages, and some had received a job offer. The selection decision was included as a control variable in the analysis. Effects were significant but not too strong. Future research, however, should survey all participants at the same time. Third, the present study was conducted surveying a sample of applicants for apprenticeship positions. To gather evidence for generalization, these findings should be replicated with different samples as some researchers (Ployhart & Ryan, 2000, Hausknecht et al., 2004) suggest that job and person characteristics (e.g., experience) impact fairness perceptions. Finally, the correlational nature of this study implies that despite the theoretical implications of Gilliland's model of applicants' reactions no conclusions about direction and causation of relationships can be drawn. Future research should employ longitudinal or experimental designs to gather evidence for effects of causation.

3.6.2 Implications for Practice

Recommendations for the conception of web-based selection procedures are derived following the procedural justice rules: treatment of the applicants, opportunity to perform, propriety of questions and reconsideration opportunity.

Treatment of the applicants. Web-based selection and recruitment websites are often the first contact that an applicant has with the hiring organization (Konradt & Rack, 2006). Due to the lack of interpersonal contact the way that the computer-mediated communication is set up could influence fairness perceptions. Therefore, organizations should put an emphasis on the way that applicants are contacted and refine the formulation of emails or website information. Applicants should also be given the opportunity to contact recruitment staff in case they require any information that is not displayed on the website.

Opportunity to perform. Opportunity to perform was identified as another crucial factor. With an online selection form or test applicants are forced to enter the required data in the stipulated format. They may lack the opportunity to provide additional information about themselves (Dineen et al., 2004). With some online application forms it is not even possible to enter certain information, because data entry can only be affected in a special format. For example, with some forms it is not possible to enter programs of study because they cannot be found within the pull down menu or grades and marks cannot be entered because the application form does not allow some letters or numbers. Organizations should find a good mixture of optimizing automation through standardization and still leaving freedom to enter additional information. When menus and fields of data entry are designed various formats of information should be considered.

Propriety of questions. To enhance the propriety of questions organizations should consider carefully which data they ask from the applicant. Questions that interfere with the applicant's privacy should be avoided, if possible. If intrusive questions are of diagnostic relevance, explanations for their purpose should be provided.

Reconsideration opportunity. To ensure reconsideration opportunity, hiring organizations should provide applicants with sufficient facilities for data-handling like possibilities to check data before submission, easy navigation throughout the entire selection process, and the possibility to go back and double-check their entries.

Following these suggestions hiring organizations can hopefully improve fairness perceptions of applicants and gain a competitive advantage in the contest for qualified employees.

3.7 References Chapter 3

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Chapter Appendix A

SPJS measure

Job-Relatedness Predictive

Doing well on **these web-based tests** means a person can do [insert job title] job well.

A person who scored well on **these web-based tests** will be a good [insert job title].

Those who pass the **web-based tests** will be a good [insert job title].^a

Information Known

I understood in advance what the **web-based testing** process would be like.

I knew what to expect on the **web-based tests**.

I had ample information about what the format of the **web-based tests** would be.

Opportunity to Perform

I could really show my skills and abilities through **these web-based tests**.

These web-based tests allowed me to show what my job skills are.

These web-based tests give applicants the opportunity to show what they can really do.

I was able to show what I can do on **these web-based tests**.

Reconsideration Opportunity

I was given ample opportunity to check my answers, if necessary.

There was a chance to check my answers.

I feel satisfied with the opportunity to check my answers.

Applicants were able to check their answers, if they wanted.

The opportunities to check my answers were adequate.

Feedback

I had a clear understanding of when I would get my test results.

I knew when I would receive feedback about my test results.

I was satisfied with the amount of time it took to get feedback on my test results.

Consistency

The **web-based tests were** administered to all applicants in the same way.

There were no differences in the way the **web-based tests were** administered to different applicants.

There were no differences made in how applicants were treated in the web-based selection process.

Openness

I was treated honestly and openly during the testing process.

Procedural questions were answered in a straightforward and sincere manner.

During the testing process, no one tried to hide anything from me.

Treatment

I was treated politely during the testing process.

During the selection process applicants were treated in a friendly manner.

Applicants were treated with respect during today's testing process.

I felt a decreasing tension when I took the web-based tests.^b

I was satisfied with my treatment at the **web-based** test site.

Communication with the Applicants

There was enough communication during the **web-based** testing process.

I would have felt comfortable asking questions about the **web-based** test if I had any.

I was comfortable with the idea of expressing my concerns at the **web-based** test.

Propriety of Questions

The content of the **web-based tests** did not appear to be prejudiced.

The **web-based tests** themselves did not seem too personal or private.

The content of the **web-based tests** seemed appropriate.

Job-relatedness Content

It would be clear to anyone that **these web-based tests** are related to the [insert job title] job.

The content of the **web-based tests** clearly related to the [insert job title] job.

Obviously, the content of the web-based tests relates to the profession of [enter occupational title].^a

Overall Fairness

I think that the **web-based** testing process is a fair way to select people for the job of [insert job title].

I think that the **web-based** tests themselves were fair.

Overall, the method of **web-based** testing used was fair.

Note. Changes of the SPJS are marked in bold.

^aThese items were included to improve the internal consistency.

^bThis item was omitted from analysis due to poor reliability.

Chapter Appendix B

PLS Loadings and Crossloadings

	PF	PI	RI	IR	JRC	JRP	OP	RO	CON	FB	IK	ON	TR	COM	PQ
PF1	0.88	0.38	0.32	0.36	0.19	0.25	0.36	0.29	0.22	0.21	-0.01	0.40	0.45	0.34	0.36
PF2	0.88	0.35	0.37	0.29	0.19	0.22	0.32	0.28	0.28	0.17	-0.01	0.34	0.42	0.27	0.38
PF3	0.92	0.35	0.37	0.32	0.22	0.26	0.30	0.33	0.27	0.28	0.00	0.40	0.44	0.30	0.37
PI1	0.35	0.90	0.47	0.55	0.26	0.25	0.14	0.11	0.21	0.08	-0.08	0.38	0.41	0.30	0.28
PI2	0.38	0.96	0.61	0.59	0.25	0.24	0.23	0.18	0.22	0.06	-0.06	0.45	0.45	0.27	0.37
PI3	0.41	0.97	0.61	0.60	0.25	0.24	0.22	0.17	0.20	0.04	-0.08	0.45	0.46	0.31	0.33
RI1	0.11	0.18	0.53	0.26	0.08	0.19	0.17	0.12	0.06	0.10	0.15	0.09	0.08	0.09	0.01
RI2	0.38	0.60	0.93	0.55	0.26	0.21	0.26	0.25	0.25	0.17	-0.01	0.40	0.43	0.30	0.31
RI3	0.37	0.55	0.91	0.52	0.21	0.19	0.24	0.22	0.21	0.18	0.03	0.36	0.42	0.31	0.32
IR1	0.31	0.53	0.49	0.80	0.21	0.22	0.30	0.27	0.16	0.13	0.11	0.33	0.37	0.26	0.27
IR2	0.32	0.63	0.58	0.84	0.19	0.27	0.33	0.27	0.19	0.10	0.05	0.38	0.38	0.31	0.30
IR3	0.24	0.42	0.42	0.82	0.16	0.27	0.25	0.13	0.04	0.04	0.09	0.27	0.24	0.20	0.18
IR4	0.30	0.42	0.38	0.82	0.15	0.28	0.28	0.17	0.11	0.08	0.10	0.29	0.23	0.18	0.21
JRC1	0.17	0.22	0.22	0.20	0.91	0.18	0.19	0.26	0.21	0.14	0.01	0.26	0.29	0.29	0.27
JRC2	0.24	0.27	0.24	0.20	0.95	0.18	0.21	0.27	0.20	0.15	-0.05	0.26	0.33	0.31	0.27
JRC3	0.22	0.27	0.24	0.20	0.95	0.19	0.22	0.26	0.17	0.15	0.00	0.27	0.32	0.32	0.27
JRP1	0.25	0.26	0.20	0.32	0.20	0.91	0.48	0.16	-0.07	0.20	0.16	0.17	0.22	0.27	0.10
JRP2	0.27	0.25	0.22	0.30	0.16	0.95	0.51	0.17	-0.02	0.19	0.16	0.17	0.23	0.25	0.11
JRP3	0.24	0.22	0.22	0.27	0.18	0.93	0.47	0.18	-0.02	0.21	0.17	0.16	0.22	0.23	0.18
OP1	0.33	0.21	0.28	0.35	0.19	0.46	0.89	0.36	0.11	0.29	0.21	0.28	0.20	0.22	0.23
OP2	0.30	0.17	0.25	0.32	0.23	0.47	0.91	0.29	0.04	0.28	0.19	0.24	0.15	0.25	0.16
OP3	0.34	0.23	0.26	0.33	0.23	0.48	0.93	0.34	0.08	0.33	0.18	0.27	0.22	0.27	0.23
OP4	0.37	0.17	0.21	0.28	0.15	0.47	0.91	0.34	0.07	0.30	0.20	0.25	0.18	0.27	0.20
RO1	0.34	0.17	0.23	0.26	0.27	0.22	0.38	0.87	0.10	0.24	0.15	0.27	0.24	0.32	0.23

RO2	0.27	0.11	0.21	0.24	0.23	0.17	0.35	0.92	0.15	0.23	0.18	0.28	0.19	0.28	0.23
RO3	0.31	0.16	0.23	0.22	0.24	0.10	0.30	0.90	0.17	0.25	0.13	0.30	0.23	0.25	0.24
RO4	0.23	0.17	0.23	0.22	0.26	0.17	0.28	0.89	0.08	0.19	0.17	0.29	0.19	0.23	0.19
RO5	0.35	0.15	0.23	0.23	0.26	0.15	0.33	0.91	0.20	0.24	0.16	0.31	0.26	0.30	0.27
CON1	0.22	0.18	0.21	0.15	0.18	-0.08	0.05	0.16	0.88	0.14	0.02	0.33	0.31	0.18	0.28
CON2	0.23	0.14	0.18	0.13	0.13	-0.03	0.11	0.14	0.88	0.12	0.02	0.34	0.28	0.18	0.32
CON3	0.29	0.27	0.23	0.13	0.23	0.01	0.05	0.10	0.85	0.14	-0.07	0.39	0.41	0.21	0.38
FB1	0.18	0.01	0.14	0.07	0.13	0.20	0.26	0.18	0.10	0.92	0.35	0.19	0.15	0.23	0.07
FB2	0.15	-0.03	0.10	0.00	0.08	0.20	0.24	0.16	0.07	0.91	0.34	0.15	0.12	0.20	0.07
FB3	0.31	0.20	0.26	0.22	0.20	0.13	0.33	0.32	0.23	0.65	0.10	0.42	0.37	0.31	0.26
IK1	-0.01	-0.10	-0.01	0.07	-0.02	0.14	0.17	0.14	-0.03	0.28	0.91	0.00	-0.09	-0.01	-0.07
IK2	-0.01	-0.07	0.04	0.09	0.02	0.15	0.21	0.22	0.02	0.30	0.92	0.06	-0.02	0.00	0.01
IK3	0.01	-0.04	0.05	0.12	-0.04	0.18	0.20	0.12	-0.02	0.30	0.90	0.10	-0.01	0.09	-0.01
ON1	0.40	0.41	0.40	0.37	0.26	0.11	0.24	0.30	0.40	0.25	-0.03	0.83	0.60	0.40	0.37
ON2	0.35	0.42	0.31	0.32	0.27	0.21	0.24	0.29	0.25	0.26	0.05	0.83	0.55	0.50	0.34
ON3	0.33	0.33	0.30	0.30	0.18	0.14	0.24	0.23	0.37	0.23	0.11	0.86	0.59	0.41	0.42
TR1	0.39	0.41	0.38	0.32	0.28	0.20	0.14	0.13	0.35	0.17	-0.07	0.61	0.88	0.49	0.42
TR2	0.42	0.39	0.40	0.34	0.29	0.26	0.24	0.24	0.33	0.22	0.01	0.61	0.91	0.59	0.43
TR3	0.46	0.43	0.42	0.32	0.33	0.19	0.15	0.24	0.34	0.27	-0.06	0.62	0.93	0.57	0.46
TR5	0.47	0.44	0.38	0.37	0.30	0.21	0.22	0.27	0.35	0.20	-0.04	0.61	0.87	0.57	0.47
COM1	0.33	0.26	0.26	0.27	0.29	0.27	0.26	0.22	0.18	0.23	-0.02	0.43	0.56	0.79	0.40
COM2	0.21	0.24	0.24	0.19	0.25	0.13	0.18	0.28	0.21	0.26	0.01	0.46	0.47	0.81	0.24
COM3	0.27	0.25	0.26	0.24	0.24	0.23	0.22	0.25	0.12	0.20	0.08	0.36	0.44	0.80	0.26
PQ1	0.41	0.28	0.24	0.22	0.24	0.15	0.23	0.21	0.35	0.18	-0.03	0.36	0.44	0.31	0.86
PQ2	0.18	0.20	0.18	0.15	0.23	-0.03	-0.03	0.09	0.27	-0.01	-0.06	0.25	0.35	0.23	0.70
PQ3	0.36	0.34	0.32	0.32	0.23	0.17	0.29	0.29	0.28	0.14	0.02	0.44	0.41	0.36	0.82

Note. PF: process fairness, PI: pursuit intentions, RI: recommendation intentions, IR: intention to reapply, JRP: job relatedness - predictive, IK: information known, OP: opportunity to perform, RO: reconsideration opportunity, FB: feedback, CON: consistency of administration, ON: openness, TR: treatment of the applicants, COM: communication, PQ: propriety of questions, JRC: job relatedness – content.

4 The Impact of Selection Website Design on Fairness – An Experimental Study

4.1 Summary

The impact of selection website features and content on fairness perceptions and intended reactions of applicants is examined in an experimental study. A sample of 91 university students is randomly assigned to one of two made-up selection websites, which have been designed in accordance with Gilliland's (1993) procedural justice rules as 'fair' or 'unfair'. Fairness perceptions and behavioral intentions (pursuit intentions, recommendation intentions, and intentions to reapply) are captured by web-based questionnaires. Using regression analysis it is shown that the experimentally modified fairness influences participants' behavioral intentions and that this relationship is mediated by the perceived process fairness. Implications for research and practice are discussed.

4.2 Introduction

The purpose of this paper is to examine the impact of selection website features and content on applicants' reactions. Large-scale surveys show that over the last years an increasing number of organizations have used the Internet for recruitment and selection purposes (Weitzel, König, von Stetten, Eckardt, & Laumer, 2010). Web-based applicant screening systems that help organizations collecting and processing CVs and biographic data are the most prevalent web-based selection tools. These systems comprise the first step in the selection process providing hiring organizations with the opportunity to reduce large applicant pools before contacting individuals (Dineen, Noe, & Wang, 2004). For organizations the Internet provides a way to improve the efficiency of human resources practices (Beulen, 2008; Parry & Tyson 2008; Sinar, Reynolds, & Paquet, 2003) saving time and costs. However, the question remains how applicants perceive web-based selection procedures (Weitzel, König, Laumer, Eckardt, & von Stetten, 2010). Especially in the struggle for highly-qualified individuals an applicant-oriented selection procedure may provide a competitive advantage for the hiring organization. With the demographic shift (Fuchs & Dörfler, 2005; Tivig, Frosch, & Kühntopf, 2008) and the resulting decline of qualified labor it is crucial for organizations to identify *and* hire qualified individuals.

In this research Gilliland's (1993) model of applicants' reactions is applied to the field of web-based selection. It is examined how modifications in selection website features and content that result in violations of Gilliland's procedural justice rules impact on applicants' reactions.

4.3 Theory and Hypotheses

4.3.1 Fairness Research and Gilliland's Model of Applicants' Reactions

In Gilliland's model of applicants' reactions ten procedural justice rules are defined as independent variables that influence the (perceived) overall fairness of the selection process (process fairness; Gilliland, 1993). The ten procedural justice rules that influence process fairness are: job relatedness, opportunity to perform, reconsideration opportunity, consistency of administration, feedback, selection information, openness, interpersonal effectiveness of

administrator, two-way communication, and propriety of questions. Process fairness mediates the relationship between the ten procedural justice rules and various applicants' reactions. The term applicants' reactions refers to different outcomes of a selection procedure. Among the applicants' reactions discussed in the literature are pursuit intentions, recommendation intentions (Gilliland, 1993), and intentions to reapply (Ployhart & Ryan, 1998).

4.3.2 Fairness Research in Web-Based Selection

Gilliland's (1993) model of applicants' reactions has been the focus of extensive research (Hausknecht, Day, & Thomas, 2004; Ryan & Ployhart, 2000; Truxillo & Bauer, 2010, for an overview). A large number of fairness research studies have been conducted for conventional selection procedures. Web-based selection, however, remains a weak point in fairness research. In the past researchers have argued for a more theory driven approach to web-based selection (Anderson, 2003) and recommended justice models as a theoretical background for research into applicants' perceptions (Lievens & Harris, 2003; Truxillo, Steiner, & Gilliland, 2004).

A number of research studies were conducted regarding applicants' perceptions of web-based selection without applying the justice framework. Wiechmann and Ryan (2003) examined the effects of mode (paper vs. computerized), technical level of the jobs (high technical job vs. low technical job) and selection decision (rejected vs. selected) on the participants' perception of the selection procedure. Even though they found no significant effects of the mode on the test-takers' perceptions, they found that computer anxiety and experience with computers were important factors in performing successfully. Harris, Van Hove, and Lievens (2003) surveyed two samples of US-American and Belgian students and found that privacy considerations affect applicants' willingness to take part in a web-based selection procedure. In a large-scale study, Sinar, Reynolds, and Paquet (2003) surveyed candidates for sales-oriented positions in several international companies that used web-based application procedures. They found that perceived system speed and user-friendliness were related to the company image. Sylva and Mol (2009) expanded on the research of Sinar et al. (2003). They found that efficiency, Internet selection image, user-friendliness and process fairness impacted on applicants' overall process satisfaction with a web-based selection procedure. Wasko (2008) examined the relation of actual test-taking conditions, perceived test procedure characteristics, and initial applicant perceptions on test scores of a selection test battery. Results indicate that information privacy concerns are an important applicant perception variable in

web-based testing over and above selection procedure fairness. Bauer et al. (2006) conducted a laboratory study and a field study. They found that the relation between information privacy concerns and outcome variables like test-taking motivation and organizational attraction was mediated by process fairness. Recently, Brünn (2010) applied the justice framework in a field study. Opportunity to perform, propriety of questions, selection information and the additional rule ease of faking predicted process fairness for a web-based selection procedure comprising an ability test and a work sample test. Evidence in these studies was captured on a correlative basis. So, apart from theoretical assumptions little is known about the direction of relationships and causal relations.

Dineen et al. (2004) used a policy-capturing design to operationalize four of Gilliland's procedural justice rules (opportunity to perform, consistency, ability to appeal to a decision, and timeliness of feedback). As a new variable they added either a human or an automated decision-making agent. They utilized vignettes describing web-based screening systems that varied systematically in the observation and violation of these justice rules. After each vignette participants were asked to judge the described selection procedure as fair or unfair. Using multi-level analysis Dineen et al. (2004) found the variables to be ranked in importance in the following order (from most important to least important): consistency, opportunity to perform, ability to appeal, decision agent, timeliness of feedback. Their approach can be criticized. Since no real selection system was used to assess, the effects may have resulted from methodical artifacts. For example it is credible that a selection system which treats candidates inconsistently (e. g. in terms of data inquired) would be perceived as unfair. But inconsistent treatment, if the selection procedure is automated and standardized for all participants like it is the case in web-based selection, seems rather unlikely (cf. Truxillo et al., 2004).

4.3.3 Experimental Fairness Research in Web-Based Selection

In addition to field studies (Brünn, 2010; Sylva & Mol, 2009; Wasko, 2008), survey research (Harris et al., 2003) and policy-capturing studies (Dineen et al., 2004) effects of rule violations need to be tested in experimental research. This approach can be utilized to investigate the direction of the relationships between procedural justice rules, fairness perceptions and behavioral intentions and show that modifications in a web-based selection procedure impact applicants' fairness perceptions and reactions. Research into the impact of recruitment and personnel marketing website features has successfully used experimental designs. Thoms, Chinn, Goodrich, and Howard (2004) showed in an experimental study that the use of photographs impacted positively on users' perceptions of recruitment sites.

In this study the influence of procedural justice rule manipulations on fairness perceptions and applicants' reactions is examined in experimental research. Procedural justice rules will be manipulated by modifying different features of a selection website. It will be investigated if the design features and content of selection websites impact on behavioral intentions and whether the perceived process fairness, as proposed by Gilliland (1993) mediates this relationship. The following hypotheses will be tested:

Hypothesis 1: The experimentally-manipulated fairness of the selection website explains significant variance in participants' behavioral intentions including (a) pursuit intentions, (b) recommendation intentions, (c) intention to reapply.

Hypothesis 2: The relationship between the experimentally-manipulated fairness of the selection website and behavioral intentions including (a) pursuit intentions, (b) recommendation intentions, (c) intention to reapply is mediated by process fairness.

4.4 Method

4.4.1 Participants

A sample of 94 undergraduate students of a German university was recruited for this research. Data were screened for inadvertent responses, resulting in removing three inappropriate cases (3.2%).⁶ The remaining sample comprised 91 participants. Of these 29.7 % were male. Mean age of the participants was 25.41 years with a standard deviation of 5.36 years. Participants were students of Business Psychology (84%), Information Technology (5.3%) or other disciplines (10.7%). Of the participants 59.6% had practical work experience, (81.6% if internships, student jobs and apprenticeship programs were included), and 90.8% had already taken part in a selection procedure before. The median number of selection procedures which participants had taken part in was four. Half of the participants (50.5%) had already taken part in an online selection procedure. On average each participant spent 22.52 hours per week at the computer including 8.96 hours Internet surfing.

4.4.2 Measures

Unless stated otherwise, items were rated on a 5-point rating scale, ranging from 1 = *completely disagree* to 5 = *completely agree*.

Procedural justice rules were captured to check the effects of the experimental manipulation by employing the translated version of the Selection Procedural Justice Scale (SPJS; Bauer et al., 2001) used in chapter 3. In the field study scales showed Alpha coefficients ranging from .72 for propriety of questions to .94 for reconsideration opportunity. Table 8 shows alphas ranging from .78 for communication with the applicants to .97 for reconsideration opportunity. Dependent measures were captured by questionnaire as well.

Process fairness: The three-item scale from Bauer and colleagues (2001) that had already been employed in Chapter 3 was used to capture process fairness. A sample item is: ‘I

⁶ Before the analysis the data was filtered for participants who obviously stated incorrect demographic data (e. g. professional experience of 38,749 years; 2 datasets) or used uniform response styles (i. e., one number for more than 90% for his/her answers; 1 dataset), resulting in removing 3 datasets (3.2%).

think that the web-based selection procedure itself was fair'. In the current study, the reliability was $\alpha = .88$.

Pursuit intentions: Konradt and Rack's (2006) German adoption of Turban and Keon's (1993) three-item measure captured pursuit intentions. A sample item is: 'I would like to work for this company' ($\alpha = .95$).

Recommendation intentions: To assess recommendation intentions a German adaptation of a three-item scale by Smither, Reilly, Millsap, Pearlman, and Stoffey (1993) translated by Konradt and Rack (2006) was used. A sample item is: 'I would recommend this company to others'. Cronbach's alpha was .85.

Intention to reapply: Intention to reapply was measured by the same scale that was used in chapter 3. A sample item is: 'I would apply again with this company'. Cronbach's alpha was .92.

Controls: In order to test conservatively, age (in years), gender (0 = male, 1 = female), number of application processes completed, weekly hours at the computer and weekly hours Internet surfing were captured and included as control variables into the following analyses. Professional experience was captured as well, but due to high correlations with age (cf. Table 8) it was excluded as a control variable.

4.4.3 Procedure

University students were recruited by offering research credits and raffling an mp3-player. Data collection was entirely conducted via Internet. As in real-life web-based selection participants were free to choose time and location. When logging on to the data collection website participants were randomly assigned to one of two made-up selection websites. After that the participants filled in the items of the SPJS, the process fairness scale as well as the scales concerning behavioral intentions. These three questionnaires were displayed in randomized order to avoid sequence effects. An important principle of the experimental design was the manipulation of the two selection websites. Both selection websites captured data concerning name and address, qualification, professional experience, IT and language skills. Website 1 "fair" was designed in an applicant-oriented way, whereas website 2 "unfair" included various violations of Gilliland's (1993) procedural justice rules. Job relatedness (content wise / predictive), treatment and propriety of questions were manipulated by displaying questionnaire items like 'Describe your relationship with your parents' in the unfair condition.

This question would likely be considered intrusive, inappropriate and not job-related within the German cultural context. Opportunity to perform was manipulated by enabling or disabling the opportunity to upload additional documents like CVs or written references (cf. Dineen et al., 2004). Feedback was manipulated by varying the information when feedback will be given (3 days vs. 3 – 4 weeks). The following rules were not manipulated actively: reconsideration opportunity, consistency of administration, selection information, openness, two-way communication.

A manipulation check was conducted by comparing the procedural justice rules' scale means for the two conditions via T-test. Significant differences were found for the experimentally manipulated variables job relatedness (content wise / predictive), treatment of the applicants, propriety of questions, opportunity to perform, and feedback. The means for the "fair" selection website were consistently higher than for the unfair website, indicating that the experimental manipulation worked as expected. No significant differences were found for reconsideration opportunity and two-way communication. Some variables even though not manipulated experimentally showed significant differences: consistency of administration, selection information, openness, even though effect sizes were not as strong as in the case of the manipulated variables. For the following analyses the experimentally-manipulated fairness is represented by a dummy variable coded 0/1.

4.4.4 Analyses

To determine whether sample size was adequate for testing the proposed hypotheses power analysis (cf. Cohen, 1988) was conducted using G*Power 3.1.3 (Faul, Erdfelder, Buchner, & Lang, 2009). With a given effect size of .26, an alpha error probability of .05 the sample size of 91 achieved a power of .82 above the minimum power of .80 (Cohen, 1992). Hypothesis 1 (impact of experimental variation on behavioral intentions) was tested using regression analysis. In the course of the regression analysis data was examined for outliers. Outliers outside three standard deviations (Stevens, 1984) were detected and excluded from the analysis. Results were calculated with and without the exclusion of outliers. Hypothesis 2 was investigated using mediation analysis following causal steps strategy (cf. Baron & Kenny, 1986). Causal steps strategy is the most common method for mediation analysis. However, it has been criticized for a couple of methodical drawbacks. First, it is unsuitable for small samples when the effect size of the mediation effect is low and all of the direct relation is mediated. Second, it does not show a numerical indicator for the strength of the mediation effect.

Third, it requires a significant relation between independent and dependent variable (MacKinnon & Fairchild, 2009). Alternative methods focus on estimating the strength of the indirect effect (predictor via mediator on criterion), which describes the difference between the total effect (direct effect plus indirect effect) and the direct effect (predictor on criterion) after it is controlled for the mediator. In this study the indirect effect was estimated via bootstrap analysis (Preacher & Hayes, 2008), providing confidence limits for the strength of the indirect effect. Using the SPSS INDIRECT macro provided by Hayes (2011) a bootstrap analysis with 5,000 subsamples was conducted for the indirect effect of the experimentally-manipulated fairness via process fairness on (a) pursuit intentions, (b) recommendation intentions, (c) intention to reapply.

4.5 Results

Table 8 shows the descriptive statistics and correlations of all variables included in the study. Before the analysis data was tested for normality⁷ and reliability. Apart from the bivariate experimental manipulation, test for normality indicated no deviations from normality (cf. Ghiselli, Campbell, & Zedeck, 1981) for the SPJS scales, process fairness, and the dependent variables. Reliability analysis revealed alphas ranging from .78 for communication with the applicants to .97 for reconsideration opportunity.

Hypotheses 1a to 1c proposed that the experimentally-manipulated fairness of the selection website explains significant variance in the participants' behavioral intentions (a) pursuit intentions, (b) recommendation intentions, and (c) intention to reapply. Regression analysis (cf. Table 9) shows that above control variables (all not significant) a significant amount of variance in the behavioral intention scales is explained by the experimental manipulation (unfair/fair). Without the control variables effects ranged from $\beta = .26$ ($p < .05$) for recommendation intentions to $\beta = .28$ ($p < .01$) for intention to reapply. The exclusion of two outlier cases (11, 14) did not change the results for the controls but increased explained variance and re-

⁷ Testing for normality of the distribution was carried out following the criteria stated by Ghiselli, Campbell, and Zedeck (1981) and Kendall and Stuart (1958): (1) mean and median of one variable should be similar, (2) the skewness of a variable should be less than 2, and (3) the kurtosis of a variable should be less than 5.

gression coefficient for the impact of the experimental manipulation on pursuit intentions ($R^2 = .18, p < .001; \beta = .41, p < .001$). Thus, hypotheses 1a to 1c are supported by the data.

Hypotheses 2a to 2c proposed that process fairness mediates the relationship between the experimentally-manipulated fairness and (a) pursuit intentions, (b) recommendation intentions, (c) intention to reapply. Mediation analysis following causal steps strategy shows that the effect of the experimentally-manipulated fairness on pursuit intentions, recommendation intentions and intentions to reapply is fully mediated by the process fairness. First, the experimental manipulation (independent variable) significantly predicts the mediator, process fairness ($R^2 = .16, p < .01; \beta = .41, p < .01$). Second, as Table 9 shows the experimental manipulation significantly impacts the dependent variables pursuit intention, recommendation intention, and intention to reapply. Third, the mediator, process fairness, predicts all dependent variables. Finally, the significant impact of the experimental manipulation on the dependent variables disappears in combination with the mediator, process fairness, indicating a full mediation. The exclusion of outlier cases for pursuit intentions (11, 14, 67, 35) refined explained variances (step 1: $R^2 = .13, p < .001$; step 2: $R^2 = .36, p < .001$) and regression coefficients (Step 1: experimental manipulation: $\beta = .36, p < .001$; Step 2: experimental manipulation: $\beta = .12, ns$; process fairness: $\beta = .53, p < .001$) but did not change the mediation effect.

The additional bootstrap analysis revealed positive 95%-confidence intervals for the mediation effects of process fairness ranging from .06 – .54 for pursuit intentions, from .12 – .54 for recommendation intentions, and from .06 – .45 for intention to reapply (cf. Table 9). Thus, hypotheses 2a to 2c are supported by the data.

Table 8. Correlation Matrix, Reliabilities, and Descriptive Statistics

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 Age	25.41	5.36	(--)																							
2 Gender	--	--	<i>.31</i>	(--)																						
3 Professional experience	4.27	4.66	<i>.88</i>	<i>.18</i>	(--)																					
4 Professional experience - Internships excluded	2.27	3.83	<i>.86</i>	<i>.13</i>	<i>.95</i>	(--)																				
5 Application processes completed	6.93	7.94	<i>.40</i>	<i>.12</i>	<i>.35</i>	<i>.29</i>	(--)																			
6 Online application processes completed	2.51	5.56	<i>.23</i>	<i>.07</i>	<i>.08</i>	<i>.08</i>	<i>.60</i>	(--)																		
7 Weekly hours at the PC	22.52	14.45	<i>.11</i>	<i>.20</i>	<i>-.04</i>	<i>-.01</i>	<i>.22</i>	<i>.27</i>	(--)																	
8 Weekly hours surfing the WWW	8.96	7.46	<i>-.05</i>	<i>.19</i>	<i>-.08</i>	<i>-.03</i>	<i>.03</i>	<i>.14</i>	<i>.45</i>	(--)																
9 Experimental manipulation (fair vs. unfair)	--	--	<i>-.09</i>	<i>-.10</i>	<i>-.14</i>	<i>-.11</i>	<i>-.04</i>	<i>-.08</i>	<i>.08</i>	<i>-.09</i>	(--)															
10 Process fairness	3.14	<i>.96</i>	<i>-.15</i>	<i>-.01</i>	<i>-.16</i>	<i>-.17</i>	<i>.10</i>	<i>.01</i>	<i>.03</i>	<i>-.13</i>	<i>.41</i>	(.88)														
11 Pursuit intentions	3.42	<i>.93</i>	<i>-.14</i>	<i>-.13</i>	<i>-.13</i>	<i>-.13</i>	<i>-.15</i>	<i>-.13</i>	<i>-.12</i>	<i>-.05</i>	<i>.27</i>	<i>.40</i>	(.95)													
12 Recommendation intentions	3.28	<i>.95</i>	<i>-.20</i>	<i>-.04</i>	<i>-.18</i>	<i>-.17</i>	<i>-.08</i>	<i>-.11</i>	<i>.04</i>	<i>.06</i>	<i>.26</i>	<i>.41</i>	<i>.67</i>	(.85)												
13 Intention to reapply	3.15	<i>.98</i>	<i>-.22</i>	<i>-.11</i>	<i>-.15</i>	<i>-.18</i>	<i>-.05</i>	<i>-.18</i>	<i>-.09</i>	<i>-.10</i>	<i>.28</i>	<i>.34</i>	<i>.76</i>	<i>.62</i>	(.92)											
14 Job relatedness – Content	2.93	1.21	<i>-.04</i>	<i>.04</i>	<i>-.05</i>	<i>-.06</i>	<i>.02</i>	<i>-.10</i>	<i>.06</i>	<i>-.12</i>	<i>.40</i>	<i>.43</i>	<i>.38</i>	<i>.43</i>	<i>.42</i>	(.94)										
15 Job relatedness – Predictive	2.01	<i>.86</i>	<i>-.02</i>	<i>.16</i>	<i>-.11</i>	<i>-.09</i>	<i>-.03</i>	<i>-.06</i>	<i>.03</i>	<i>-.02</i>	<i>.22</i>	<i>.42</i>	<i>.40</i>	<i>.31</i>	<i>.32</i>	<i>.44</i>	(.94)									
16 Opportunity to perform	2.45	<i>.98</i>	<i>-.03</i>	<i>.06</i>	<i>-.09</i>	<i>-.05</i>	<i>-.03</i>	<i>-.12</i>	<i>-.10</i>	<i>-.06</i>	<i>.48</i>	<i>.44</i>	<i>.36</i>	<i>.30</i>	<i>.38</i>	<i>.56</i>	<i>.55</i>	(.94)								
17 Reconsideration opportunity	3.57	1.09	<i>-.16</i>	<i>-.12</i>	<i>-.09</i>	<i>-.08</i>	<i>-.09</i>	<i>-.10</i>	<i>.04</i>	<i>.09</i>	<i>.09</i>	<i>.19</i>	<i>.14</i>	<i>.27</i>	<i>.19</i>	<i>.32</i>	<i>.11</i>	<i>.22</i>	(.97)							
18 Consistency of administration	4.16	<i>.86</i>	<i>-.03</i>	<i>-.08</i>	<i>-.02</i>	<i>.03</i>	<i>-.02</i>	<i>-.14</i>	<i>.06</i>	<i>.05</i>	<i>.23</i>	<i>.21</i>	<i>.15</i>	<i>.10</i>	<i>.11</i>	<i>.27</i>	<i>.00</i>	<i>.13</i>	<i>.13</i>	(.89)						
19 Feedback	3.04	1.45	<i>.17</i>	<i>.04</i>	<i>.17</i>	<i>.18</i>	<i>.01</i>	<i>-.16</i>	<i>-.11</i>	<i>-.23</i>	<i>.29</i>	<i>.33</i>	<i>.14</i>	<i>.02</i>	<i>.16</i>	<i>.26</i>	<i>.21</i>	<i>.37</i>	<i>-.03</i>	<i>.29</i>	(.91)					
20 Selection information	2.47	<i>.99</i>	<i>.13</i>	<i>.21</i>	<i>.04</i>	<i>.04</i>	<i>.19</i>	<i>.16</i>	<i>.09</i>	<i>-.13</i>	<i>.18</i>	<i>.11</i>	<i>-.06</i>	<i>.13</i>	<i>.10</i>	<i>.36</i>	<i>.30</i>	<i>.28</i>	<i>.02</i>	<i>.17</i>	<i>.17</i>	(.93)				
21 Openness	3.1	<i>.88</i>	<i>.06</i>	<i>.14</i>	<i>.00</i>	<i>.01</i>	<i>-.06</i>	<i>-.10</i>	<i>-.21</i>	<i>.02</i>	<i>.26</i>	<i>.28</i>	<i>.19</i>	<i>.16</i>	<i>.17</i>	<i>.36</i>	<i>.54</i>	<i>.54</i>	<i>.18</i>	<i>.14</i>	<i>.23</i>	<i>.23</i>	(.80)			
22 Treatment of the applicants	3.69	<i>.83</i>	<i>-.12</i>	<i>-.19</i>	<i>-.08</i>	<i>-.07</i>	<i>.04</i>	<i>-.23</i>	<i>.02</i>	<i>-.07</i>	<i>.51</i>	<i>.45</i>	<i>.43</i>	<i>.33</i>	<i>.48</i>	<i>.41</i>	<i>.20</i>	<i>.48</i>	<i>.22</i>	<i>.42</i>	<i>.32</i>	<i>.07</i>	<i>.29</i>	(.91)		
23 Communication with the applicants	2.22	<i>.85</i>	<i>.00</i>	<i>.03</i>	<i>-.02</i>	<i>-.03</i>	<i>.12</i>	<i>.02</i>	<i>.04</i>	<i>-.04</i>	<i>.12</i>	<i>.25</i>	<i>.07</i>	<i>.13</i>	<i>.14</i>	<i>.34</i>	<i>.33</i>	<i>.43</i>	<i>.27</i>	<i>.14</i>	<i>.11</i>	<i>.32</i>	<i>.46</i>	<i>.30</i>	(.78)	
24 Propriety of questions	3.08	1.16	<i>-.13</i>	<i>.02</i>	<i>-.17</i>	<i>-.14</i>	<i>.03</i>	<i>-.16</i>	<i>.14</i>	<i>-.05</i>	<i>.70</i>	<i>.57</i>	<i>.45</i>	<i>.48</i>	<i>.42</i>	<i>.45</i>	<i>.28</i>	<i>.48</i>	<i>.19</i>	<i>.23</i>	<i>.26</i>	<i>.05</i>	<i>.21</i>	<i>.56</i>	<i>.08</i>	(.90)

Note. *N* = 91, except for Professional Experience and Application Processes Completed (*N* = 87) and professional experience - internships excluded (*N* = 89). Correlations statistically significant at $p < .05$ are italicized. Alphas are in brackets on the diagonal.

Table 9. Regression and Mediation Analysis (Causal Steps & Bootstrap)

		Pursuit Intention					Recommendation Intention					Intention to Reapply				
		<i>B</i>	<i>SE (b)</i>	β	<i>R</i> ²	ΔR^2	<i>B</i>	<i>SE (b)</i>	β	<i>R</i> ²	ΔR^2	<i>B</i>	<i>SE (b)</i>	β	<i>R</i> ²	ΔR^2
Direct Effect of Website Design																
Step 1	Controls				.05				.05					.10		
	Age	-.01	.02	-.07			-.04	.02	-.20			-.05	.02	-.25		
	Gender	-.18	.24	-.09			.01	.24	.01			-.06	.25	-.03		
	Applications	.01	.02	.06			.01	.24	.07			.02	.02	.20		
	Online applications	-.01	.02	-.05			-.02	.02	-.13			-.04	.02	-.22		
	Hours at the pc	-.01	.01	-.07			.00	.01	.06			.00	.01	-.00		
	Hours internet surfing	.00	.02	-.00			.01	.02	.04			-.01	.02	-.08		
Step 2	Experimental manipulation				.11*	.07*			.11*	.06*				.15*	.06*	
	Fair vs. unfair	.50	.20	.27*			.48	.21	.25*			.49	.21	.25*		
Mediation by Process Fairness (Causal Steps Strategy)																
Step 1	Experimental manipulation				.07*	.07*			.07*	.07*				.08**	.08**	
	Fair vs. unfair	.50	.19	.27*			.50	.20	.26*			.55**	.20**	.28**		
Step 2	Mediation				.17**	.10**			.18**	.11**				.14**	.06*	
	Fair vs. unfair	.23	.19	.12			.22	.20	.12			.33	.22	.17		
	Process fairness	.34	.10	.35**			.35	.10	.36**			.28	.11	.27*		
Mediation by Process Fairness (Bootstrap Analysis)																
		<i>B</i>	<i>B</i> Boots-	Bias	SE	95% CI	<i>B</i>	<i>B</i> Boots-	Bias	SE	95% CI	<i>B</i>	<i>B</i> Boots-	Bias	SE	95% CI
	Mediation effect	data	trap				data	trap				data	trap			
	Indirect effect (<i>ab</i> -path)	.2652	.2707	.0055	.1204	.06 - .54	.2786	.2769	-.0018	.1033	.12 - .54	.2180	.2135	-.0045	.0989	.06 - .45

Note. *N* = 91, except for Application Processes Completed (*N* = 87) and Professional Experience - Internships Excluded (*N* = 89), * *p* < .05, ** *p* < .01

4.6 Discussion

The intention of this paper was to investigate the impact of manipulations in selection website features and content on fairness perceptions and applicants' reactions examined in experimental research. It was shown that the experimentally-manipulated fairness of a selection website impacts on applicants' behavioral intentions and that this relationship is mediated by the applicants' subjective ratings of process fairness.

This study fills a gap in the research on applicants' reactions in web-based selection, providing the following findings: As predicted in hypothesis 1, it was shown that the features and content of a selection website can affect behavioral intentions of applicants. In contrast to correlative studies (Brünn, 2010; Sylva & Mol, 2009; Wasko, 2008) in which predictors and dependent variables were captured simultaneously via questionnaire, evidence for a directed causal relationship was established. Results for the impact of selection website features and content are conform to findings of Dineen and colleagues (2004). The current results also expand these previous findings by providing insights not based on situational descriptions but from experimentally modeling selection websites. Moreover, consistent with hypothesis 2 process fairness mediates the impact of the experimentally-manipulated website fairness on behavioral intentions. This finding is consistent with Gilliland's (1993) model of applicants' reactions, which proposes process fairness as a mediator between procedural justice rules and applicant's reactions. Applicants evaluate the process fairness to draw conclusions concerning their reactions. Thus, the applicants' appraisal of process fairness determines their intended reactions.

An additional finding of this research shall be discussed. The effects of the experimental manipulations show that organizations can use certain features of website design to enhance fairness perceptions. For this experiment the unfair selection website was manipulated to an extent where some procedural justice rules like opportunity to perform, feedback, treatment of the applicants, propriety of questions, and job-relatedness (content) were violated, while the other justice rules were not influenced. All manipulated procedural justice rules showed significant differences between the fair and the unfair selection website. Other procedural justice rules (consistency of administration, selection information, openness), though not manipulated actively through website features, also revealed significant differences. Two reasons seem possible: First, despite careful manipulation targeting only the intended procedural justice rules, other rules could have been accidentally affected while changing the website design features. Second, despite the discriminant validity of the SPJS there may be halo effects

of rule violations. The violation of some justice rules may lead to a negative holistic impression, which affects the perception of other justice rules. Further research should investigate these effects.

4.6.1 Limitations and Future Research

In the following limitations to this study are outlined. The effects of the procedural justice rule manipulations were examined using a between-subjects design. With an experimental design that compares two different groups with different treatments it cannot be proven exactly that the variance between the groups is caused by the experimental manipulation and not by inter-individual differences. However, participants were assigned to the conditions randomly and no significant differences in demographic data were found for the two groups. An additional drawback of experimental research is the lack of external validity. In case of this research this means that the participants did not experience the stress of a real selection process and only intended reactions and behaviors could be captured. Finally, sample size, may be considered small for the application of regression analysis. Even though power analysis (cf. Cohen, 1988; Faul et al., 2009) shows that the sample size is adequate for the given effect size and the significance level, a larger sample would have provided higher confidence into the robustness of this study's findings.

It has been shown that manipulating features of a selection website impacts on the perception of procedural justice rules, the process fairness as well as on intended reactions. Because several website features were manipulated simultaneously it is yet to be shown which website feature impacts on which justice rule – in particular as there possibly were halo effects on other justice rules. A design similar to the study of Dineen and colleagues (2004) where the different website features are manipulated independently in a within-subject design could provide a deeper insight. When website features impact on the perception of procedural justice rules the question arises how justice rules relate to ergonomic aspects of selection websites. In this respect it could be interesting to expand on the approach of Sylva and Mol (2009) incorporating more detailed measures of aspects of usability.

4.6.2 Implications for Practice

For selection practice it was shown that hiring organizations can influence applicants' behavioral intentions by modifying the design and content of their selection websites. In this study fairness perceptions and behavioral intentions were influenced by modifying a selection website after pivotal procedural justice rules. As it was discussed above, these violations of some rules affected also the perception of other rules not modified actively. Hiring organizations therefore should pay attention to all justice rules in order to avoid negative spill-over effects.

Web-based selection will continue playing a major role in the pre-selection and the selection of employees. Organizations can actively influence applicants' reactions by modifying features of their selection websites and achieve a competitive advantage in the struggle for highly-qualified individuals.

4.7 References Chapter 4

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5 Diskussion

Das letzte Kapitel beinhaltet eine Diskussion der gesamten Arbeit. Zuerst erfolgt eine Erörterung der Ergebnisse. Anschließend werden die Schwächen der Arbeit kritisch betrachtet und Empfehlungen für weitere Forschung sowie die Gestaltung internetbasierter Personalauswahl gegeben.

5.1 Übersicht und Einordnung der Ergebnisse

Ziel der Dissertation war es, das Verständnis der Bewerberreaktionen auf internetbasierte Auswahlverfahren zu vertiefen und einen Beitrag zur Erschließung dieses noch relativ wenig erforschten Gebiets zu leisten. In Kapitel 2 wurden hierzu ein Überblick über die bisherige Forschung zur Akzeptanz internetbasierter Auswahlverfahren gegeben und Fragestellungen für die weitere Forschung abgeleitet.

Als wichtige noch unzureichend geklärte Fragen wurden identifiziert: Erstens, die Anwendbarkeit von Gillilands (1993) Modell der Bewerberreaktionen auf internetbasierte Auswahlverfahren, zweitens, ausschlaggebende Gerechtigkeitsregeln in der internetbasierten Personalauswahl, drittens, Nachweis für kausale, gerichtete Zusammenhänge zwischen der Gestaltung von internetbasierten Auswahlverfahren und Bewerberreaktionen.

In Kapitel 3 und 4 wurden die Durchführung und die Ergebnisse einer Feldstudie und einer Laboruntersuchung berichtet und diskutiert. Im Folgenden werden die Ergebnisse der einzelnen Teile der Arbeit zusammenfassend dargestellt und diskutiert.

5.1.1 Messinstrument und Modellanwendung

Für die Untersuchungen wurde nach der Methode der Rückübersetzung eine deutsche Version des englischen Selection Procedural Justice Scale (Bauer et al., 2001) entwickelt. Eine konfirmatorische Faktorenanalyse und Reliabilitätsanalysen zeigten, dass die Faktorenstruktur des englischsprachigen Originals in der deutschen Version für internetbasierte Auswahlverfahren abgebildet werden konnte und die Skalen in beiden Untersuchungen zuverlässig maßen. Die Gerechtigkeitsregeln wiesen, wie im Modell der Bewerberreaktionen postuliert, positive Zusammenhänge mit der wahrgenommenen Fairness des internetbasierten Aus-

wahlverfahrens auf, welche – wiederum modellkonform – Zusammenhänge mit den Bewerberreaktionen aufwies. In der Laborstudie erwies sich die Fairness als Mediator der Beziehung zwischen dem experimentell nach den Gerechtigkeitsregeln variierten Website-Design und den Verhaltensintentionen der Teilnehmer. Es konnte gezeigt werden, dass Gillilands Modell der Bewerberreaktionen sehr gut auf den Bereich der internetbasierten Personalauswahl anwendbar ist. Die in Gillilands Modell der Bewerberreaktionen postulierten Zusammenhänge konnten bestätigt werden.

5.1.2 Einflussfaktoren auf die Fairnesswahrnehmung

Ein weiteres Ziel dieser Dissertation war die Identifikation jener Regeln der prozeduralen Gerechtigkeit, welche die wahrgenommene Fairness internetbasierter Auswahlverfahren erklären. Hier konnten als bedeutsame Regeln Behandlung der Bewerber, Gelegenheit zur Selbstdarstellung, Angemessenheit der Fragen und Gelegenheit zur Überprüfung der eigenen Antworten identifiziert werden.

Die Erkenntnis, dass die Regel Behandlung der Bewerber die stärksten Zusammenhänge mit der Fairnesswahrnehmung aufweist, zeigt die hohe Bedeutung der interaktionalen Fairness in der internetbasierten Personalauswahl. Dies ist insofern bemerkenswert, als in der Vergangenheit vermutet wurde, dass Regeln wie „Interpersonal Treatment“ durch den Einsatz von Technologie leiden (Truxillo, Steiner & Gilliland, 2004). Die Untersuchungsergebnisse zeigen jedoch, dass dies nicht zwangsläufig der Fall sein muss. In konventionellen Auswahlverfahren findet die erste Interaktion zwischen Bewerber und Organisation in der Regel mit Repräsentanten der auswählenden Organisation statt, deren Bedeutung bereits Schmitt und Coyle (1976) feststellten. Im Falle der internetbasierten Personalauswahl stellt die Auswahlinternetseite die erste Interaktion zwischen Bewerber und auswählender Organisation dar. Anders als bei einer Papierbewerbung findet hier bereits eine Art computervermittelter asynchroner Kommunikation statt. Die auswählende Organisation bestimmt im Vorwege, welche Informationen (Lebenslaufdaten, Inventardaten oder Testdaten) sie vom Bewerber zum Treffen einer Vorauswahlentscheidung benötigt und wie sie die Interaktion zum Erhalt dieser Information gestaltet. Eine Möglichkeit zur direkten synchronen Interaktion besteht in der Regel nicht. Vor diesem Hintergrund ist es möglich, dass der Bewerber die Gestaltung der Interaktion auf der Auswahlinternetseite (Formulierung der Beschreibungstexte, Aufgaben und Fragen) als Repräsentanz der Organisation ansieht und hieraus Rückschlüsse auf die Organisation zieht – daher die hohe Bedeutung der Regel Behandlung der Bewerber.

Neben Behandlung der Bewerber erklären die Gerechtigkeitsregeln Gelegenheit zur Selbstpräsentation, Gelegenheit zur Überprüfung der Antworten und Angemessenheit der Fragen die Fairness eines internetbasierten Auswahlverfahrens. In der Bedeutung dieser Regeln schlagen sich die Besonderheiten internetbasierter Personalauswahl (hochstandardisierte Bedingungen, kein persönlicher Kontakt zu den Auswählenden und Versendung persönlicher Daten über das Internet) nieder.

Die Tatsache, dass konform mit den Ergebnissen früherer Forschung (Brünn, 2010; Dineen, Noe & Wang, 2004) Gelegenheit zur Selbstpräsentation die Fairnesswahrnehmung erklärt, resultiert möglicherweise aus dem Wunsch des Bewerbers, als Individuum wahrgenommen zu werden und sein Wissen und seine Fähigkeiten zu zeigen. Dies spielt insbesondere bei hochstandardisierten internetbasierten Auswahlprozessen eine wichtige Rolle, die manche Bewerber in dieser Hinsicht als einschränkend empfinden könnten. Bewerber, die das Gefühl haben, sich selbst präsentieren zu können, empfinden das Auswahlverfahren als fairer.

Aus Bewerbersicht ist es wichtig, dass die übermittelten Daten, welche über die berufliche Zukunft des Bewerbers entscheiden, korrekt sind. Hierauf ist möglicherweise die hohe Bedeutung der Regel Gelegenheit zur Überprüfung der eigenen Antworten zurückzuführen. Die Erfüllung dieser Regel hängt im internetbasierten Auswahlverfahren eng mit der Art des Auswahlinstruments zusammen. Das in der Feldstudie (vgl. Kapitel 2) untersuchte Auswahlverfahren bestand aus Online-Bewerbungsformularen, Persönlichkeitsfragebögen und kognitiven Leistungstests. Online-Bewerbungsformulare und Persönlichkeitsfragebögen sollten ausreichend Gelegenheit zur Überprüfung der Antworten bieten, so dass die Regel Gelegenheit zur Überprüfung der eigenen Antworten gut eingehalten werden kann. Hingegen gehört es zum Prinzip von zeitbasierten Leistungstests, dass Bewerbern diese Zeit generell nicht eingeräumt wird.

Der Befund, dass die Regel Angemessenheit der Fragen mit der Fairness zusammenhängt, ist konsistent mit den Ergebnissen von Brünn (2010). Im Vergleich zur konventionellen Personalauswahl (wie beispielsweise im Rahmen eines Bewerbungsgesprächs) besteht in der internetbasierten Personalauswahl keine Möglichkeit für den Bewerber, Begründungen für eine Frage zu erhalten. Er wird mit den Fragen „allein gelassen“ und muss eigene Vermutungen über Sinn und Zweck anstellen. Zusätzlich werden vertrauliche Informationen über Datennetzwerke an einen persönlich nicht bekannten Empfänger versendet. Somit könnten Sorgen um den Datenschutz seitens des Bewerbers zur Bedeutung dieser Regel beitragen (vgl. Bauer et al., 2006; Harris, Van Hove & Lievens, 2003).

Zusammenfassend lässt sich sagen, dass die Befunde zu den einzelnen Gerechtigkeitsregeln die Bedeutung der interpersonalen Gerechtigkeit auch in der internetbasierten Personalauswahl betonen. Mangels persönlichen Kontakts wird die Internetseite zum „Repräsentanten“ der auswählenden Organisation. Entgegen den von Truxillo und Kollegen (2004) geäußerten Bedenken muss die Regel Behandlung der Bewerber nicht durch die Nutzung des Mediums Internet leiden. Vielmehr können Organisationen durch bewerberorientierte Kommunikation positiv auf die Fairnesswahrnehmung der Bewerber einwirken.

5.1.3 Nachweis kausaler Zusammenhänge

Während in der Feldstudie (Kapitel 3) Zusammenhänge zwischen Gerechtigkeitsregeln und Bewerberreaktionen auf korrelativer Basis festgestellt wurden, konnte durch das experimentelle Design der Laboruntersuchung aufgezeigt werden, dass Manipulationen der Internetseite nach den Gerechtigkeitsregeln auf die Reaktionen der Bewerber wirken. Hierdurch wurde der Beweis für einen kausalen Zusammenhang erbracht. Gillilands Modell der Bewerberreaktionen wurde insofern bestätigt, als die kausale Wirkung der Auswahlinstrumente auf Gerechtigkeitsregeln, Fairness und Bewerberreaktionen belegt wurde. Die mediiierende Rolle der Fairness zwischen der experimentellen Bedingung (fair/unfair) und den Bewerberreaktionen wurde nachgewiesen.

5.2 Methodenkritik und Empfehlungen für die weitere Forschung

Durch die Kombination von Feld- und Laborstudie konnten die Stärken beider Untersuchungsformen genutzt und deren Nachteile teilweise ausgeglichen werden. So konnten z. B. methodische Probleme der Feldstudie wie deren korrelationale Natur und das damit einhergehende Problem des Common Method Bias durch die Laboruntersuchung kompensiert werden. Hier zeigte sich, dass die Zusammenhänge zwischen prozeduraler Gerechtigkeit und Bewerberreaktionen nicht ausschließlich auf der gleichen Erhebungsmethode beruhen, sondern dass die Einhaltung und Verletzung der Gerechtigkeitsregeln eine kausale Wirkung auf die Bewerberreaktionen hat. Ebenso konnte in der Laborstudie das Problem der sozialen Erwünschtheit verringert werden, da die Teilnehmer der Studie nicht – wie in der Feldstudie – Bewerber waren, die das Auswahlverfahren jener Organisation bewerten sollten, bei der sie sich bewerben hatten.

Wie jede empirische Forschung weist aber auch diese Arbeit eine Reihe von Schwächen auf. So handelt es sich bei den beiden Stichproben entweder um Schulabgänger oder um Studierende. Die Generalisierbarkeit der Befunde sollte daher in weiteren Untersuchungen mit Bewerberstichproben von berufserfahrenen Individuen und aus verschiedenen Branchen überprüft werden.

In beiden Untersuchungen wurden als abhängige Variablen Verhaltensintentionen und nicht reales Verhalten erhoben. Obgleich die Befunde der Einstellungs-Verhaltensforschung (vgl. Ajzen, 1980) auf einen starken Zusammenhang zwischen Verhaltensintentionen und Verhalten hinweisen, sollte zukünftige Forschung, sofern möglich, reales Verhalten erheben.

In der Feldstudie wurde eine Testbatterie bestehend aus Online-Bewerbungsformular, kognitivem Leistungstest und Persönlichkeitsinventar untersucht. In der Laborstudie wurden als experimentelle Bedingung mehrere Regeln zugleich manipuliert. Insbesondere für die Praxis der internetbasierten Personalauswahl wäre es von Bedeutung zu wissen, welche Auswahlinstrumente welche spezifische Wirkung auf die Bewerber haben und wie sich die Manipulation einzelner Gerechtigkeitsregeln auf das Fairnessempfinden der Bewerber auswirkt. Hier bieten sich (a) Vergleiche zwischen einzelnen internetbasierten Instrumenten an wie Steiner und Gilliland (1996, 2001) sie für konventionelle Verfahren durchführten und (b) experimentelle Untersuchungen - angelehnt an die Vignettenstudie von Dineen und Kollegen (2004) - in denen einzelne Funktionalitäten einer Auswahlinternetseite systematisch variiert und von einer abhängigen Stichprobe bewertet werden.

In der Feldstudie wurde der Fragebogen zu einem festen Zeitpunkt geschaltet. Zu diesem Zeitpunkt hatten viele Bewerber das internetbasierte Auswahlverfahren bereits vor einigen Monaten abgeschlossen, so dass die Ergebnisse durch Erinnerungseffekte konfundiert worden sein könnten. Obgleich ein internetbasiertes Auswahlverfahren als wichtiges Ereignis gut im Gedächtnis verankert sein dürfte, sollte in zukünftigen Untersuchungen die Befragung zeitnah direkt nach dem Auswahlverfahren erfolgen.

Da es sich in der Laborstudie um die Untersuchung unabhängiger Stichproben handelt, kann trotz randomisierter Zuordnung der Teilnehmer zu einer der beiden Versuchsbedingungen nicht mit Sicherheit davon ausgegangen werden, dass inter-individuelle Unterschiede keinen konfundierenden Effekt auf die Ergebnisse hatten. Bei der Einbeziehung von soziodemographischen Variablen wie Alter, Geschlecht, wöchentliche Nutzung des Computers und Erfahrung mit Auswahlverfahren als Störvariablen in die regressionsanalytischen Auswertungen zeigten sich keine Effekte. Dennoch sollten in zukünftigen Studien Längsschnittuntersuchungen durchgeführt werden, in denen die Teilnehmer beide Versuchsbedingungen bewer-

ten. In diesem Zusammenhang könnte auch eine größere Stichprobe untersucht werden. Zwar ist die Stichprobengröße bei der gegebenen Effektstärke und dem angestrebten Signifikanzniveau laut Cohen (1988) ausreichend, gleichwohl geben größere Stichproben höhere Sicherheit im Hinblick auf die Robustheit der Befunde.

Im Rahmen der Laborstudie konnte gezeigt werden, dass Veränderungen am Design von Bewerbungsformularen das Fairnessempfinden der Bewerber beeinflussen. Vor diesem Hintergrund sollten zukünftige Studien die Zusammenhänge zwischen Aspekten der Ergonomie, d. h. der Benutzbarkeit, von Auswahlinternetseiten und Gerechtigkeitsregeln untersuchen. Hier können die Studien von Sinar, Reynolds und Paquet (2003) sowie Sylva und Mol (2009) aufgegriffen werden. Einblick in die Beziehungen von Variablen der Ergonomie und Gerechtigkeitsregeln könnten das Verständnis von Fairness in der internetbasierten Personalauswahl verbessern.

5.3 Implikationen für die Praxis

Für die Praxis der internetbasierten Personalauswahl wurden wichtige Gerechtigkeitsregeln aufgezeigt. Insbesondere die Regel der Behandlung der Bewerber wurde bei Computer-vermittelter Interaktion als bedeutsam identifiziert. Es konnte zudem nachgewiesen werden, dass die Gestaltung eines Bewerbungsformulars die Fairnesswahrnehmung der Bewerber beeinflusst. Daher werden im folgenden Empfehlungen gegeben, wie im Rahmen der internetbasierten Personalauswahl die Einhaltung der in der Arbeit als bedeutsam identifizierten Gerechtigkeitsregeln gewährleistet werden kann.

Behandlung der Bewerber: Zur Erfüllung dieser Regel sollten auswählende Organisationen bei der Formulierung von Texten in E-Mails und auf Websites auf einen höflichen und freundlichen Tonfall achten. Da kein persönlicher Kontakt zu den Auswählenden gegeben ist (vgl. Kapitel 2 und 3), ist die Ansprache des Bewerbers über E-Mails und die Auswahlinternetseite umso wichtiger.

Gelegenheit zur Selbstpräsentation: Auswahlmenüs und Textfelder in Bewerbungsformularen sollten so gestaltet werden, dass die Bewerber Gelegenheit haben, sich und ihre individuellen Lebensläufe und Qualifikationen zu präsentieren. Hier sollten Organisationen eine gute Mischung aus Effizienz durch Standardisierung und individueller Gestaltungsfreiheit für den Bewerber finden.

Angemessenheit der Fragen: Bei der Auswahl der vom Bewerber zu erhebenden Informationen sollte neben ihrer diagnostischen Bedeutung auch berücksichtigt werden, inwie-

fern sie die Privatsphäre des Bewerbers betreffen. Bei Fragen, die vom Bewerber als unakzeptabel empfunden werden könnten, sollte erläutert werden, inwiefern sie für die Auswahl von Bedeutung sind.

Gelegenheit zur Überprüfung der Antworten: Bei der Gestaltung der Interaktion in der internetbasierten Personalauswahl sollte darauf geachtet werden, dass die Bewerber die Möglichkeit haben, die von ihnen eingegebenen Daten zu überprüfen und gegebenenfalls vor dem Absenden zu korrigieren.

5.4 Fazit

Die Bedeutung des Internets als Medium der Personalauswahl wird weiter steigen. Bedingt durch den Fachkräftemangel und den damit verbundenen Wettbewerb um Arbeitskräfte müssen Organisationen geeignete Bewerber nicht nur identifizieren, sondern auch für sich gewinnen. Ein als fair empfundenen Auswahlverfahren leistet somit einen Beitrag zur Bindung der Bewerber an die auswählende Organisation. Im Rahmen dieser Arbeit wurden auf Basis von Gillilands (1993) Regeln der prozeduralen Gerechtigkeit wichtige Faktoren zur bewerberorientierten, fairen Gestaltung von internetbasierten Auswahlverfahren identifiziert. Zudem wurde nachgewiesen, dass Organisationen durch Gestaltung ihrer Auswahlinternetseite die Tendenz der Bewerber, ein Stellenangebot zu akzeptieren, positiv beeinflussen können. Die vorliegende Arbeit leistet somit einen wichtigen Beitrag zur wissenschaftlichen Analyse internetbasierter Personalauswahl.

5.5 Literatur Kapitel 5

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Anhang: Fragebogen

Kurzbeschreibung:

Fragebogen zur Fairness internetbasierter Personalauswahl

Tim Warszta

Instrument

Instruktion

Vielen Dank für Ihre Bereitschaft zur Teilnahme an dieser Befragung! Ihre Angaben bleiben vertraulich und werden keinesfalls dem auswählenden Unternehmen weitergegeben! Ihre Angaben dienen dazu, die Personalauswahl für Bewerber angenehmer zu gestalten. Bitte geben Sie auf dem folgenden Fragebogen an, inwieweit Sie den hier aufgelisteten Aussagen zustimmen.

Zustimmung

1 = stimme gar nicht zu, 2 = stimme wenig zu, 3 = stimme mittelmäßig zu, 4 = stimme überwiegend zu, 5 = stimme völlig zu

Tabelle 1: Itemliste

Skala	Name	Item Nr.
	Vorhaben nach Abschluss des Auswahlverfahrens	
WBW	Wiederbewerbung	
WBW1	Bei diesem Unternehmen würde ich mich wieder bewerben.	1
WBW2	Sollten in Zukunft passende Stellen frei sein, würde ich mich bei diesem Unternehmen wieder bewerben.	2
WBW3	Wenn es diesmal nicht klappt, würde ich mich für andere Jobs bei diesem Unternehmen bewerben.	3

WBW4	Ich würde mich bei diesem Unternehmen auch auf andere Stellen bewerben.	4
	Beschäftigungsintentionen	
ASA1	Ein Stellenangebot dieses Unternehmens würde ich annehmen.	5
ASA2	Bei diesem Unternehmen würde ich gern arbeiten.	6
ASA3	Bei diesem Unternehmen würde ich gern anfangen.	7
	Empfehlungsintentionen	
EI1	Ich habe Freunde, welche an diesem Unternehmen interessiert wären.	8
EI2	Ich würde anderen dieses Unternehmen empfehlen.	9
EI3	Anderen würde ich eine Bewerbung bei diesem Unternehmen nahe legen.	10
	SPJS	
	Berufsbezogenheit (Vorhersagekraft)	
BBV1	In diesem Online-Auswahlverfahren gut zu bestehen, heißt, dass man auch im Job gut ist.	11
BBV2	Eine Person, die in diesem Online-Auswahlverfahren gut abgeschnitten hat, wird ein guter [Berufsbezeichnung].	12
BBV3	Wer in diesem Verfahren gut besteht, wird ein guter [Berufsbezeichnung].*	13
	Information über das Auswahlverfahren	
IA1	Ich wusste im Vorwege, wie das Online-Auswahlverfahren ablaufen würde.	14

IA2	Ich wusste, was mich im Online-Auswahlverfahren erwartet.	15
IA3	Ich hatte ausreichend Information darüber, wie das Online-Auswahlverfahren gestaltet sein würde.	16
	Gelegenheit zur Selbstpräsentation	
GS1	Ich konnte durch dieses Online-Auswahlverfahren meine Fertigkeiten und Fähigkeiten wirklich zeigen.	17
GS2	Dieses Online-Auswahlverfahren erlaubte mir, meine beruflichen Fähigkeiten zu zeigen.	18
GS3	Dieses Online-Auswahlverfahren gibt den Bewerbern die Gelegenheit zu zeigen, was sie wirklich können.	19
GS4	In diesem Online-Auswahlverfahren hatte ich die Möglichkeit, zu zeigen, was ich kann.	20
	Gelegenheit zur Überprüfung der Antworten	
GÜA1	Ich hatte ausreichend Gelegenheit, meine Antworten zu überprüfen, falls nötig.**	21
GÜA2	Es gab die Möglichkeit, meine Antworten zu überprüfen.**	22
GÜA3	Ich bin zufrieden mit den Möglichkeiten, meine Antworten zu überprüfen.**	23
GÜA4	Bewerber konnten ihre Antworten überprüfen, wenn sie wollten.**	24
GÜA5	Die Möglichkeiten, meine Antworten zu überprüfen waren angemessen.**	25
FB	Feedback / Ergebnisrückmeldung	
FB1	Mir war klar, wann ich meine Testergebnisse erhalten würde.	26
FB2	Ich wusste, wann ich Rückmeldung zu meinen Testergebnissen erhalten würde.	27
FB3	Ich war zufrieden mit der Zeit, die benötigt wurde, um Feedback auf meine Testergebnisse zu erhalten.	28
	Gleichheit in der Durchführung	
GD1	Das Online-Auswahlverfahren wurde für alle Bewerber auf die gleiche Art durchgeführt.	29
GD2	Es gab keine Unterschiede darin, wie das Online-Auswahlverfahren für verschiedene Bewerber durchgeführt wurde.	30
GD3	Im Online-Auswahlverfahren wurden keine Unterschiede in der	31

	Behandlung der Bewerber gemacht.	
	Offenheit	
O1	Ich wurde während des Online-Auswahlverfahrens offen und ehrlich behandelt.	32
O2	Fragen zum Ablauf des Online-Auswahlverfahrens wurden direkt und aufrichtig beantwortet.	33
O3	Während des Online-Auswahlverfahrens wurde nicht versucht, etwas vor mir zu verheimlichen.	34
	Behandlung der Bewerber	
BB1	Ich wurde höflich behandelt während des Online-Auswahlverfahrens.	35
BB2	Während des Online-Auswahlverfahrens wurde entgegenkommend mit den Bewerbern umgegangen.	36
BB3	Während des heutigen Online-Auswahlverfahrens wurden die Bewerber mit Respekt behandelt.	37
BB4	Meine Aufregung wurde abgebaut während des Online-Auswahlverfahrens.***	38
BB5	Ich war zufrieden mit der Behandlung der Bewerber im Online-Auswahlverfahren.	39
	Kommunikation zwischen Bewerbern und Unternehmen	
KBU1	Es gab ausreichend Kommunikation während des Online-Auswahlverfahrens.	40
KBU2	Ich konnte ohne Bedenken Fragen über das Online-Auswahlverfahren stellen.	41
KBU3	Ich fühlte mich in der Position, auch Bedenken zum Ausdruck bringen zu können.	42
	Angemessenheit der Fragen	
AF1	Der Inhalt des Online-Auswahlverfahrens erschien mir vorurteilsfrei.	43
AF2	Das Online-Auswahlverfahren selbst erschien mir nicht zu persönlich.	44
AF3	Der Inhalt des Online-Auswahlverfahrens erschien angemessen.	45

	Berufsbezogenheit (Inhalt)	
BB11	Es wäre für jeden klar, dass das Online-Auswahlverfahren bezogen auf den Beruf des [Berufsbezeichnung] ist.	46
BB12	Der Inhalt des Online-Auswahlverfahrens bezog sich klar auf den Beruf des [Berufsbezeichnung].	47
BB13	Es ist offensichtlich, dass sich der Inhalt des Online-Auswahlverfahrens auf den Beruf des [Berufsbezeichnung] bezieht.*	48
	Fairness des Auswahlprozesses (Process Fairness)	
GF1	Ich denke, dass der Auswahlprozess ein fairer Weg ist, um Personen für den Job des [Berufsbezeichnung] auszuwählen.	49
GF2	Ich denke, dass das Online-Auswahlverfahren selbst fair war.	50
GF3	Alles in allem, war die benutzte Auswahlmethode fair.	51

* Diese Items wurden aufgrund eigener Vorarbeiten zur Steigerung der Reliabilität zusätzlich aufgenommen.

** Die Items dieser Skala wurden dem Bereich der internetbasierten Personalauswahl angepasst.

*** Wegen mangelnder Reliabilität wurde dieses Item ausgeschlossen.

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