Game-based Assessments: Perceptions, Moderators, and their Influence on

Organisational Attractiveness

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Abstract

Applicant Perceptions of game-based assessments (GBA) in selection procedures are examined to validate and enhance their usage in favour of applicants and organisational goals. We used the organisational justice framework to investigate the factors contributing to the fair usage of methods in applicant procedures (Gilliland, 1993). Current research using this framework focuses on traditional assessment methods; thus, more research is needed to apply this to GBAs. Particularly, what contributes to the perceived fairness of GBAs, its relationship to organisational attractiveness, and the interplay of educational background on this relationship is examined. Participants were asked to read a fictional job posting and play a GBA created by Equalture (2023). The researchers assessed participant ratings of the perceived chance to perform, perceived propriety of the task, perceived fairness, and organisational attractiveness. Perceived chance to perform and the task's perceived propriety were significant predictors of perceived fairness. Additionally, perceived fairness was a significant predictor of organisational attractiveness. The educational background did not significantly impact the relationship between perceived fairness and organisational attractiveness. Research adaptions would contribute to a better understanding of the perceptions of GBAs and potential moderating effects. Nevertheless, our results suggest consistency between the understanding of traditional assessment methods according to the organisational justice framework and perceptions of GBAs. It is demonstrated that the implementation of GBAs is in favour of applicant attitudes.

Keywords: Game-Based Assessments, Selection Procedures, Organisational Attractiveness, Perceived Fairness, Organisational Justice Framework

Game-based Assessments: Perceptions of Fairness and its Influence on Organisational Attractiveness

For decades, organisations and researchers have been increasingly interested in discovering optimal recruitment methods to attract and select the best employees (Ryan & Tippins, 2004). Selection techniques aim to predict performance and employee-organisational fit to identify and select suitable candidates for a role (Ryan & Tippins, 2004). In particular, assessments aim to evaluate an applicant's capabilities, knowledge, or skills (Tippins, 2015). However, many organisations design assessment methods around their needs and fail to consider what is attractive to applicants (Hausknecht et al., 2004). This lack of consideration can have negative consequences for employing suitable candidates by deterring them from working for the organisation (Hausknecht et al., 2004). Applicant perceptions of recruitment methods significantly influence their perceptions, assessment outcomes, and attitudes towards the organisation as a whole (Nikolaou et al., 2019).

For this reason, this present study addresses how applicant perceptions impact attitudes towards organisations in the context of game-based assessments (GBA). The central question directing this study is: What contributes to the perceived fairness of game-based assessments and what is its relationship to the attractiveness of an organisation, while considering educational background? This is an important question to investigate as the way candidates view the employment process greatly impacts on how they view the organization as a whole (Nikolaou et al., 2019). Furthermore, this present study is important to develop a comprehensive understanding of procedural attitudes towards game based assesments using aspects of the organisational justice framework. This research aims to improve HR practices by ensuring that the usage of GBAs is just, constructive, and tailored to applicants of interest.

Game-based Assessments

Game-based assessments (GBA) are assessment methods whereby game-based elements are added to existing techniques to measure constructs of interest (Landers et al., 2020). In a selection context, the goal of these assessments is to motivate applicants or prospective employees to show, and later on develop behaviours that are desired by the organisation (Fathian et al., 2020). Primarily, GBAs aim to accurately measure soft skills, transversal skills, and other job specific skills (Altomari et al., 2022).

In GBA the use of game elements reduces the appearance of the measure being an assessment (Altomari et al., 2022). In turn, users are provided a simulated context directly related to the characteristics being assessed (Altomari et al., 2022). These aspects are beneficial in reducing test anxiety and response faking, which often reduce test performance in traditional assessment methods such as interviews or questionnaires (Nikolaou et al., 2019). A study conducted by Wang and colleagues (2022) gamified an assessment on critical thinking and found that participants reported high enjoyment of the assessment (Wang et al., 2022). Moreover, GBA's are a commonly successful at improving applicant experience and engagement (Ellison et al., 2020; Fathian et al., 2020). One study demonstrated that when applicants were familiar with the game they exhibited perceived ease of use, autonomy, competence, and perceived usefulness (Buil et al., 2020a). In turn, they scored higher on recommendation intention, organisational attractiveness, and overall satisfaction (Buil et al., 2020a). Thus, whether or not participants were familiar with the game used in the assessments it impacted their perception of the tool. However, researchers are concerned that gamified assessments may alienate applicants that do not enjoy games (Fathian et al., 2020).

The usage of such methods must be deemed valid to support fair and reliable selection decisions (Ryan & Tippins, 2004). Studies have shown that gamified assessments of cognitive ability are consistent with traditional cognitive testing methods (Landers et al., 2020; Wang et al., 2022). Likewise, results from game-based assessments have been shown to converge with

situational judgement tests and measures of critical thinking (Nikolaou et al., 2019; Wang et al., 2022). Notably, participant perception of assessment validity is important. In particular, rejected applicants or applicants that have performed poorly, believe that their results are due to the invalidity of the assessment method (Nikolaou et al., 2019). Additionally, when applicants meet face-to-face with the recruiters they perceive the recruitment to have high face-validity (Nikolaou et al., 2019). This is a key characteristic that game-based assessments may miss as applicants prefer selection procedures they perceive as valid (Nikolaou et al., 2019). Research has a long way to go to establish the full validity of game-based assessments in comparison to traditional recruitment methods (Nikolaou et al., 2019).

Moreover, GBAs are of great interest to organisations for various reasons. They provide an objective measure of participants, are time efficient, and cost-effective as they can be effortlessly administered to a large pool of applicants (Nikolaou et al., 2019). In this study we aim to add to this body of research by further exploring which aspects of GBAs constitute and encourage valid assessment from the perspective of the applicant.

Organizational Justice Framework

The organisational justice framework is an important tool in understanding applicant reactions across all recruitment methods (Nikolaou et al., 2019). This framework currently outlines that selection methods and decisions influence applicants perceptions of fairness (Gilliland, 1993). In turn, perceptions of fairness have a substantial effect on applicants' perceptions of an organisation (Cropanzano et al., 2007). Following the principles of this framework, the procedural justice dimension refers to the fairness of evaluation methods and denotes the factors contributing to organisational justice perceptions (Bauer et al., 2001). Namely, job-relatedness, perceived chance to perform, reconsideration opportunity, consistency of administration, feedback, information known, openness, treatment, two-way

communication, and propriety of questions (Bauer et al., 2001). These particular factors contribute to perceptions of unfairness or fairness (Bauer et al., 2001).

In the context of GBAs, perceived usefulness and competence has a positive impact on perceptions towards the selection method (Buil et al., 2020a). These particular factors are considered an important indicator of perceived fairness overall as they align with aspects of the organisational justice framework (Buil et al., 2020a). However, little is known about the entirety of the dimensions of the framework particularly applied to game-based assessments (Nikolaou et al., 2019). Nevertheless, it is important to understand the full scope of employee reactions as procedural justice perceptions cause individuals to view organisations more favourably (Hausknecht et al., 2004).

Perceived Fairness

Following the presumptions of organisational justice framework, we are interested in the methods and decisions that influence people's perceptions of fairness in the context of GBAs. Perceived fairness in selection procedures, assesses applicant beliefs regarding the justice and reasonability of the formal characteristics and individual treatment of applicants within selection procedures (Nikolaou et al., 2019). However, there are mixed results regarding the perceived fairness of GBAs (Ellison et al., 2020). For example, in cases where selection assessment are perceived to be high-stake and GBAs are used, applicants have lower perceptions of fairness (Ellison et al., 2020). Nevertheless, it is agreed that this measure is of high interest as it impacts perceptions of an organisation such as organisational attractiveness, intention to pursue a job, and how an individual talks about the organisation to others (Nikolaou et al., 2019). Furthermore, we are interested in understanding the characteristics of GBA's that affect perceptions of fairness.

Perceived Chance to Perform

The perceived chance to perform, also derived from the procedural justice dimensions, measures how individuals are able to show their skills and abilities through an assessments (Bauer et al., 2001). Current research establishes the relevance of this across traditional recruitment procedures and applicant attitudes towards the organisation (Nikolaou et al., 2019). Applicants who believe that they had a chance to showcase their skills and attributes relevant to the job believed that the method was valid and fair (Nikolaou et al., 2019). Additionally, perceived chance to perform has positive effects on reapplication intentions, self-perception, reactions after hiring, job acceptance, and possibly on-the-job performance (Bauer et al., 2001). Applicants also perceived the organisation to be more attractive (Nikolaou et al., 2019). Competence, a dimension of the perceived chance to perform, has a positive impact on attitudes towards game based assessments (Buil et al., 2020b). However, the majority of research is based on traditional assessments methods (Nikolaou et al., 2019). Thus, research is needed to establish this effect across gamified assessments.

Hypothesis 1. The perceived chance to perform will positively impact the perceived fairness of a game-based assessment

Perceived Propriety of the Task

Drawing from the procedural fairness dimensions described in Bauer and colleagues (2001), the proprietary of the task could be an important indicator of perceptions of fairness of the selection process. The original factor, propriety of questions, assesses bias, invasions of privacy and illegality, and the appropriateness of questions (Bauer et al., 2001). Studies show that assessments that score low on propriety are perceived by applicants as being unfair and have negative consequences on the perception of an organisation (Nikolaou et al., 2019). Notably, the use of technology in applicant procedures raises many privacy concerns (Tippins, 2015). Current research establishes that propriety of questions influences other

important factors such as test-taking motivation and job acceptance (Bauer et al., 2001). Therefore, it is important to understand these concerns in the context of game-based assessments. Although there are no explicit questions in game-based assessments, we can investigate the participant belief of the proprietary of the task itself.

Hypothesis 2. The perceived propriety of the task will positively impact the perceived fairness of a game-based assessment.

Organisational Attractiveness

Organisational attractiveness is used to understand the applicants' aspiration to become a part of an organisation and talk positively about it (Highhouse et al., 2003). This includes the intention to pursue a job, the extent to which an applicant would recommend the organisation to others, prestige, and general attractiveness (Highhouse et al., 2003). Prestige refers to applicant beliefs about the reputation of the company (Highhouse et al., 2003). GBAs increase applicant perceptions of the technological reputation of the organisation, referring to it as 'sophisticated' (Landers et al., 2020). However, little is known about the perception of game-based assessments on organisational attractiveness as a general concept. These factors are important as HR managers are interested in creating recruitment practices which attract the best employees (Ryan & Tippins, 2004). However, given the dynamic nature of game-based assessments, research is needed to address this factor. Thus, we aim to understand attraction to an organization in the context of game-based assessments.

Current research focuses on applicant perceptions of assessments in predicting organisational attractiveness (Hausknecht et al., 2004). Specifically, much interest has been drawn to the impact of perceived fairness of the procedures and practices of organisations and organisational attractiveness (Nikolaou et al., 2019). Previous studies show that perceived fairness in selection methods positively impact applicant perceptions of organisational

attractiveness (Hausknecht et al., 2004; Nikolaou et al., 2019). Inversely, research shows that low perceptions of fairness decrease organisational attraction (Nikolaou et al., 2019). Furthermore, the relationship between perceived fairness and organisational attractiveness in the context of GBAs should be explored.

Hypothesis 3. The perceived fairness of a game-based assessment will positively impact organisational attractiveness.

Educational Background

Educational background is often seen as a globally standardized recruitment criteria as research indicates it may influence intentions towards the organisation and employee-job fit (Snyder et al., 2019). For example, someone's inclination to behave according to organisational goals (as opposed to individual goals) differs across factors such as educational background (Snyder et al., 2019). Likewise, educational diversity is known to impact team dynamics and performance (Snyder et al., 2019). Notably, application procedures influence the applicants organisation attract (Ryan & Tippins, 2004). In particular, occupational sectors often differ in the makeup of the educational background of their members (Snyder et al., 2019). Thus, it is beneficial for organisations for research on GBAs to consider the educational demographic of applicants. Additionally, we can inference from current research regarding individual differences common throughout educational differences to understand its role in selection procedures. Amongst occupational sectors, and the prospective occupational sectors of individuals, there are observable differences in behaviours and attitudes towards organisations (Garcia-Sedeño et al., 2009). Additionally, studies have shown that such individual differences influence perceptions of fairness in applicant procedures (Nikolaou et al., 2019). Thus, individuals of differing educational backgrounds, may differ in expectations of fairness, which in turn, impacts organisational attractiveness. Currently, there is limited

research on how differences between educational groups effect perceptions of GBAs (Ellison

et al., 2020). Moreover, understanding the specific impact of educational background can help

fill this gap of research. Thus, we are using individual's faculty of education as a proxy to

investigate the moderating effect of educational background and prospective occupational

sectors on perceptions of fairness and organisational attractiveness.

    Hypothesis 4. The educational background of the participant influences the relationship

between perceived fairness and organisational attractiveness.

Figure 1

Variables of Interest Model
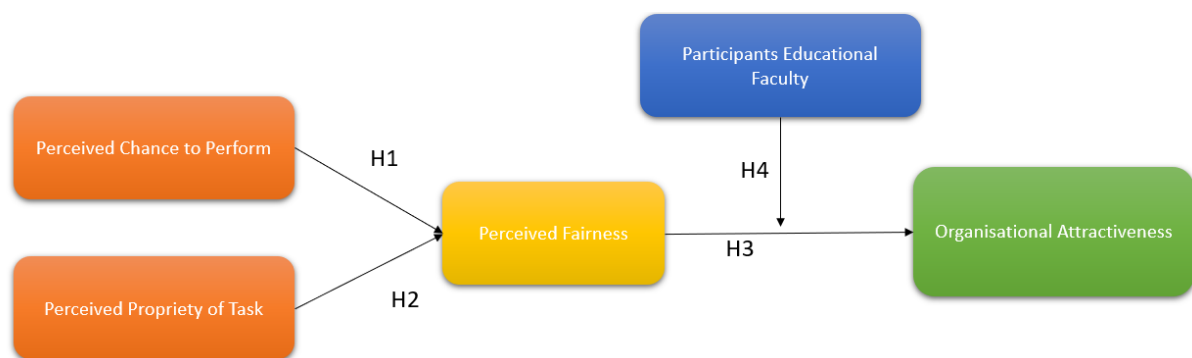
Note: This model visualises Hypothesis one through four. In Hypothesis 1-2 Perceived
Chance to Perform and the Perceived Propriety of the Task are the independent variables and
Perceived Fairness is the dependent variable. In Hypothesis 3-4 Perceived Fairness is the
independent variable and Organisational Attractiveness is the dependent variable. Educational
Faculty is the moderating variable in this relationship.

Methods

Participants

A total of 176 participants took part in this study. Participants that did not fully complete the survey were removed. Thus, 77 participants were removed. Our effective sample size was $N= 99$ (57 females, 36 males, 5 non-binary, 1 undisclosed, $M_{age} = 24.93$, $Mode = 21$, $SD = 8.70$). Notably, the required sample size to confidently assess medium effects for Hypothesis 1 and 2 was determined to be 107 (1-beta prob = 0.95, $f^2 = 0.15$, a err prob = 0.05). For Hypothesis 3 and 4, the sample size required was 89 (1-beta prob = .95, $f^2 = 0.15$, a err prob = .05). For the moderator variable in Hypothesis 4, the required sample size in each educational faculty is 42 (1-beta prob = 0.95, $f^2 = 0.15$, and err prob = .20). There were seven different educational faculties varying in frequency amongst participants (Table 2). The most frequently occurring educational faculty of the participant assessed in the sample was the Faculty of Behavioural and Social Sciences (*44.4%)*. The prior job experience of participants was distributed as 91.9% with prior job experience and 8.1% without prior job experience. Additionally, the current employment status of participants was distributed as 59.6% working and 40.4% unemployed.

Materials

Participants were invited to complete a survey created on Qualtrics. Participants were prompted to play a demo of "The Ferry" game. This game was created by Equalture for the purpose of measuring problem-solving ability and problem-solving style in pre-employment screening (Equalture, 2023). The demo version provided participants with the first level of the game. A fictitious organisation and job posting emphasizing the need for problem-solving was created to provide a realistic simulation of the applicant experience. We used ChatGPT to create a representative posting as the technology generates text based on existing real-life job

postings (*GPT-4*, 2023). The prompt used to create the posting was, "Give me a generic, yet detailed job offer/post on LinkedIn based on real offers that would rely on problem solving abilities". The research team edited the posting of unnecessary characteristics. Points used to convey this message included seven key requirements such as, "The ability to think critically and develop creative solutions to complex business problems" A message from a recruiter addressed to the participant was created using the same technique. All materials were provided in English.

Research Design and Procedure

We used a cross-sectional correlational design study, where the characteristics and reactions of the participants were recorded and analysed in relation to each other. The participants received the questionnaire through snowball sampling and the questionnaire was shared through different forms of social media between 12 and 30 May 2023. All participants were assigned to the same task and questionnaires. All conditions were the same for all participants, excluding the environment in which they completed the study. There were various additional variables being collected to address the research questions of fellow researchers. It is believed that these items have no influence on the variables of interest. They were also asked the control questions.

A chance to win 30 euros after completion of the survey was shared as an incentive for participation. Participants received general information of the context of the study and were prompted to provide consent. First, participants completed a questionnaire which collected demographic information (age, student status, educational faculty, employment status, and job experience). Then, they received a generalized job posting for an operations analyst (Appendix A). After reading this, participants read a sample message from a recruiter thanking them for their time and interest in the job position. They then received the instructions of how to play the game and completed the game demo. Afterwards, they

completed a questionnaire which measured their attitudes towards the game and organization (Appendix B). The opportunity to sign-up to win 30 Euros was included at the end of the study.

Measures

Manipulation Check

      One item served as a manipulation check to ensure that the participant completed the game: "How many characters were needed to cross the river?" (1 = *incorrect*, 4 = *correct*, 7 = *incorrect*). Participant feedback insinuated that this question was phrased poorly, so we excluded this question for our data cleaning.

Perceived Chance to Perform

      Perceived chance to perform was used to measure the participants discernment of the ability to show their individual skills through the game. To assess perceived chance to perform, questions from the procedural justice dimension scale were adapted (Bauer et al., 2001). Previous validation of this measure indicates a Cronbach's alpha of $\alpha = .92$ (Bauer et al., 2001). In our study, Cronbach's alpha was slightly lower at $\alpha = .549$. Measurement of perceived chance to perform included three items such as: "I've had an adequate opportunity to demonstrate my strengths within the task". All items are measured using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Perceived Propriety of the Task

      Perceived propriety of the task was used to measure participant perception of bias present in the game. Participants were given a brief description of bias in assessments to increase the validity of this measure. The description was: "Bias in assessments refers to any factors in the design, administration, or scoring of an assessment that may influence the results in a way that deviates from the intended purpose of the assessment or fairness". Propriety of the task was adapted from the "propriety of the questions" from the procedural

justice dimension scale (Bauer et al., 2001). In the available literature, the Cronbach's alpha of this measure is reported to be $\alpha = .92$ (Bauer et al., 2001). In our study, we calculated $\alpha = .728$. This demonstrates sufficient internal validity. This measure was adapted to focus on the propriety of the task as there are no questions present in the assessment. Measurement of perceived propriety of the task included three items such as: "The assessment used objectively evaluated my performance". All items are measured using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Perceived Fairness

Perceived fairness was used to measure whether the characteristics and treatment of participants completing the task was deemed fair. Questions from the procedural justice dimension scale were adapted (Bauer et al., 2001). Previous research demonstrated the internal validity of this measure as the Cronbach's alpha of this measure is $\alpha = .84$ (Bauer et al., 2001). Our research indicates a slightly lower internal validity as $\alpha = .563$. Measurement of perceived fairness included four items such as: "I feel that using the test to select applicants for the job is fair". All items are measured using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Organisational Attractiveness

Organisational attractiveness was used to measure participants desire to work for the organisation and have positive opinions of it. Intention to pursue was included in this measure. Cronbach's alpha of organisational attractiveness in previous research is $\alpha = .87$ (Bauer et al., 2001). Our study demonstrates similar internal validity as the calculated Chronbach's alpha is $\alpha = .70$. Measurement of organisational attractiveness included four items such as: "I am interested in learning more about this company as a place for

employment". Each item is measured using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Data Analysis Plan

Participants who did not consent to the study were automatically excluded. To clean the data participants who said they not complete the game or properly fill out the survey, were removed from analysis. The assumptions of homoscedasticity, linearity, independence, and normality were checked using diagnostic plots. The correlation and regression coefficients between variables of interest are checked to assess their significance. The strength and direction of each relationship of interest was assessed through these coefficients. To examine the hypotheses, regression was performed on the means of the variables to investigate the relationships between the variables and moderator. Additionally, PROCESS was used to analyse the moderation effect (Hayes, 2012).

Results

Data cleaning

To improve the reliability of the data, initial data cleaning was conducted to remove participant attrition, inconsistencies, and errors. The initial dataset included 176 participants. We initially had a manipulation check to analyse this, however, due to typographical errors, this item was removed from analysis. Therefore, we removed three participants who did not complete the game by self-admission. Additionally, we removed 67 participants who started but did not complete the survey. Finally, we removed two participants who completed the survey for testing purposes. The complete dataset contained 104 participants. New variables were created to represent the means of each measured variables for further analysis. All the variables were labelled for easy analysis.

Further review was enacted to specifically analyse the variables relevant to the 4 research questions. First, frequency analysis was done to identify missing values in the variables of interest. In this stage, five participants were removed leaving 99 participants for analysis of the research questions. Visual inspection of the dataset showed that there were no identifiable response patterns among participants. This initial review granted a complete and legitimate data set for subsequent analysis.

Assumption checks

The continuous variables were analysed for the remaining participants. First normality and homoscedasticity of the observations was checked through analysis of diagnostic plots of the continuous variables (Appendix C). The mean statistics of the variables, excluding the faculty of the participant, is based on the seven-point scale for each variable. The mean scores for these variables are numerically close (3.36-4.11) indicating that most answers were either 'somewhat disagree' or 'neither agree nor disagree' (Table 1). The sample showed that the lowest scoring independent variable was the perceived chance to perform ($M = 3.36$, SD

=1.40). The remaining independent variables were very close together with standard

deviations ranging from 1.19 to 1.29 (Table 1). Diagnostic plots were generated and validated

that the assumptions of the regression analysis were met (Appendix C). The correlation

coefficients were calculated for initial analysis of the research hypotheses (Table 1). The

remaining tables used for the following analysis can be found in Appendix D.

Table 1.

Mean, Standard Deviation, and Correlation Matrix of the Quantitative Variables

	Mean[a]	Standard Deviation[a]	1	2	3	4
1. Perceived Chance to Perform	3.36	1.40	1.00			
2. Perceived Propriety of the Task	4.05	1.25	.362**	1.00		
3. Perceived Fairness	4.10	1.29	.594**	.351**	1.00	
4. Organisational Attractiveness	4.11	1.19	.413**	.108	.287	1.00

Note. a. All ratings were on 7-point scales ranging from 1 = *absolutely disagree* to 7 = *absolutely agree*. b. Correlation is significant at the 0.01 level (2-tailed)

Hypothesis testing

The perceived fairness of the assessment in relation to its predictors was analysed to

assess Hypothesis 1, the perceived chance to perform (*M*=3.36, *SD*=1.40, *N*=99) in relation to

the perceived fairness of the assessment (*M*=4.10, *SD*=1.29, *N* = 99) was analysed by carrying

out a linear regression model to analyse the correlation. After conducting a correlation

analysis between the perceived change to perform and the perceived fairness, it was found

that the correlation coefficient was $r = .594$, $p = <.001$. The *t*-value is $t=7.27$ ($p=<.001$). This indicates a strong positive correlation between perceived chance to perform and perceived fairness of game-based assessment. The relationship was statistically significant ($p < 0.001$) providing evidence for a significant association between these variables.

The correlation analysis between the perceived propriety of the task ($M = 4.05$, $SD = 1.296$, $N = 99$) and the perceived fairness of the game-based assessment revealed a correlation coefficient of $r = .351$, $p = <.001$. Additionally, the t-test indicated $t=1.831$, $p=<.001$. This suggests a strong positive correlation between perceived propriety of the task and perceived fairness. The correlation was statistically significant ($p < .001$ indicating a meaningful relationship between these variables.

The combined effect of the perceived propriety of the task and the perceived chance to perform on the perceived fairness yield a collective explained variance of $R = .612$. The regression coefficients of the perceived propriety of the task and the perceived chance to perform are $B = .162$ and $B = .495$, respectively. This affirms that there is a positive effect of the predictors on the perceived fairness that explains a considerable amount of the model's variance. Additionally, the F statistic of $F = 28.699$ ($p<.001$) supports a considerable effect of both predictors on the perceived fairness of the game-based assessment.

The analysis assessing the correlation between the perceived fairness and organisational attractiveness ($M = 4.11$, $SD = 1.19$, $N = 99$) yielded a correlation coefficient of $r = .400$, $t = 7.010$, and $F = 18.47$ all at $p = <.001$. Additionally, the regression coefficient of the model is $B = .370$ indicating a positive directional relationship. This demonstrates a positive moderate correlation between the perceived fairness of the game-based assessment and organisational attractiveness.

To examine the potential moderation effect of the educational background of the participant on the relationship between perceived fairness and organisational attractiveness, initial analysis of the distribution of educational faculties was conducted (Table 2). Participants of seven different educational faculties completed the study (N=83). Notably, there is a largely unequal distribution of faculties among participants. The lowest reported faculty was the Faculty of Law (N=1). This faculty was excluded from analysis as the statistical method is not applicable for a sample size this small. Thus, the remaining sample size for this analysis is 98.

Table 2.

Faculty Frequencies

Faculty	N	%
Faculty of Business and Economics	18	18.2
Faculty of Behavioural and Social Sciences	44	44.4
Faculty of Law[a]	1	1.0
Faculty of Arts	7	7.1
Faculty of Medical Sciences	3	3.0
Faculty of Science and Engineering	8	8.1
University College Groningen (UCG)	2	2.0
Other	9	9.1
None	7	7.1

Note. a. Excluded from analysis.

The educational faculties of the participants were tested for moderation on the interaction between the perceived fairness and the organisational attractiveness. The results indicated that the interaction terms between each faculty and the perceived fairness were insignificant. Additionally, the test of the highest order unconditional interactions was also

insignificant at $p = .079$. The conditional effects of the perceived fairness at the different faculties of the participants were analysed and no significant effects were observed. Furthermore, a model including each faculty and its interaction between the perceived fairness scores was observed also demonstrating a lack of significance. The results indicate that the educational background of applicants does not moderate the relationship between perceived fairness and organisational attractiveness. Further examination of the nature of the interaction effect may be warranted to fully understand the influence of the categorical variable.

In summary, the analysis of the hypotheses revealed significant relationships between the predictor variables under investigation. The findings supported the presence of correlations between perceived fairness and perceived chance to perform, perceived propriety of the task, as well as organisational attractiveness. Additionally, the analysis demonstrated that the educational background does not play a moderating role in the relationship between perceived fairness and organisational attractiveness. These results provide important insights into the characteristics of applicant perceptions in GBAs.

Discussion

In this study, we investigated the effect of perceptions of game-based assessments, namely, perceived propriety of the task, perceived chance to perform, and perceived fairness. Additionally, we observed the impact of perceived fairness on organisational attractiveness and the influence of educational background on this relationship. In line with the literature on applicant perceptions of assessment methods, (Bauer et al., 2001; Hausknecht et al., 2004; Nikolaou et al., 2019) the perceived chance to perform and the perceived propriety of the task should impact the applicants perception of the fairness of the assessment, as well as their perceived organisational attractiveness. Additionally, research suggests that there may be an effect of educational background on the relationship between perceived fairness and organisational attractiveness based on understanding the influences of individual differences within organisations (Ellison et al., 2020; Garcia-Sedeño et al., 2009; Nikolaou et al., 2019; Snyder et al., 2019). We hypothesized that these effects will occur within perceptions of game-based assessments.

The results showed a positive effect of the perceived propriety of the task and perceived chance to perform on the perceived fairness of the GBA and provided support for Hypothesis 1 and 2. These findings are consistent with the literature available observing this same relationship within traditional selection procedures (Bauer et al., 2001; Nikolaou et al., 2019). Additionally, perceived fairness was positively associated with organisational attractiveness, which is supportive of Hypothesis 3 and previous literature which consistently observes this relationship in selection procedures (Hausknecht et al., 2004; Highhouse et al., 2003; Landers et al., 2020; Nikolaou et al., 2019; Ryan & Tippins, 2004). Overall, the findings of Hypothesis 1-3 are consistent with the traditional understanding of the organisational justice framework which emphasizes the relationship between the described factors, perceived fairness, and organisational attractiveness (Bauer et al., 2001; Buil et al.,

2020a; Nikolaou et al., 2019). This suggests that the factors that influence the perceptions of traditional assessment methods are also relevant in the perceptions of GBAs.

Additionally, there was no significant impact of educational background on the interaction between perceived fairness and organisational attractiveness as theorized in Hypothesis 4. This is inconsistent with the research supporting the potential influence of the educational background on applicant perceptions through knowledge of individual differences and perceptions of fairness in the workplace (Ellison et al., 2020; Garcia-Sedeño et al., 2009; Nikolaou et al., 2019; Snyder et al., 2019). Possibly, the inference dervived from this research was not strong enough to suggest a conclusive relationship on selection procedures. Although a lack of significance was concluded, this analysis has expanded knowledge in a new direction. Assessment of the educational background of the participants explored a unique line of research previously unseen in relation to GBAs and otherwise important knowledge for HR personnel (Snyder et al., 2019). The theoretical and practical implications are further discussed in this section, as well as the strengths, limitations, and suggestions for future research.

Theoretical and Practical Implications

In our study, the perceived chance to perform was correlated with the perceived fairness of the GBA. In real-world settings, organisations should be cognisant that the GBA should be designed to allow applicants to feel that they have a chance to perform well within the task to improve perceived fairness, and in turn, organisational attractiveness. In practice, this may potentially mean choosing or designing GBAs that are related to the skills advertised to be in the job role. Likewise, organisational justice framework predicts this among traditional assessment procedures (Bauer et al., 2001; Buil et al., 2020a; Nikolaou et al., 2019). Thus, this framework is a valid lens to understand and improve GBAs.

Notably, previous research reports on the frequent distrust of technology usage in selection procedures, challenging the notion that there would be perceived propriety of a GBA (Ryan & Tippins, 2004). Nevertheless, our findings show that in a GBA where there is a lack of mistrust, there would be a positive contribution to the perception of both the game and organisation. Thus, real life design of GBAs should be perceivably free of bias, invasions of privacy, and have appropriate tasks to improve the applicant's perception of fairness in the game. Specifically, this could lead to an increased technological reputation of the organisation (Landers et al., 2020). Thus, propriety of the task is an important factor which organisations should prioritize in all procedures including GBAs. This is also in-line with the implications of the organisational justice framework in traditional selective procedures (Bauer et al., 2001; Buil et al., 2020a; Nikolaou et al., 2019). Propriety of a task is an important factor for organisations to consider in all assessment methods.

Our research demonstrates how high perceptions of fairness in GBAs contribute to organisational attractiveness. This is consistent with the impact of perceptions of fairness of traditional selection procedures on organisational attractiveness (Bauer et al., 2001; Highhouse et al., 2003; Nikolaou et al., 2019; Snyder et al., 2019). This, the impact of perceived fairness of selection procedures remains important to organisations in all selection methods as it directly impacts an applicant's intention to pursue a job, individual recommendation of the organisation to others, and potentially their future performance (Bauer et al., 2001; Highhouse et al., 2003; Nikolaou et al., 2019; Snyder et al., 2019). Morever, our research suggests these benefits may apply when organisations are cognisant of fairness in GBAs.

Furthermore, the consistency of the perceived chance to perform, propriety of the task, and perceived fairness between traditional and game-based assessments provide support for part of the organisational justice framework. Thus, it is plausible that the other factors of the

framework (i.e., reconsideration opportunity, feedback, information known) can have an influence on the perception of GBAs. Such research would play a crucial role in determining the applicability of the entire framework in the context of GBAs.

The absence of a significant influence of educational background on perceptions of fairness and organisational attractiveness has theoretical and practical implications. From a theoretical standpoint, our findings challenge the idea that educational background, a specific individual difference, has an impact on perceptions within selection procedures. However, understanding how perceptions may differ among educational backgrounds is still important to assess to tailor selection procedures to applicants of interest (Snyder et al., 2019). Thus, the practical implications of this finding are to continue to explore and investigate this potential relationship. Perhaps, researchers can consider a more comprehensive approach by considering other vocational characteristics of applicants. By broadening this scope of research, organisations can gain a more thorough understanding of selection procedures in relation to their desired employees.

The characteristics of the sample utilized in this study provide beneficial insight to employers. The majority of the participants were of young age (*Mean = 24.9, Mode*=21) suggesting limited job experience and increased likelihood to start looking for a job in the future. This implies that the perceptions analysed in this study are generalizable to the future workforce. Thus, the significant relationships assessed in this study should be considered by organisations who wish to attract young professionals.

Most GBAs are administered online where every applicant completes it in their own time and location (Equalture, 2023; Nikolaou et al., 2019). Our study used an online non-proctored cross-sectional design which is consistent with the real-world administration of GBAs. Thus, the perceptions of GBAs observed in this study may be well aligned with real-world

administration of GBAs. Organisations interested in how GBAs are perceived should take note of this and understand that the observed relationships are likely to occur in their respective selection pools.

Limitations and suggestions for future research

The characteristics of the sample limit the certainty and reliability of this research. Notably, there were not enough participants overall to assess the first three hypotheses with adequate power. Thus, this lack of statistical power may have influenced the results. Likewise, for analysis of educational faculty for Hypothesis 4, the frequencies of observations may have contributed to the lack of significance. For an adequate power of 80%, a minimum of 34 participants were needed in each observed faculty. However, most faculties had a considerable low number of participants (range = 1 – 44). Thus, the power of the test was not sufficient for reliable analysis (Kemal, 2020). More replications of this study with larger sample sizes are needed to fully understand these relationships.

Likewise, the sample of our current study consisted mostly of participants who were or are a part of the Faculty of Behavioural Science. In comparison, other studies on perceived fairness and organisational attractiveness have not specified the educational background of participants, limiting our theoretical knowledge on this effect (Nikolaou et al., 2019; Snyder et al., 2019). Nevertheless, the limited variability within the educational background of participants limits the ability to fully explore the impact on educational background on the relationship of perceptions of fairness and organisational attractiveness. Future studies should include an even distribution of educational background to have research not limited to the potential characteristics associated with behavioural science students.

The assessment within this study was only accompanied with a simulated job posting, instead of the additional material, pressures, and potential rewards associated with real-world

job selection. Overall, there is limited research of GBAs within real-world job selection, thus there is limited knowledge in the context it is intended to be used (Nikolaou et al., 2019). Future research should explore reactions to game-based assessments within the real application setting. This would contribute to a more comprehensive understanding of game-based assessments within selection and its implications on an applicant's views towards an organisation.

Similarly, the nature of the job posting may influence the perceptions of the GBA. The emphasis on 'problem solving' in the posting and the game, may influence the generalisability of this research. Perhaps, perceptions towards GBAs differs across the context of the traits measured. Current research of GBAs differ across industries and measurement constructs (Landers et al., 2020; Nikolaou et al., 2019; Ryan & Tippins, 2004; Wang et al., 2022). Thus, continued research must be done to measure different skills in relation to different jobs.

This study was reliant on manipulation checks and the self-admission of completion by the participant. The manipulation item was discarded for analysis due to miswording. Thus, we lacked the correct information to assess whether all participants completed the game. Likewise, researchers were unable to see if participants fully read the job posting. This potential variation in completion or understanding may have influenced how participants view the validity of the GBA, and created a bias against its usage or propriety. Manipulation checks or proctorial methodology in future research must be included/monitored to ensure that the completion and realism is consistent among all participants.

Notably, the game administered was a limited demo version where only one level was shown. In real-life settings, GBAs may take far more time, and include far more challenging or diverse tasks (Equalture, 2023). Such differences in tasks or duration may pointedly impact the applicant's perception towards them. Future research should be done to understand this

further for a more comprehensive understanding of the characteristics of GBAs that contribute to perceived fairness and organisational attractiveness. On the other hand, in an experimental setting, participants could be randomly assigned different games or levels available to control for the impact of the nature of the game itself.

Conclusion

Our study has demonstrated the significant interplay between applicant perceptions and organisational attractiveness within GBAs. Particularly, increasing the perceived chance to perform within a task and the perceived propriety of the task may contribute to perceived fairness of GBAs, and in turn, organisational attractiveness. There is currently no impact found of educational background of the applicant on this relationship. Research adaptions would contribute to a better understanding of the effects of perceptions of the assessment, perceptions of fairness, organisational attractiveness, and applicant perceptions as a whole. Future research should continue to investigate these relationships in real-world applications with larger applicant pools to fully understand this relationship. his study has played an important role in demonstrating perceptions of GBA within the future workforce and has introduced educational background as a potential influential factor. Investigating these in continued research may eventually create a unified understanding amongst GBAs and traditional assessments. Nevertheless, this research plays a crucial role in demonstrating that there are parallels between the factors that contribute to perceived fairness of traditional selection assessments and GBAs.

References

Altomari, L., Altomari, N., & Iazzolino, G. (2022). Using Gamification for Assessing Soft
Skills: A Serious Game design. *2022 IEEE 10th International Conference on Serious
Games and Applications for Health(SeGAH)*, 1–7.
https://doi.org/10.1109/SEGAH54908.2022.9978591

Bauer, T. N., Truxillo, D. M., Sanchez, R. J., Craig, J. M., Ferrara, P., & Campion, M. A.
(2001). Applicant reactions to selection: Development of the Selection Procedural Justice
Scale (SPJS). *Personnel Psychology*, *54*(2), 387–419. https://doi.org/10.1111/J.1744-
6570.2001.TB00097.X

Buil, I., Catalán, S., & Martínez, E. (2020a). Understanding applicants' reactions to gamified
recruitment. *Journal of Business Research*, *110*(May 2019), 41–50.
https://doi.org/10.1016/j.jbusres.2019.12.041

Buil, I., Catalán, S., & Martínez, E. (2020b). Understanding applicants' reactions to gamified
recruitment. *Journal of Business Research*, *110*, 41–50.
https://doi.org/10.1016/J.JBUSRES.2019.12.041

Cropanzano, R., Bowen, D., & Gilliland, S. (2007). The Management of Organizational
Justice. *Academy of Management Perspectives, The*, *21*, 24–48.
https://doi.org/10.5465/AMP.2007.27895338

Ellison, L. J., McClure Johnson, T., Tomczak, D., Siemsen, A., & Gonzalez, M. F. (2020).
Game on! Exploring reactions to game-based selection assessments. *Journal of
Managerial Psychology*, *35*(4), 241–254. https://doi.org/10.1108/JMP-09-2018-
0414/FULL/HTML

Equalture. (2023). Equalture - Objective hiring through neuroscience. *Equalture - For the*

Pioneers Who Are No Longer Willing to Accept the Flaws of CV-Based Hiring.
https://www.equalture.com/

Fathian, M., Sharifi, H., & Nasirzadeh, E. (2020). Conceptualizing the role of gamification in contemporary enterprises. *IEEE Access*. https://doi.org/10.1109/ACCESS.2020.3043144

Garcia-Sedeño, M., Navarro, J. I., & Menacho, I. (2009). Relationship between personality traits and vocational choice. *Psychological Reports*, *105*(2), 633–642. https://doi.org/10.2466/PR0.105.2.633-642

Gilliland, S. W. (1993). The Perceived Fairness of Selection Systems: An Organizational Justice Perspective. *The Academy of Management Review*, *18*(4), 694–734. https://doi.org/https://doi.org/10.2307/258595

GPT-4. (2023). Open AI. https://openai.com/product/gpt-4

Hausknecht, J. P., Day, D. V., & Thomas, S. C. (2004). Applicant Reactions to Selection Procedures: An Updated Model and Meta-Analysis. *Personnel Psychology*, *57*(3), 639–683. https://doi.org/10.1111/J.1744-6570.2004.00003.X

Hayes, A. F. (2012). *The PROCESS macro for SPSS, SAS, and R - PROCESS macro for SPSS, SAS, and R*. https://processmacro.org/index.html

Highhouse, S., Lievens, F., & Sinar, E. (2003). Measuring Attraction to Organizations. *EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT*, *63*, 986–1001. https://doi.org/10.1177/0013164403258403

Kemal, Ö. (2020). Power Analysis and Sample Size, When and Why? *Turkish Archives of Otorhinolaryngology*, *58*(1), 3. https://doi.org/10.5152/TAO.2020.0330

Landers, R. N., Auer, E. M., & Abraham, J. D. (2020). Gamifying a situational judgment test

with immersion and control game elements: Effects on applicant reactions and construct validity. *Journal of Managerial Psychology*, *35*(4), 225–239. https://doi.org/10.1108/JMP-10-2018-0446

Nikolaou, I., Georgiou, K., Bauer, T. N., & Truxillo, D. M. (2019). Applicant reactions in employee recruitment and selection: The role of technology. *The Cambridge Handbook of Technology and Employee Behavior*, 100–130. https://doi.org/10.1017/9781108649636.006

Ryan, A. M., & Tippins, N. T. (2004). Attracting and selecting: What psychological research tells us. *Human Resource Management*, *43*(4), 305–318. https://doi.org/10.1002/HRM.20026

Snyder, T. D., de Brey, C., & Dillow, S. A. (2019). Digest of Education Statistics 2017, 53rd Edition. NCES 2018-070. *National Center for Education Statistics*.

Tippins, N. T. (2015). Technology and Assessment in Selection. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 551–582. https://doi.org/10.1146/annurev-orgpsych-031413-091317

Wang, D., Liu, H., & Hau, K. T. (2022). Automated and interactive game-based assessment of critical thinking. *Education and Information Technologies*, *27*(4), 4553–4575. https://doi.org/10.1007/S10639-021-10777-9/METRICS

Appendices

Appendix A

Preliminary job posting message

Q23

On the next page, you will be provided with a job posting for a position for the company called GTS-INC. For the course of this research, imagine this is your dream job and you applied for it.

As a first step of the selection process, you have to play a short game that will assess your problem-solving skills for this job. When you click on the link you will be directed to the game.

Once you have played this game please return to the questionnaire and answer the questions about your experience.

Job Posting

Operations Analyst

GTSINC.

Job Description
Job Title: Operations Analyst
Company: GTS Inc.
Location: Groningen, NL
Job Type: Full-time

GTS Inc. is seeking an experienced Operations Analyst who is passionate about solving complex business problems to join our dynamic team. The successful candidate will be responsible for identifying and analysing operational issues, developing solutions and recommendations, and implementing process improvements. The ideal candidate will have excellent problem-solving skills, strong analytical abilities, and experience working in a fast-paced environment.

Key Responsibilities
• Analyse operational issues and develop recommendations for process improvements
• Monitor and report on performance metrics
• Develop and implement project plans
• Conduct analysis to support business decision making

Requirements
• Strong problem-solving and analytical skills
• Excellent written and verbal communication skills
• Ability to work collaboratively with cross-functional teams

Qualifications
• Ability to think critically and develop creative solutions to complex business problems
• Strong attention to detail and a passion for delivering high-quality work
• Ability to prioritize and manage multiple projects simultaneously
• Strong organizational and time management skills

Pre-Assessment Statement

Q27

Thank you for your interest in joining GTS Inc.! Before you begin your job assessment, please take a moment to review the job description and requirements carefully. We believe that our company is only as strong as our team, and we are excited to consider you for this opportunity. Next you will complete the first level of the assessment which is the first part of the selection procedure. Good luck!

Start the Game

Appendix B

Complete Questionnaire

| Variable	Question(s) - Likert Scale	Citation
Perceived Chance to perform[a]	• I've had an adequate opportunity to demonstrate skills within the task. • I've had an adequate opportunity to demonstrate my strengths within the task. • This assessment allowed me to show what my job skills are.	(Bauer et al., 2001) (Bauer et al., 2001; via LaHuis et al., 2007 and via Ellison et al., 2019)
Perceived Propriety of Task[a]	• The assessment used objectively evaluates my performance • The procedures used in this assessment are free of bias • The task avoided an invasion of privacy Prior statement: Bias in assessments refers to any factors in the design, administration, or scoring of an assessment that may influence the results in a way that deviates from the intended purpose of the assessment or fairness.	(Flint, 2012) (Bauer et al., 2001)
Technology Self-Efficacy	• I am very confident in my ability to work with computers. • I am very confident in my ability to work with smartphones. • I usually find it easy to learn how to use a new program on a computer. • I usually find it easy to learn how to use a new program on a smartphone.	(Cassidy and Eachus, 2002; via Ellison et al., 2019)
Prior Game Experience	• I play video games on a regular basis • I play board games on a regular basis • I am proficient or skilled at playing video games • I am proficient or skilled at playing board games	(Terlecki and Newcombe, 2005)
Perceived Fairness[a]	• I feel that using the test to select applicants for the job is fair. • The use of the test would allow screening every applicant fairly and giving them the same opportunity to compete for the job	(Chan et al., 1998)

	• Using the test would cut down on favoritism that can sometimes be a problem when applicants are selected for jobs • Overall, the method of using the gaming task was fair	
Organizational Attractiveness[a]	• This organization would be a good place to work • I am interested in learning more about this company as a place for employment • I would recommend this company to a friend looking for a job	(Bauer et al., 2001) (Highhouse, 2003)
Perceived Validity of the recruitment process	• I can see a clear connection between the test and what I think is required by the job • I do not understand what the test had to do with the job • I am confident that the test can predict how well an applicant will perform on the job. • The employer can tell a lot about the applicant's ability to do the job based on the results of the test.	(Chan et al., 1998)
Perceived Job Relatedness	• The actual content of this assessment was related to job duties • This assessment can predict how well an applicant will perform on the job • It would be clear to anyone that this test is related to the job. • A person who scored well on this test will be good at the job.	(Bauer et al., 2001), (Gillilan et al., 2001; via Zibarras & Patterson, 2015) (Bauer et al., 2001; Warszta, 2012; via Langer, Konig & Hemsing, 2019) (Chan, 1997; via LaHuis et al., 2007). (Ellison et al., 2019)
Intention to pursue	• I would accept a job offer from this company • I would make this company a first choice as an employer • I would exert a great deal of effort to work for this company	(Highhouse, 2003)

*Note:* a. Variables analysed in this study.

Appendix C

Figure C1

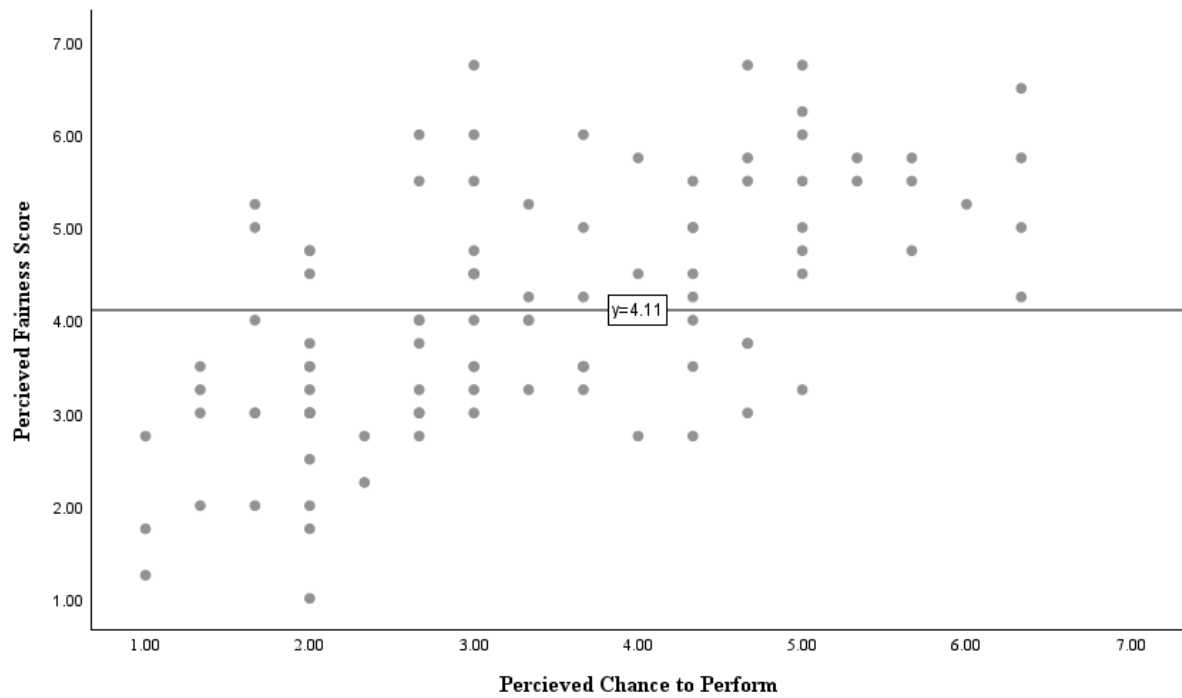*Normal P-P Plot of the Perceived Chance to Perform Scores*
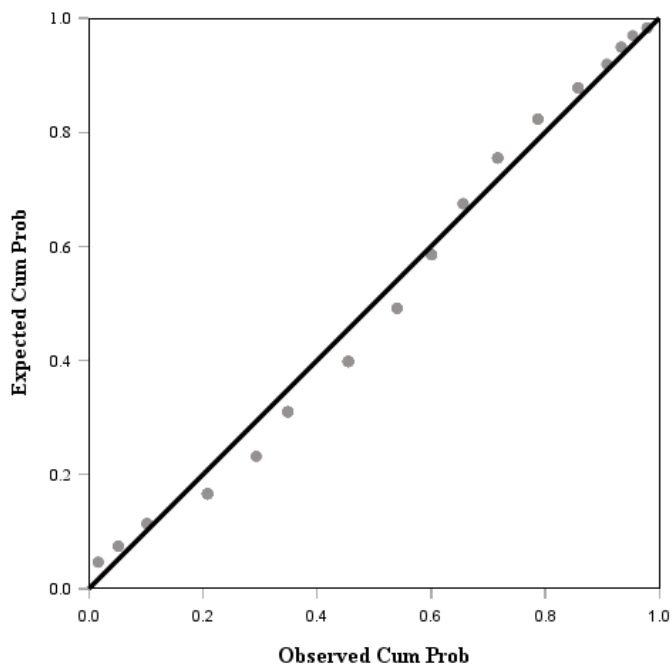
Note: Probability-Probability plot evaluating the normality assumption for the perceived chance to perform scores. The plot compares the observed distribution to the theoretical normal distribution. The data points in the plot closely follow the diagonal line, indicating a good fit to the normal distribution. No significant outliers are observed.

Figure C2

Perceived Chance to Perform Scores Distribution
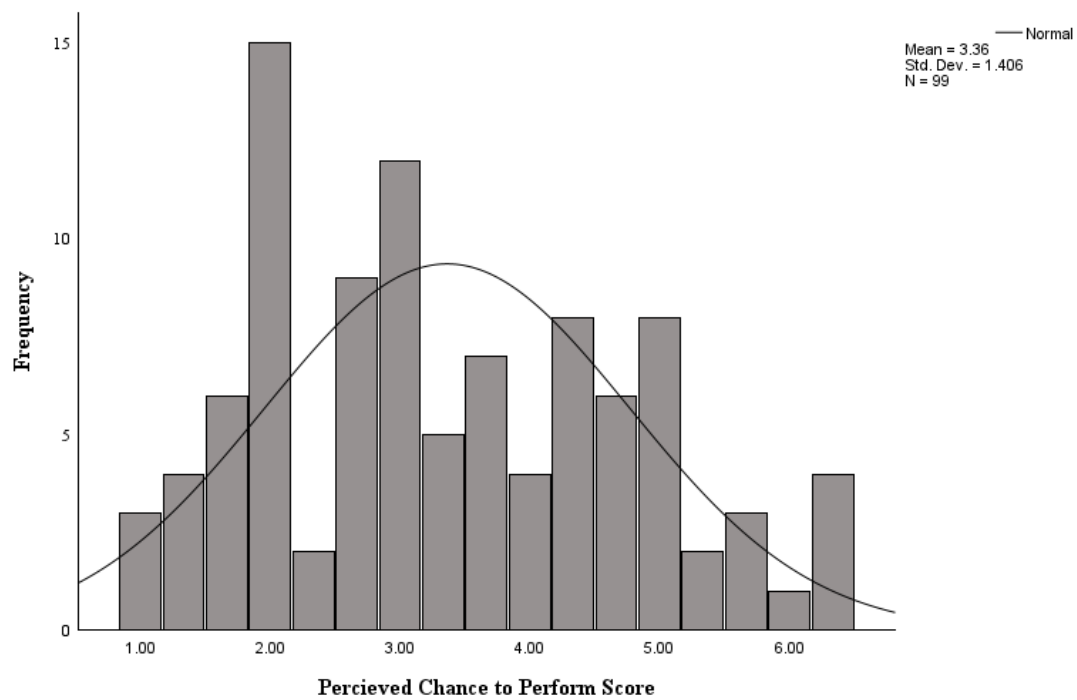
Note: Histogram displaying the distribution of the perceived chance to perform scores. The histogram provides a visual representation of the frequency distribution to assess the normality assumption. Data slightly deviates from the bell-curve, suggesting slight deviation from of normality.

Figure C3

Perceived Chance to Perform Scores Scatterplot

Note: This scatterplot examines homoscedasticity by evaluating the dispersion of residuals around a horizontal line representing the expected mean value of the perceived fairness scores for each perceived chance to perform score. A consistent spread of scores along the range of the perceived chance to perform is observed, indicating homoscedasticity.
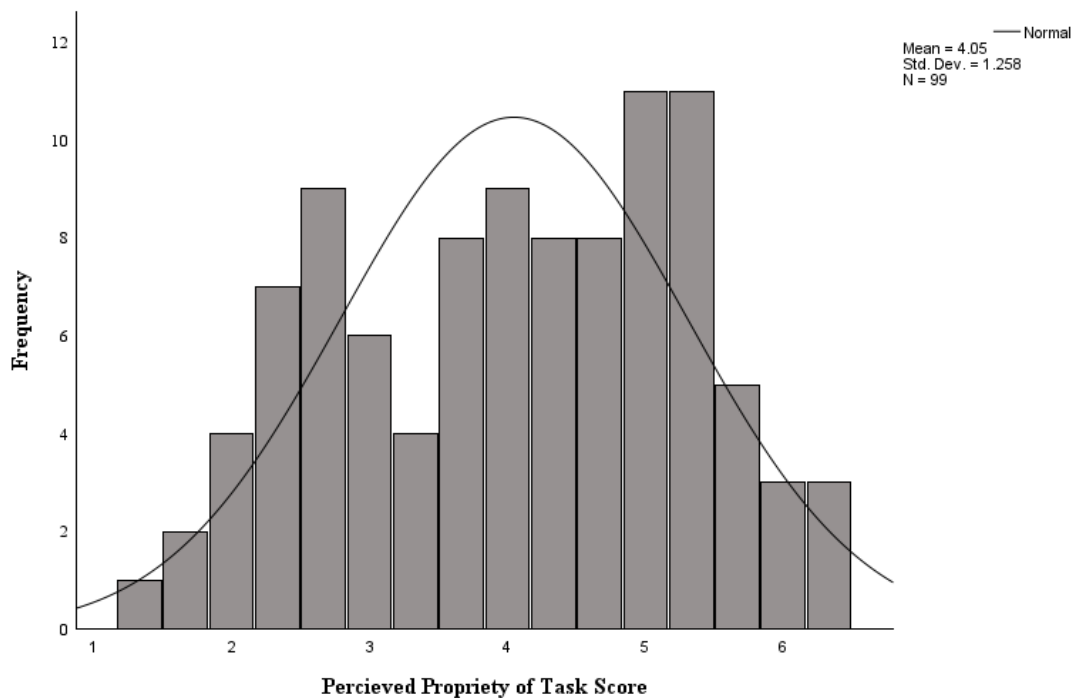
Figure C4

Normal P-P Plot of the Perceived Propriety of the Task Scores
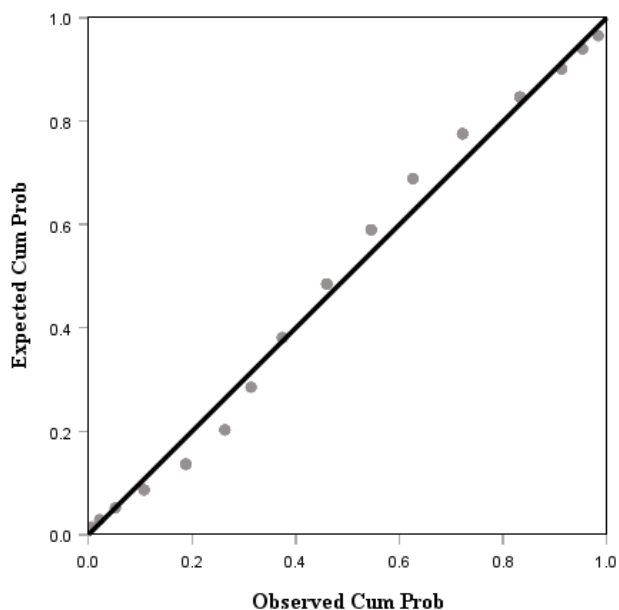
Note: Probability-Probability plot evaluating the normality assumption for the perceived propriety of the task scores. The plot compares the observed distribution to the theoretical normal distribution. The data points in the plot closely follow the diagonal line, indicating a good fit to the normal distribution. No significant outliers are observed.

Figure C5

Perceived Propriety of the Task Scores Distribution

Note: Histogram displaying the distribution of perceived propriety of the task scores. The histogram provides a visual representation of the frequency distribution to assess the normality assumption. Data resembles the bell-curve indicating normality.

Figure C6

*Perceived Propriety of the Task Score Scatterplot*
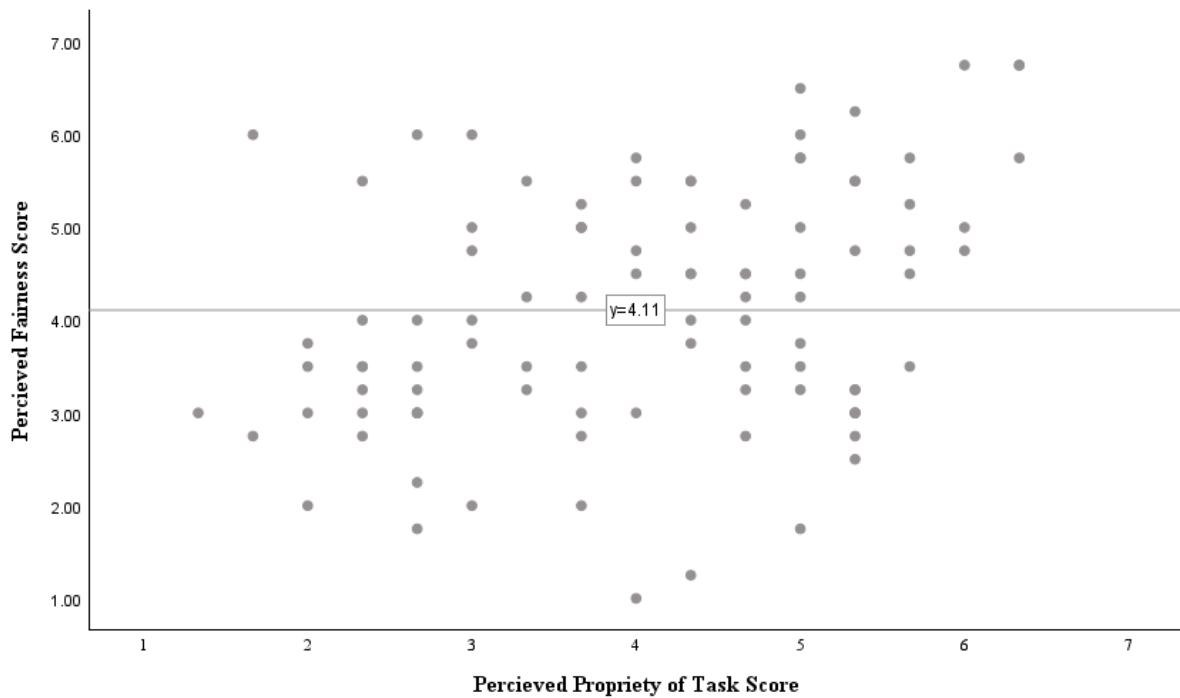
Note: This scatterplot examines homoscedasticity by evaluating the dispersion of residuals around a horizontal line representing the expected mean value of the perceived fairness scores for each perceived propriety of the task score. A consistent spread of scores along the range of the perceived propriety of the task scores is observed, indicating homoscedasticity.

Figure C7

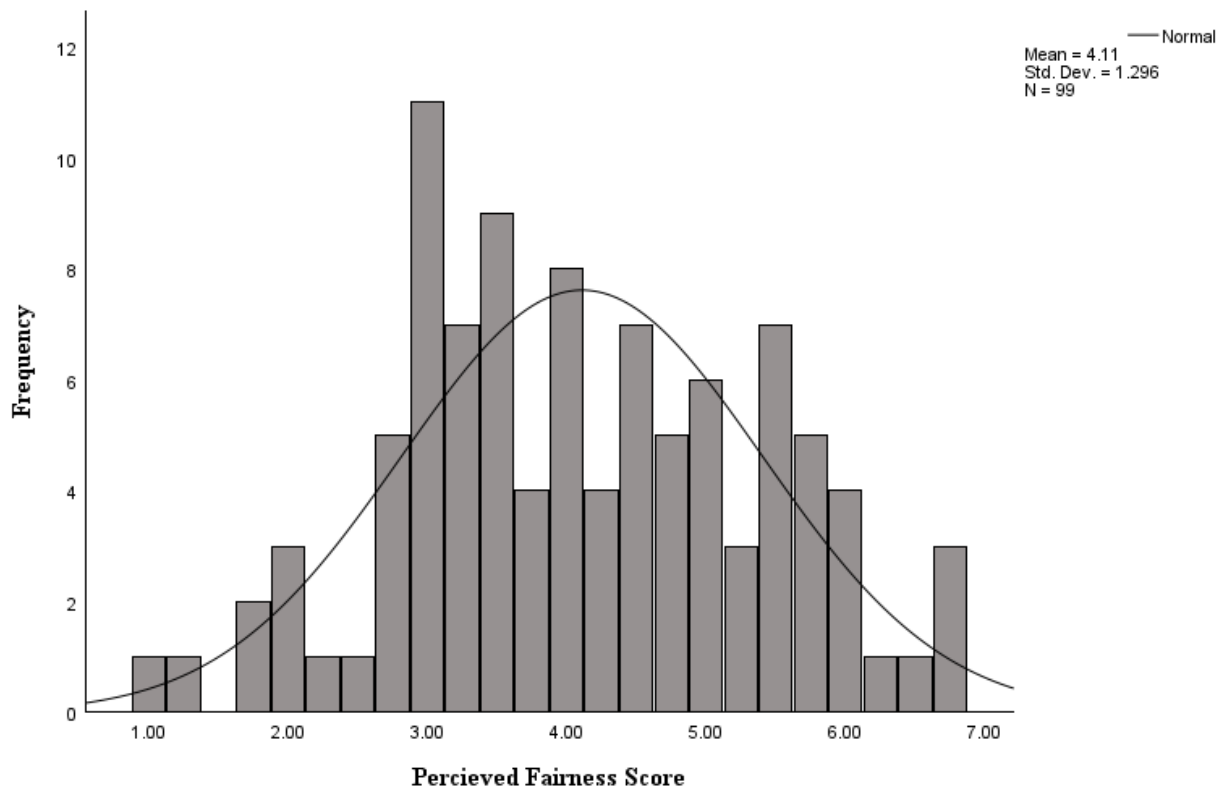*Normal P-P Plot of the Perceived Fairness Scores*
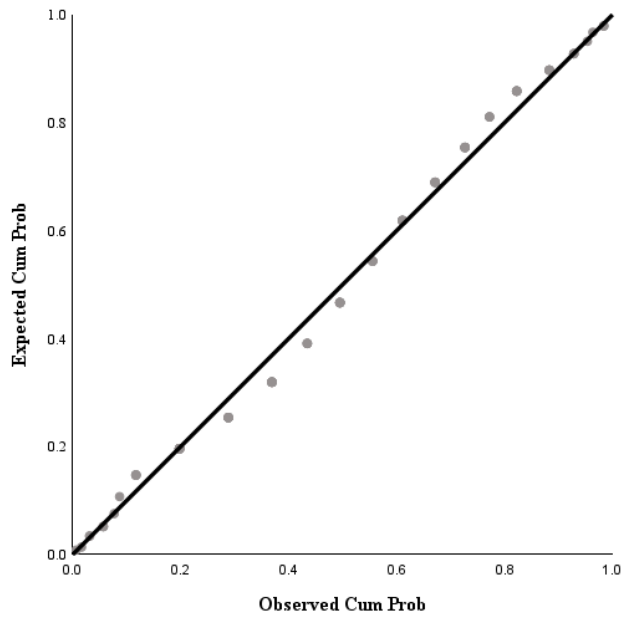
Note: Probability-Probability plot evaluating the normality assumption for the perceived fairness scores. The plot compares the observed distribution to the theoretical normal distribution. The data points in the plot closely follow the diagonal line, indicating a good fit to the normal distribution. No significant outliers are observed.

Figure C8

Perceived Fairness Scores Distribution

Note: Histogram displaying the distribution of the perceived fairness scores. The histogram provides a visual representation of the frequency distribution to assess the normality assumption. Data slightly deviates from the bell-curve, suggesting slight deviation from of normality.

Figure C9

Normal P-P Plot of the Perceived Organisational Attractiveness

Note: Probability-Probability plot evaluating the normality assumption for the perceived organisational attractiveness scores. The plot compares the observed distribution to the theoretical normal distribution. The data points in the plot closely follow the diagonal line, indicating a good fit to the normal distribution. No significant outliers are observed.

Figure 10

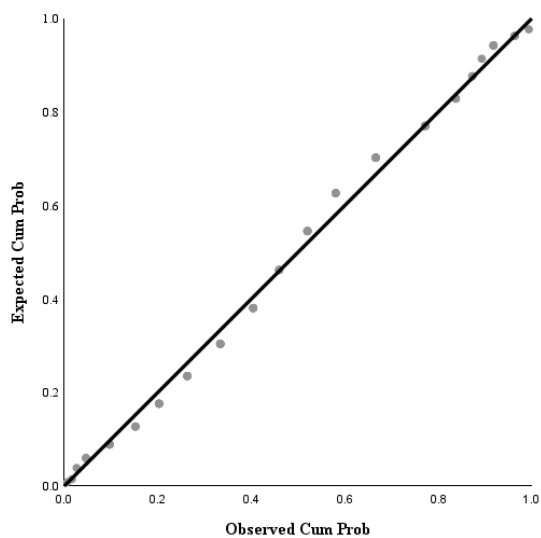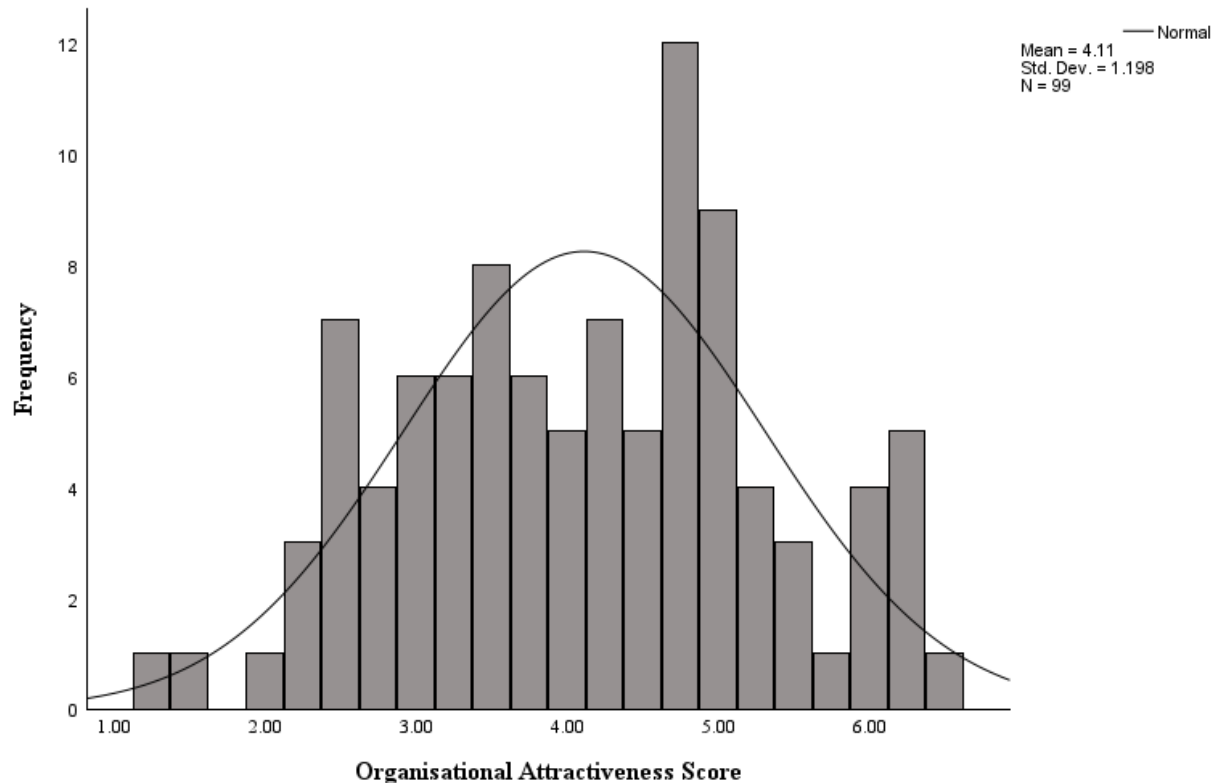*Perceived Organizational Attractiveness Scores Distribution*

Note: Histogram displaying the distribution of the perceived organisational attractiveness scores. The histogram provides a visual representation of the frequency distribution to assess the normality assumption. Data slightly deviates from the bell-curve, suggesting slight deviation from of normality.

Figure C11

Perceived Fairness and Organisational Attractiveness Mean Scatterplot
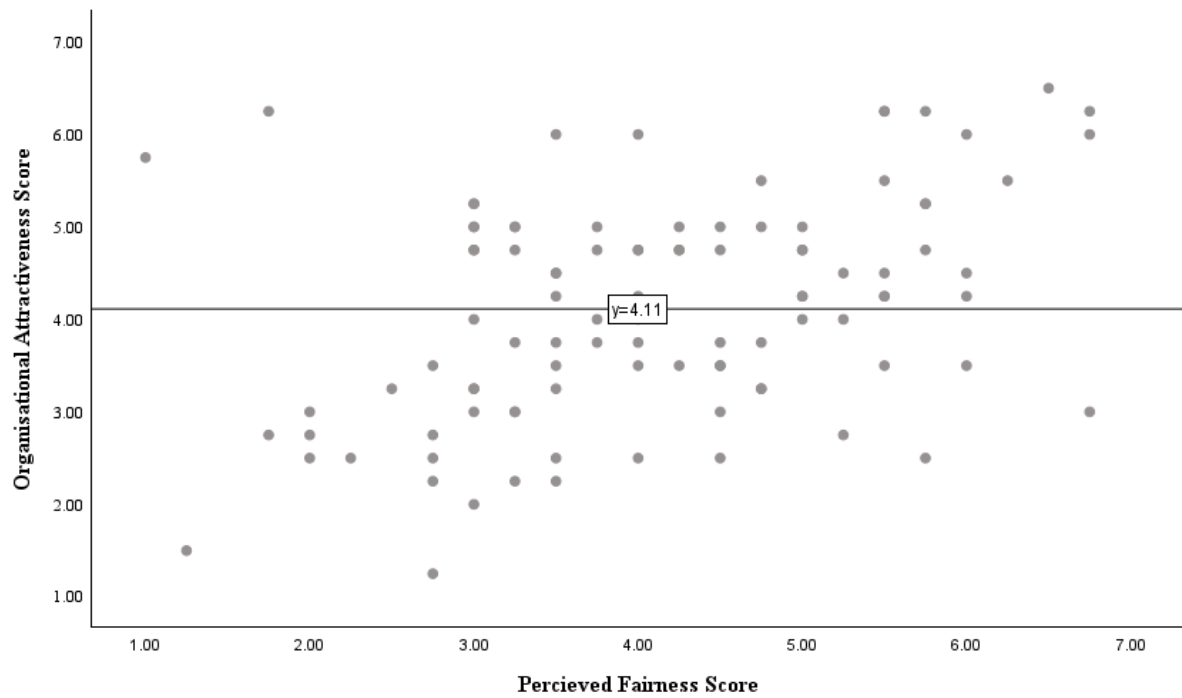
Note: This scatterplot examines homoscedasticity by evaluating the dispersion of residuals around a horizontal line representing the expected mean value of the organisational attractiveness scores for each perceived fairness score. A consistent spread of scores along the range of the perceived propriety of the task scores is observed, indicating homoscedasticity.

Appendix D

Additional Tables Used for Analysis

Table D1.

Regression Coefficients of the Predictor of Hypothesis 1 & 2[a]

Model	B[b]	Std.[b] Error	Beta[c]	t	Sig	Lower Bound[d]	Upper Bound[d]	Zero-order Correlations	Partial Correlations	Part Correlations
1 (Constant)	2.267	.274		.413**	.413**	.413**	.413**	.413**	.413**	.413**
Perceived Chance to Perform	.547	.075	.075	7.271	<.001	.389	.697	.594	.594	.594
2 (Constant)	1.789	.378		4.727	<.001	1.038	2.540			
Perceived Chance to Perform	.495	.080	.537	6.201	<.001	.337	.654	.594	.535	.501
Perceived Propriety of the Task	.162	.089	.157	1.813	.073	-.015	.339	.351	.182	.146

Note. a. Dependent variable: Perceived Fairness Score. b. Unstandardized coefficients. c. 95.0% Confidence Interval for B.

Table D2.

ANOVA of Hypothesis 1 & 2[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.077	1	58.077	52.863	<.001[b]
	Residual	106.568	97	1.099		
	Total	164.645	98			
2	Regression	61.606	2	30.803	28.699	<.001[c]
	Residual	103.039	96	1.073		

Model		Sum of Squares	df	Mean Square	F	Sig.
	Total	164.645	98			

Note. a. Dependent variable: Perceived Fairness Score. b. (Constant), Perceived chance to perform score. c. Predictors: (Constant), Perceived Chance to Perform Score, Perceived Propriety of Task Score

Table D3.

Model Summary Hypothesis 1 & 2 [c]

	R	R Square	Adjusted R Square	Std. Error of Estimate
Model 1	.563[a]	.353	.346	1.04816
Model 2	.612[a]	.374	.361	1.03601

Note. a. Predictors: (Constant), Perceived Chance to Perform Score. b. Predictors: (Constant), Perceived Chance to Perform Score, Perceived Propriety of Task Score. c. Dependent

Table D4.

ANOVA Hypothesis 3[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.077	1	58.077	52.863	<.001[b]
	Residual	118.052	97	1.217		
	Total	140.534	98			

Note. a. Dependent variable: Organisational Attractiveness Score. b. (Constant), Perceived Fairness Score

Variable: Perceived Fairness Score

Table D5.

Regression Coefficients Hypothesis 3[a]

Model		B[b]	Std. Error[b]	Beta[c]	t	Sig.
1	(Constant)	2.595	.370		7.010	<.001
	Perceived Fairness Score	.370	.086	.400	4.298	<.001

Note. a. Dependent variable: Organisational Attractiveness Score. b. Unstandardised Coefficients. c. Standardised Coefficients

Table D6.

Complete Model Hypothesis 4

	Coefficient	SE	t	p	Lower Bound[a]	Upper Bound[a]
(Constant)	1.80	2.28	.790	.431	-2.735	6.34
Perceived Fairness	.447	.473	.945	.347	-.494	1.38
None	.049	2.23	-.0214	.983	-4.68	4.58
Faculty of Behavioural and Social Sciences	5.11	2.56	1.99	.049	.009	10.2
Faculty of Arts	-1.92	7.94	-.242	.808	-17.74	13.8
Faculty of Science and Engineering	.779	2.86	.272	.785	-4.90	6.46
University College Groningen (UCG)	.092	3.16	.029	.976	-6.201	6.38
Faculty of Business and Economics	.845	2.39	.353	.725	-3.92	5.61
Other	-.542	2.84	-.190	.849	-6.20	5.12
Perceived Fairness*No Faculty Selected	.139	.486	.287	.774	-.828	1.10

	Coefficient	SE	t	p	Lower Bound[a]	Upper Bound[a]
Perceived Fairness*Faculty of Behavioural and Social Sciences	-1.00	.557	-1.79	.075	-2.11	.106
Perceived Fairness*Faculty of Medical Sciences	.283	1.47	.191	.848	-2.65	3.22
Perceived Fairness*Faculty of Science and Engineering	-.016	.655	-.024	.980	-1.31	1.28
Perceived Fairness*University College Groningen (UCG)	.1360	.678	.200	.841	-1.21	1.48
Perceived Fairness*Faculty of Business and Economics	-.090	.502	-.180	.857	-1.08	.908
Perceived Fairness*Unlisted Faculty	.079	.611	.1293	.897	-1.13	1.29

Note. Confidence intervals with 95.00 confidence.

Table D7.

Conditional effects of Organisational Attractiveness at different Faculties for Hypothesis 4

Faculty	Effect	*SE*	*t*	*p*	Lower Bound[a]	Upper Bound[a]
None	.447	.473	.945	.347	-.494	1.38
Faculty of Business and Economics	.356	.168	2.12	.036	.022	.691

Faculty	Effect	SE	t	p	Lower Bound[a]	Upper Bound[a]
Faculty of Behavioural and Social Sciences	.587	.114	5.14	.000	.360	.814
Faculty of Arts	-.555	.294	-1.88	.062	-1.14	.029
Faculty of Medical Sciences	.730	1.40	.521	.603	-2.05	3.51
Faculty of Science and Engineering	.431	.453	.951	.344	-.470	1.33
University College Groningen (UCG)	.583	.486	1.19	.233	-.384	1.55
Other	.526	.387	1.35	.177	-.243	1.29

Note. Confidence intervals with 95.00 confidence.

Table D8.

Tests of highest order unconditional interactions for Hypothesis 4

	R2-chng	F	Df1	Df2	p
Perceived Fairness*Faculty	.1050	1.93	7.00	82.00	.0749