An Examination of Perceptions of Fairness, Organizational attractiveness and Agreeableness in Game-Based Assessments

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Abstract

Reactions and attitudes towards selection procedures have been widely studied in the field of organizational psychology. Especially the perception of fairness in an assessment procedure is in focus because it may have an impact on the applicant's perception of the organization. Newer strategies for assessing applicants are game-based assessments (GBA). In our study, we were interested whether previous findings about the perception of fairness can be applied to a GBA. We hypothesized that fairness perception is significantly linked to organizational attractiveness in a GBA context. Further, we examined whether there is a link between the personality characteristic agreeableness of the Big Five and fairness perception in a GBA. Our sample consisted of 192 people we recruited through the Faculty of Economics and Business (FEB) and through social media, especially among students. The survey consisted of questions on the participants' level of agreeableness, level of fairness perception and organizational attractiveness perception, where after participants were asked to complete two game-based assessments. We conducted two simple linear regression analyses which indicated a significant relationship between fairness perception and organizational attractiveness. For our second hypothesis, we did not find a significant link between agreeableness and fairness perception which opposes most findings of previous studies. Our results support previous literature findings of a relationship between fairness perception and organizational attractiveness and add to the research on GBAs.

Keywords: Game-based assessment (GBA), Fairness perception, Agreeableness, Organizational attractiveness

An Examination of Perceptions of Fairness, Organizational attractiveness and

Agreeableness in Game-Based Assessments

Organizations are constantly challenged with finding the most talented and suitable employees. Over the past decades, the continuously progressing technology has led to a wider implementation of computer and online-based assessments in many companies' personnel recruitment and selection procedures (Ellison et al. 2020). These newer strategies related to or based on games enable a larger pool of applicants for organizations searching for the best fit and also enable more options for applicants. So- called game-based assessments (GBAs), ought to increase engagement and fun in applicants (Georgiou & Nikolaou, 2020) and are more time efficient for the organization than traditional assessment procedures.

Among many terms describing gamified or game-based assessment procedures, Ramos-Villagrasa et al. (2022) use the hypernym game-related assessments (GRA) to describe assessments based on games. Due to the discordant terminology in research regarding the same core topic, Landers and Sanchez (2022) proposed to distinguish between the three terminologies gamification, gameful design and game-based assessments. Gamification, which has been a frequent focus in recent research, refers to a redesign strategy of already existing assessments that have elements and concepts of games added to them. Gameful design is a design strategy for assessments using existing assessments, whereby the decision-making is guided by game concepts. In comparison to the former two, game-based assessments (GBA) are entirely new developed methods, in which job applicants are players in a gameplay loop. Thereby, information about the applicants' skills and traits are assessed and their overall eligibility for the job evaluated based on the game outcome or performance (Landers et al., 2019).

While the classical interviews and psychometric tests assessing cognitive ability or personality applied in traditional application procedures are generally more negatively

connoted, game-based assessments inherent the enjoyable and fun element of game and are therefore perceived as more positive by applicants (Ellison et al., 2020)

More positive perceived application processes can be beneficial, as the applicants reactions and attitudes towards the selection process were found to have an impact on their perceptions of the organization applying to, as well as the actual recruitment outcomes. For instance, Chapman et al. (2005) have shown a moderate positive association between applicant's positive perception of the assessment and the attractiveness of the organization as employer. Similarly, Ployhart and Harold (2004) have found that if employees perceive an organization's selection procedure as positive, more people will apply for a job at this organization in the future. Georgiou and Nikolaou (2020) describe further how applicants, who participate in a selection process including a gamified assessment, perceive the organization as more attractive in comparison to an organization using traditional assessment methods. Thereby, they found an indirect link between an organization's selection process and its perceived attractiveness through applicants' perceived fairness of the test (Georgiou & Nikolaou, 2020).

As the perception of the selection process has an impact on the attitude of applicants towards the company they are applying to (Ellison et al., 2020), the perception of fairness in the procedure requires more scientific investigation. While a range of research studies on fairness perception in selection procedures (Gilliland, 1993; Ryan & Ployhart, 2000) and computerized testing (Wiechmann & Ryan, 2003) exist, the utilization of this knowledge in GBA's is limited (Ellison et al., 2020). In our study we therefore formulated the following research questions: What effect do applicants' perceptions of fairness have on their attraction to the organization, particularly in a game-based assessment? And: H ow does the perception of fairness interact with personal differences? (Please see Figure 1 for model of contemporary study).

Literature Review

Fairness perception

Based on prior studies (Gilliland, 1993; Wiechmann & Ryan, 2003) Laumer et al. (2012), define perceived selection fairness as a person's judgement of whether a self-assessment is appropriate for the underlying self-selection tasks, if it covers all the crucial facets of the position and whether job applicants' have trust in the results of the game-like application. These judgments of fairness shape applicants' perceptions about the organization and how they want to proceed (e.g. whether they can imagine this organization as a place to work or would recommend it in the future). Ryan and Ployhart (2000) examined when and for what reason applicants have negative or more positive impressions of a selection procedure. They have shown that among others, the type of the test, the method of the assessment and the outcome of the test are influential for the applicants' perception of fairness. The fairness perception of selection procedures have been linked to their outcomes, such as impact on self-esteem and self-efficacy of rejected applicants (Ellison et al. 2020), willingness to recommend an organization and its attractiveness (Hausknecht et al., 2004), as well as applicants' willingness to plea against possible discrimination (Gilliland, 1993).

One of the most impactful models in applicant reactions is the justice 'model of applicants' reactions to employment selection systems proposed by Gilliland (1993). Using the organizational justice theory (Greenberg, 1982) as a framework, the model describes the applicant's fairness perceptions during the recruitment process and distinguishes between distributive justice and procedural justice. While distributive justice focuses on the fairness of the selection outcomes, procedural justice is based on rules that can be either violated or satisfied and thus determine the perception of fairness. The procedural justice rules consist of formal characteristics such as opportunity to perform, consistency or job relatedness; explanations in form of feedback, honesty and information about the selection; and

interpersonal treatment in form of effectiveness, communication and the type of questions (Gilliland, 1993). In our study we use the rules of procedural justice as the basis to measure fairness perception among applicants.

Organizational attractiveness

As mentioned, Georgiou and Nikolaou (2020) found a positive relationship between applicants' fairness perception and their perception of the organizations' attractiveness in a gamified assessment context. The components with most attention as measures for organizational attraction (Highhouse et al., 2003) were identified as the attractiveness, intentions to pursue the application process and prestige of the organization. Hence, organizations can increase their overall attractiveness for employees, attract and identify applicants with technological skills and create a higher variety in their applicant pool by using GBAs (Bina et al., 2021). For the further analysis, we will work with the assumption that the use of a game-based assessment in the selection procedure in job applications has a positive influence on the organizational attractiveness. We will further use the results of Truxillo et al.'s (2004) study, indicating that reactions, such as fairness perceptions have a noteworthy effect on organizational attractiveness.

As previous studies, we will apply the justice model of applicants' reactions by Gilliland (1993), which provides a framework for examining applicants' reactions and attitudes towards the organization by looking into procedural fairness perception and specifically how it influences organizational attractiveness.

The following research hypothesis is given:

Hypothesis 1: An applicants' perception of fairness of a game-based assessment context is significantly correlated with attraction to an organization.

Various studies have investigated the connection between individual differences and applicant reactions towards game-based assessments (e.g. Bhatia, 2018; Bittner & Shipper,

2014). More specifically, Georgiou and Nikolaou (2020) explored the relationship between personality (e.g. Openness to Experience) and applicants' reactions towards a gamified selection method. While Georgiou and Nikolaou (2020) hypothesis could not be supported, we want to investigate this relationship with another personality trait of the big five (Goldberg, 1990), namely Agreeableness and explore its influence on applicants' fairness perception in GBAs.

Agreeableness

When examining the fairness perception of applicants the assessment during the application is not the only influential contributor. Personality and individual differences have also long been identified by researchers as promising indicators for job satisfaction, job performance and fairness perception (e.g. McCarthy et al. 2017). A trait with moderate attention in research when it comes to fairness perception is Agreeableness. Agreeableness is one trait of the five-factor model by Goldberg (1990), which also includes Conscientiousness, Openness to Experience, Extraversion and Neuroticism. Agreeableness is described as the trait of generosity, sociability, altruism and cooperation (Bernerth et al., 2005). Goldberg (1992) uses the terms fair and unfair as markers for agreeableness, which could indicate that individuals scoring high in agreeableness possess an inherent fairness approach compared to people scoring low. Based on past research, Bernerth et al. (2005) proposes that there is an intuitive link between agreeableness and reactions to selection decisions since there seems to be a connection between interpersonal relations and the motivation to positively preserve these relationships (Graziano & Eisenberg, 1997). Scoring low on agreeableness would indicate a temperamental, argumentative, emotional and difficult-to-calm individual according to Skarlicki et al. (1999). Oostrom et al. (2010) therefore proposes that people scoring low on agreeableness could tend to react more negatively to selection procedures. Individuals scoring high on agreeableness on the other side, Butucescu & Iliescu (2019)

suggest, have a higher tendency to plea against an assessment process when it is perceived as unfair.

Following this research on agreeableness, its relation to fairness and Georgiou and Nikolaou (2020) findings, this study aims to examine the relationship between the fairness perceptions of individuals scoring high on agreeableness compared to those scoring low on this trait in a game-based assessment context. Additionally, based on Georgiou and Nikolaou's (2020) findings, this paper aims to investigate whether there is a relationship between fairness perception in applicants and organizational attractiveness in a game-based assessment context.

Concluding, the following research hypothesis is given:

Hypothesis 2: An applicant's level of agreeableness is significantly correlated with their fairness perception in a game-based assessment.

Figure 1

Model of contemporary study
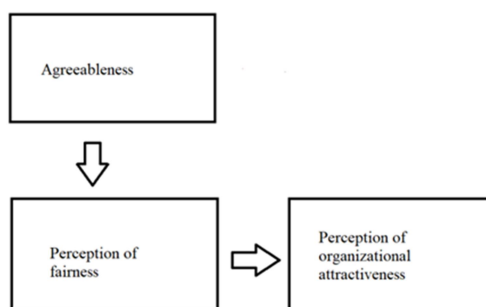
Note. Fairness perception is the independent variable in H1 and the dependent variable in H2. Agreeableness is the independent variable in H2. Organizational attractiveness is the dependent variable in H1.

Method

Participants

In total we received 240 responses to the survey. Out of the initial dataset ($N = 240$), 48 participants were excluded due to abandoning the survey after giving informed consent only, finishing with too many missing values or answering the questionnaire in a pattern that differed from all the other participants and assumed their answering to be insincere. The entries in the listed cases were marked incomplete. The final sample (N = 192) consisted of 56 (29.2%) females, and 136 (70.8%) males. Ages ranged between > 18 and < 60 years of age ($M_{age} = 1.99$, $SD_{age} = .517$)[1], whereby the majority (89.6%) were in the age range between 18-25 years of age. Participants indicated 23 different languages as their first spoken language. The most spoken language was Dutch (65.6%) followed by 150 (78.1%) participants that were fluent in English or native speakers. Regarding education, 133 (69.3%) participants received at least a high school diploma and 28 (14.6%) participants received a bachelor's degree or higher level of education. Furthermore, 27 (14.1%) participants had prior experience with game-based assessments and 102 (53.1%) participants with recruitment selections. An a priori G*power analysis based on a linear multiple regression, showed that 89 participants were required to achieve a small effect size of ($f^2 = .15$) and power .95%.

Procedure

For the data collection we conducted an online survey using Qualtrics and shared a survey link via social media, especially WhatsApp Messenger. We further gathered data from the research lab of the Faculty of Economics and Business (FEB). Participation was voluntary and participants provided informed consent before launching the survey.

The survey consisted of questions and two GBAs. After providing consent the participants had to answer questions regarding their demographics and personalities. Before

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[1] We measured Age in 1-6 answer options. 1 equals >18 years of age, 2 equals 18-25, 3 equals 26-35, 4 equals 36-45, 5 equals 46-59, 6 equals >60 years of age.

completing the GBAs we asked the participants to imagine their ideal organization and ideal job to create a more realistic job application scenario. Following this, we asked participants to complete two mini-games which were demo versions of a game-assessment provided by the company *Equalture*. The first game "The Ferry" measured problem-solving- ability and problem-solving style in applicants. The second game "Bird Spotting" measured speed and accuracy in participants (please see Appendix A). After completing, the participants had to indicate that they completed the two GBAs and were asked to fill out the rest of the questionnaire regarding their perception and attitude towards the assessment.

Compensation was offered for their participation, in form of a € 1.00 donation to UNICEF for each participant, up to € 150. The students from FEB received SONA credits for their participation.

Demographics

The demographics of the study's participants were measured by gender, age, first language and their English proficiency. In addition, they were asked to indicate their highest level of education, as well as whether or not they had any prior experience with GBAs or recruitment (Table 1).

Table 1

Demographic Characteristics of Participants

Demographic	*N*	%	*SD*
Gender			.456
Male	136	70.8	
Female	56	29.2	
Age			.517
<18	14	7.3	
18-25	172	89.6	
26-35	3	1.6	
46-59	2	1.0	
>60	1	0.5	
English level proficiency			.575
Basic	42	21.9	
Fluent	127	66.1	
Native/Bilingual	23	12	
Highest educational level			1.217
Less than High school diploma	1	0.5	
High school	133	69.3	
Some college/no degree	32	16.7	
Bachelor's degree	17	8.9	
Master's degree	7	3.6	
Professional degree	1	0.5	
Doctorate	1	0.5	
Recruitment/selection experience			.5
Yes	102	53.1	
No	90	46.9	
GBA experience			.714
Yes	27	14,1	
Not sure	72	37.5	
No	93	48.4	

Note. Frequency table. N=192

Materials

Perceived Fairness

      Perceived fairness was operationalized through a three-item scale inspired by a scale regarding perceived fairness on applicants' reactions to employment testing procedures (Kluger & Rothstein, 1993). The participants had to indicate on a 5-Point Likert scale ranging (1= *very fair*, 5= *not fair at all*) on how much they agree with the given items. The questions asked were "How fair do you think the assessment procedure was?", "Do you think this procedure is a fair way to select suitable candidates?" and "Most people would say that this assessment procedure is fair." Our reliability measures indicated a moderate internal consistency α=.76.

Organizational attractiveness

      To measure organizational attractiveness we used six items from the 15-item scale of organization attraction items by Highhouse et al. (2003). We chose six items out of 15 that we found most relevant for our study to not exceed the questionnaire and risk insincere answering. On a 5-point Likert scale (1=*very likely*, 5=*very unlikely*) participants could indicate their answer options towards three questions regarding General attractiveness (α=.88) e.g. "This company is attractive to me as a place for employment" and three questions regarding Intentions to pursue (α=.82) i.e. "If this company invited me for a job interview, I would go." The scores on the scale indicate that the higher the score on the scale is the lower is the perceived attractiveness of the organization. Because the first question was stated negatively "I would not be interested in this company except as a last resort", we had to reverse the scale scores when analysing the data to standardize the questions (Appendix B). The internal consistency of the scale was acceptable (α=.895~.9).

Agreeableness

Agreeableness was measured in a questionnaire using a ten-item, bipolar scale (Goldberg, 1992). Participants could indicate their most suitable position between terms, such as 'cold' versus 'warm', ranging from negative connoted attributes to positive. There were seven (originally nine) answer options: For example, from answer option 1= *very 'cold'* (Trait A); 4= *neither 'cold'* (Trait A) nor *'warm'* (Trait B), to 7= *very 'warm'* (Trait B). We changed the answer options from 7 to 9 to reduce the choice for the participants and therefore simplify the answering process. We included an attention check in the fourth question. The scale was reversed and started with the positive term 1=*unselfish* and ended in 7=*selfish* (Appendix C).When analysing the data, we recoded the answer option to fit into the scale again. The 10-item scale had a Cronbach's Alpha of .79 (Goldberg, 1992), which is similar to the reliability measure of α=.72 in the current study.

Results

In our study we first hypothesized the relationship between fairness perceptions, as the predictor variable, in applicants and their perception of the organizational attractiveness, as the outcome variable, in a GBA context (H1). We further hypothesized a relationship between the level of agreeableness (predictor) and fairness perception (outcome) in applicants in a GBA context (H2).

Assumption Testing

We analysed our data using SPSS software and had to test for assumptions before conducting a linear regression. We tested the variables for normality with the Shapiro-Wilk test. The test indicated that the variables Fairness W (192) =.97, $p<.001$ Organizational Attractiveness W (192) =.97, $p<.001$ and Agreeableness W (192) =.98, $p=.029$ are not normally distributed (Table 2) due to their significant value smaller than .05.

Table 2

Shapiro-Wilk test for normality

Variable	*W*	*df*	*p*
Fairness	.972	192	<.001
Organizational attractiveness	.968	192	<.001
Agreeableness	.984	192	.029

Note. Significance level $p < .05$ indicates a deviation from normality

We checked for the skewness and kurtosis (Table 3) of our variables and found that the statistic and standard error are in between the range of -1/+1 which is in the acceptable range (the closer to 0 the better) and indicates an approximate normality. Because of our sufficiently large sample size (*N*=192) we assume the sampling distribution of the mean to be

normal even when normality rules are violated. We also include the mean and standard deviation of each variable in Table 3.

Table 3

Descriptive statistics for variables

Predictor	M	SD	Skewness	Kurtosis
Fairness	2.96	.81	-.52	-.628
Organizational attractiveness	2.48	.734	-.492	-.172
Agreeableness	5.26	.613	-.422	.56

*Note.* Skewness and Kurtosis in acceptable range of -1/+1 suggests no deviation from normality

We further tested all three variables for linearity and homoscedasticity with organizational attractiveness as the outcome variable for H1 (Figure 2) and fairness perception as the outcome variable for H2 (Figure 3). Linearity and homoscedasticity are approximately met for both assumptions.
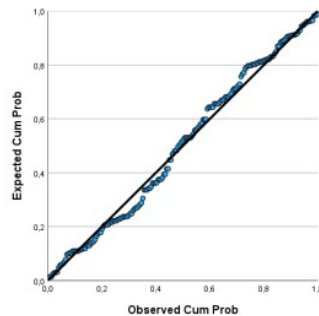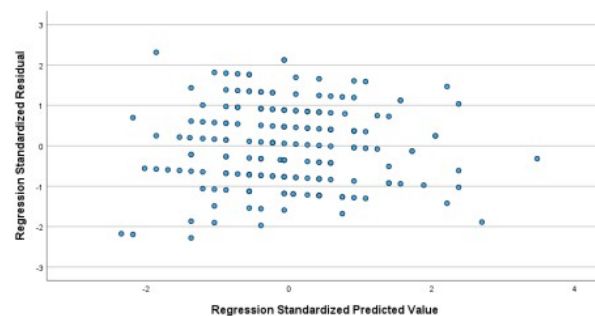
Figure 2
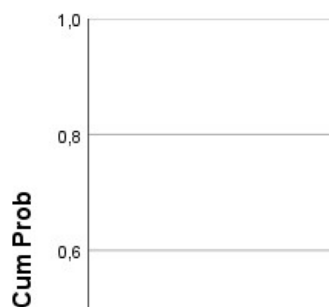
(a) P-P plot testing for linearity   *(b) Scatterplot for testing homoscedasticity*
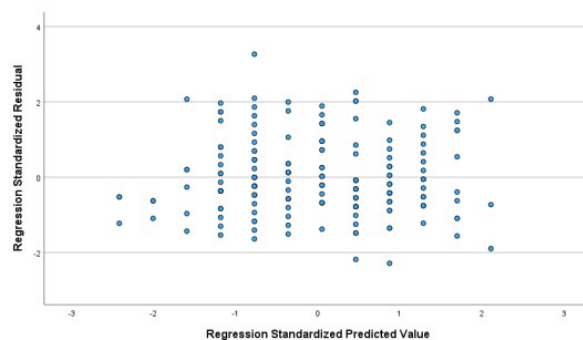
Note. Dependent variable: Organizational attractiveness

Figure 3

(a) P-P plot testing for linearity   *(b) Scatterplot for testing homoscedasticity of*

Note. Dependent variable: Fairness perception

Analysis

      We hypothesized for H1 that an applicants' perception of fairness in a game-based

assessment context is significantly correlated with their perception of organizational

attractiveness. We conducted a correlation (Pearson) test that indicated a positive and

significant correlation between the fairness perception and organizational attractiveness with

a strength of r =.244 (*p* < .001). In other words, an increase by 1 in fairness is associated with

an increase in attraction to an organization by 0.24 (Table 4).

Table 4

Correlations

Variable	Fairness perception	Organizational attractiveness	Agreeableness
Fairness perception			
r	1	,244**	-,106
p		<,001	,144
Organizational attractiveness			
r	,244**	1	-,052
p	<,001		,475
Agreeableness			
r	-,106	-,052	1
p	,144	,475	

Note. **Correlation is significant at the .01 level (two-tailed)

To further investigate the correlation we conducted a simple linear regression with perception of fairness (M=2.96, SD= 0.81) and organizational attractiveness (M= 2.48, SD= 0.73). Overall the regression was statistically significant (R^2= .06, F (1,190) = 12.064, $p <$ .001). 6% of the observed data can be explained by the regression model. Fairness perception significantly and positively predicted organizational attractiveness (β= .222, p<.001, SE=.063), 95% CI [0.096, 0.347] (Table 5). We therefore reject the null hypothesis and accept H1.

Table 5

Coefficients of regression analysis

	B	SE	Beta	t	p	95% CI	
						LL	UL
(Constant)	*1.820*	*.196*		*9.303*	*<.001*	*1.434*	*2.206*
Fairness Perception	*.222*	*.063*	*.244*	*3.473*	*<.001*	*.096*	*.347*

Note. Dependent variable: Organizational attractiveness. Confidence Interval (95%), LB=Lower Limit, UB=Upper Limit

In H2 we hypothesized that agreeableness (*M*=5.26, *SD*= .61) and fairness perception (*M*=2.96, *SD*= .81) are correlated. We conducted a simple linear regression and find that the correlation between an applicant's level of agreeableness and their fairness perception has no significant correlation in this sample (β= -.140, p=.144, SE=.095) 95% CI [-0.328, 0.048] (Table 6). For further information we find that 1.1% (R^2=.011) of the model fit the regression. Agreeableness did not significantly predict fairness (F (1,190) = 2.158, p=.144). Thus, based on the evidence we reject H2.

Table 6

Coefficients of regression analysis

	B	SE	Beta	t	p	95% CI	
						LL	UL
(Constant)	*3.694*	*.504*		*7.329*	*<.001*	*2.7*	*4.688*
Agreeableness	*-.140*	*.095*	*-.106*	*-1.469*	*.144*	*-.328*	*.048*

Note. Dependent variable: Fairness perception. Confidence Interval (95%), LL=Lower Limit, UL=Upper Limit

Discussion

The purpose of this study was to investigate in the reactions and attitudes of applicants in a game-based assessment context. We wanted to gain more insight into what role the perceived fairness of a game-based assessment plays with regard to applicants' perceptions of the organization. We further wanted to examine whether personality traits could have a potential effect on fairness perception in the first place. We, therefore, hypothesized that perceptions of fairness are related to perceptions of organizational attractiveness and that agreeableness is related to fairness perception, both set in a game-based assessment context.

The results of our study support the hypothesis that fairness perception and organizational attractiveness are significantly linked. Our research found supportive evidence that the fairer the participants evaluated our game-based assessment the higher they graded the organization, its general attractiveness level and the possibility of accepting the organization as a place to work. Our key findings show a positive correlation, however weak correlation; indicating a relation between fairness perceptions of the assessment and organizational attractiveness. This finding may be explained by the idea that applicants seem to form a perception of the organization as a reaction to the assessment method the organization uses and that they are participating in (Chapman et al., 2005). As an outcome of this reaction to the assessment, the perception of the organization is influenced. The results of our study are in line with earlier findings by Georgiou and Nikolaou (2020), that fairness perception mediates the perception of gamified assessment and organizational attractiveness. Similarly with Ellison et al. (2020), who demonstrated that fairness mediates the relationship between procedural justice and willingness to recommend the company to others. Both studies found support for a positive relationship between perceived fairness and organisational attraction.

Based on prior research regarding fairness perception, such as procedural justice in

the model of applicants' reactions towards assessments by Gilliland (1993), we wanted to further investigate which factors could predict a higher fairness perception of an assessment among applicants. Based on Georgiou and Nikolaou's (2020) study examining the effect of openness to experience on the perception of fairness, we assumed that personality differences could have an effect on how participants evaluate an assessment and how fair they perceive it. Thus we hypothesized that agreeableness, a personality trait among the "Big Five" (Goldberg, 1992) is associated with the fairness perception of applicants in a game-based assessment.

However interestingly, we found only a weak negative correlation between agreeableness and fairness perception, which in fact was not significant. This finding contradicts earlier assumptions in the literature on the trait of agreeableness and its reactions to assessments. For instance, Oostrom et al. (2010) have argued that scoring low on agreeableness would initially lead to a more negative perception of assessment procedures and also in Truxillo et al.'s (2006) study agreeableness was significantly correlated to fairness. In contrast, the results of our study would have indicated if they had been significant, that lower scores on agreeableness are correlated to a higher perception of fairness. This opposes the initial idea of agreeableness and its inherent drive for fairness (Bernerth et al., 2005).

Study Limitations and Suggestions for Future Research

There are several limitations to our study we want to address. One limitation was the hypothetical context of our survey. We asked our participants to imagine that they are applying for their ideal job at an ideal organization and are thereby assessed in the selection procedure via the two games. Different factors play into the ability of the participants to imagine a scenario involving risks and high stakes (in this case being accepted to the ideal job or not), in an equal manner as being in a real job selection procedure. Higher levels of motivation, imagination and experience are factors that might have made it easier for some

participants to get into the right mind-set. However, to receive a real impression of the effects of the study a job selection scenario closer to reality would have been crucial. This scenario has been created by Bernerth et al. (2005), who tested the role of personality and procedural justice perception in participants. After completing an assessment which was said to be used for an actual organization recruiting from the university, participants were told that successful participants will receive communication with the HR of the company regarding their application to the job. Measures like this could create an actual selection scenario where it becomes important whether the test was perceived as fair or not.

A further limitation was that we failed to provide information beforehand or feedback after the complementation of the games. The participants, therefore, did not have an indication of why and what the games were measuring and how they performed. On the technical limitations, it was only possible to use demo versions of the games "The Ferry" and "Bird Spotting" and we thus do not have data regarding the real versions of the game-based assessments. For future research, the engagement factor of a game-based assessment, which has been recognized as an improvement compared to traditional assessments should be considered (Ellison et al., 2020). Therefore, the use of a finalized version of a GBA may be more beneficial to ensure optimal engagement of applicants in the selection procedure (Landers & Sanchez, 2020).

Another limitation was the sample and our survey. Even though our sample size seemed sufficiently large (N=192) our sample lacked participant diversity and contextual factors that would indicate a certain population. This threatens the possibility of generalizability of the study outcome. We primarily had young (18-25 years of age), male, students participating in our study without any secondary degree and little cultural diversity. Follow-up research could either focus on a specific population or a broader population to increase diversity. A homogenous sample, such as students from a certain study program and university could

create a more specific context. Another option is employees in a company who would have similar assessment experiences due to working in the same company would lead to more specific findings.

Due to many variables that were tested in our survey, our core interest in the role of fairness perception in game-based assessments was ultimately underrepresented. The complex construct of fairness perception was covered by three questions in our survey which cannot capture the multitude of factors that influence fairness perceptions. Additionally, the internal consistency was moderate in our study and previous research (Georgiou & Nikolaou, 2020) and the original scale by Kluger and Rothstein (1993) reported an even lower Cronbach's alpha ($\alpha = .66$). Future research should consider this lack of consistency in fairness scales.

Implications and future research

Despite the limitations of our study, research in game-based assessments is of great interest to companies nowadays because of its progress and improvement in job selection procedures or selection procedures per se. Game-based assessments seem to be more efficient to find the best fits, also because of the difficulty to deceive (Ellison et al., 2020). Organizations should consider what influence applicants' perception of the assessment have on their organization (Ellison et al. 2020), its attractiveness as a place to work and its prestige. Personality differences are an influencing factor, as in most aspects of life, as studies with paper-and-pencil assessments were demonstrating (e.g. Truxillo et al., 2006; Bernerth et al., 2005). Future research could further replicate these findings with newer technological strategies such as game-based assessments to gain more knowledge on how to develop selection and recruiting procedures that are more inclusive and fair for applicants. We focused on reactions and attitudes in our study but future research has a broad field to investigate in.

Conclusion

The aim of our study was to investigate in the relationship of fairness perception with organizational attractiveness and fairness perception with agreeableness. We found supporting evidence for the link between fairness perception and the outcome organizational attractiveness that has been suggested in previous studies, although not in a GBA context. The generality of our results could be established by future research. We did not find any significant support for a relationship between agreeableness and fairness perception, but hope that we inspire future research to investigate further in that link. Overall, our current study adds to a growing field of research in game-based assessments.

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Appendix A

Game-Based Assessments used in the Survey

In the following step, you will perform 2 game-based assessments provided by your ideal company that offers your ideal job. These games will test your logical reasoning (problem-solving ability) as well as your speed/accuracy, to determine your suitability for the role.

To start the assessment you have to click on the links provided below.

Game 1: "The Ferry" (3-5 min)

Game 2: "Bird Spotting" (2-3 min)

Please continue with the questionnaire when you have finished the assessments.

Appendix B

Questionnaire Items: Organizational attractiveness

Please select the most suitable answer: After completing the game-based assessment...

(Answer options: 1= very likely, 2=likely, 3=neutral, 4=unlikely, 5=very unlikely)

General attractiveness

1. I would not be interested in this company except as a last resort.

2. This company is attractive to me as a place for employment.

3. I am interested in learning more about this company.

Intentions to pursue

4. I would accept a job offer from this company.

5. If this company invited me for a job interview, I would go.

6. I would recommend this company to a friend looking for a job.

(Adopted from Highhouse et al., 2003)

Appendix C

Questionnaire Items: Agreeableness

Please choose the most suitable answer option which describes you the most.

(Answer options: 1=extremely, 2=very, 3=slightly, 4=neither, 5=slightly, 6=very, 7=extremely)

1. Cold-warm

2. Unkind-kind

3. Uncooperative-cooperative

4. Unselfish-selfish

5. Rude-polite

6. Disagreeable- agreeable

7. Distrustful- trustful

8. Stingy- generous

9. Inflexible- flexible

10. Unfair- fair

(Adopted from Goldberg, 1992)