Examining the relationship between conscientiousness, perceived fairness and organizational attractiveness in a selection setting using GBA

W.H.R. van der Schoor

S3822958

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 22

Supervisor: dr. S.P. Adams

Second evaluator:

In collaboration with: Fardau van der Werff, David Ulas and Clara Borstelmann.

January 2023

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Abstract

Game-based assessment is a tool that an organization could use to test the skills of applicants applying for a job. This study, based on previous research, aimed to study the relationships between conscientiousness, perceived fairness and organizational attractiveness. Specifically, the individual relationships between conscientiousness and perceived fairness and the between perceived fairness and organizational attractiveness, as well as the mediating effect of perceived fairness on the relationship between conscientiousness and organizational attractiveness. We performed a correlational study based on an experimental design with a sample of 267 participants. Statistical analysis showed evidence for a positive correlation between perceived fairness and organizational attractiveness. No evidence was found for a relation between conscientiousness and perceived fairness, or a mediating effect of perceived fairness on the relationship between conscientiousness and organizational attractiveness. The conclusion states that organizations should choose game-based assessments with high perceived fairness. Further research is needed to create a reliable overview of applicants' reactions and attitudes to, as well as the fairness and validity of game-based assessment.

Examining the relationship between conscientiousness, perceived fairness and organizational attractiveness in a selection setting using GBA

Whenever an employer hires a new employee, they run the risk of hiring someone that is unsuited for the task. For this reason, many different methods have been used to uncover the ideal candidate for the position. Interviews and resumé's are popular techniques, but other methods have certainly been tried, like, flyers, employee referrals, or networking events. The way open positions are filled works very differently nowadays than it did several years ago. Online job-advertisements have the possibility to reach more people. While that may create a higher likelihood of finding the ideal candidate, it also increases the number of unsuitable candidates. Since so many more candidates need to be considered, new assessment methods are needed by employers to get a clear overview of who the applicants are. Methods that are time-efficient and do not require as much manpower are preferred (Ellison et al, 2020).

The other side of the coin is also interesting to look at. Not only is the point of view of the employers interesting, the applicants also have their own feelings and opinions. Applicants are more likely to accept a job if they feel positively towards both the selection procedure and the organization (Bazerman et al., 1994). Employers would not want their ideal candidate to reject the position. Therefore, they need to use a selection method which leaves a positive imprint on the applicants.

A possible method of selection assessment, which might be beneficial for both sides, is game-based assessment. Game-based assessment, or GBA, refers to psychometric methods of assessment that include multiple game elements and assess an individual's ability (Bhatia, 2018). Game elements can differ vastly, from basic aspects such as levels or badges, to more complicated ones like simulations, challenges and situations in which the applicant must apply strategy. (Garris et al., 2002) Game-based assessments that seek to determine personal traits such as reaction speed or cognitive ability, will naturally adopt the more complicated elements. Game-based assessment requires to be differentiated from gamification, which is "the use of game elements to non-game contexts" (Deterding, 2011, p.1). Game-based assessment uses a game, specifically designed for assessment of a certain skill.

Game-based assessment (GBA) has several possible upsides. These include an increased amount of test-taking motivation, decreasing the amount of score contamination due to stress, and an increased validity of measurement, due to gameplay being a behavioural outcome (Landers, 2015). Game-based assessment has also shown to increases the likelihood

of recommending the company to others (Ellison et al, 2020). Game-based assessment has also been shown to be correlated with justice perceptions (Bhatia, 2018). Bhatia suggests this is because people might be in a flow state. Other options could be related to a sense of control over one's own actions. On a personal note, the objectivity of a program might be preferable over the subjectivity of an interviewer.

A downside of game-based assessment is that the research on it is all very new. The first research published on the topic is from 2007 (Kearney, 2007). Due to the limited exploration of the topic, a logical fear is that the games themselves might be biased. It could be argued that people who have previous experience with computer technology, or video gaming in particular, might have an unfair advantage. Apart from technological efficacy, other variables spring to mind. Age and gender might have an effect, although it is possible this could overlap with technological efficacy (Midão et al., 2020). Another possibility is that people of certain cultural or educational background would score differently on these types of assessment, without it indicating a difference in job performance. Finally, people of different personality types might respond differently to game-based assessment.

The focus of the study is on the differentiation between applicant reactions and attitudes towards game-based assessment, based on their personality. The reactions and attitudes of applicants towards game-based assessment are examined. One goal of our research is to discern how different groups of the population react differently to game-based assessment. Do they think it is a fair way to decide whether someone is suitable to the job? Do they have a higher opinion of the company based on this method of recruitment? Questions like this are important for organizations. Logically they will desire the best applicants. If applicants are turned off by the idea of working for a company based on the selection procedure, it might be beneficial for that organization to change their selection procedure, however cheap or efficient. The focus of this study specifically is how perceived procedural justice varies across different levels of conscientiousness, when exposing applicants to game-based assessment. It also seeks to find out what the link is with organizational attractiveness. Specifically, the focus is to determine to what extent the level of organizational attractiveness varies across different levels of conscientiousness, when exposing applicants to game-based assessment, and does perceived fairness have a mediating role in that relationship.

Conscientiousness

According to Roberts et al. (2015), conscientiousness is the ability to control impulses, be goal directed, plan and delay gratification. These traits are considered ideal to be present in one's employees, from an employer's perspective. People with a higher level of conscientiousness have been shown to experience a more positive relationship between family-to work facilitation and job performance compared to people with a lower level of conscientiousness (Srivastava, 2018). It has also been demonstrated that it is positively related to job performance rating itself (Ohme & Zacher, 2015). Given that candidates that record high conscientiousness scores could be seen as optimal contenders, it is natural to assume employees would prefer using methods that would both highlight applicants with high levels of conscientiousness, while also being positively perceived by those same participants. The research on the relationship between level of conscientiousness and opinion of selection systems is limited and does not show a consistent direction. Viswesvaran and Ones (2004) found a moderate negative relationship between conscientiousness and importance of selection system context variables, while Dineen et al. (2004) found a positive relationship between level of conscientiousness and the weight given to procedural justice characteristics. The relationship might differ depending on the assessment method, creating an interesting research point in relation to GBA.

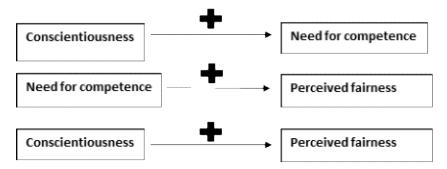
Procedural Justice

Procedural justice is often used interchangeably with procedural fairness. It relies on the idea that the opinion of individuals pertaining to the fairness of the system, is influenced more by the perceived fairness of the process (procedure), than it is by the fairness of the outcome (The Case for Procedural Justice: Fairness as a Crime Prevention Tool, n.d.). Perceptions of procedural justice have an influence over the applicant's decision to accept a job offer (Bazerman et al., 1994, Harold et al., 2015). This naturally leads to a situation in which an employer would be looking for an assessment method which applicants perceive to be procedurally fair and just.

This relationship can be explained through the need for competence. Since a higher level of conscientiousness is correlated with a more satisfied need for competence (Prokesova et al., 2019), and a more satisfied need for competence is correlated with a higher level of perceived fairness, specifically in gamified recruitment (Buil et al., 2020). One could assume that this same relationship works similarly in the setting of a game-based assessment. Therefore, because conscientiousness is positively correlated with satisfaction of the need for competence, and a more satisfied need for competence is correlated positively with a

perceived fairness, we tested whether conscientiousness has a direct positive correlation with perceived fairness.

Hypothesis 1: Conscientiousness is positively correlated to perceived fairness.

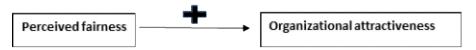


Organizational Attractiveness

Organizational attractiveness is generally referred to as an applicant's "attitude or expressed general positive affect towards an organization" (Aiman-Smith, et al., 2001, p. 221). It is studied in the context of selection procedures, providing an indication to what extent the organization in question is seen as an inviting option. Naturally, an organization will strive to appear as attractive as possible, in order to recruit the best applicants. Lowery, 2017 has found low levels of perceived fairness may have negative impacts such as decreased organizational attraction, a loss of qualified applicants, and potential litigation troubles. Lowery stated that when the organisation was not perceived to be fair, the applicants do not view it as a safe place to work. This would be because the procedure may not be seen as related to the job and does not provide an opportunity for applicants to demonstrate their knowledge, skills, and abilities related to the work.

This provides the second hypothesis for our study.

Hypothesis 2: Perceived fairness is positively correlated to organizational attractiveness.



Current study

Combining these three aspects, our aim is to research the relationship between conscientiousness level and level of perceived fairness, specifically in the situation of a game-based assessment. The two hypotheses already formulated are:

Hypothesis 1: Conscientiousness is positively correlated to perceived fairness

Hypothesis 2: Perceived fairness is positively correlated to organizational attractiveness

These lead to an exploratory hypothesis. If conscientiousness is positively correlated to perceived fairness, which is positively correlated to organizational attractiveness it is possible that there is an indirect effect of conscientiousness on organizational attractiveness, mediated by perceived fairness.

Hypothesis 3: Perceived fairness is a mediator between conscientiousness and organizational attractiveness.

Figure 1.

The mediating effect of perceived fairness on the relationship between conscientiousness and organizational attractiveness



Methodology

Participants and Design

Participants were recruited through social media outreach by the researchers, as well as from a sample of FEB students. In total 267 participants completed the study. In the demographic section, 25 people did not answer the questions. Most of the candidates indicated to be between 18 and 25 (216, 88.9%). The sample comprised 168 (62.9%) males, 73 (27.3%) females, 1 (0.4%) non-binary/third gender, and 1 (0.4%) chose the category "prefer not to say". The first language of the participants varied greatly, with the most common ones being Dutch (159, 59.55%) and German (32, 11.99%). No other first language was represented over 7 times. When asked about their English proficiency, 53 (20.2%) participants indicated a basic understanding, 159 (59.6%) reported a fluent understanding, while 29 (10.9%) reported they possessed a native or bilingual proficiency. In terms of education, 164 (61.4%) reported to have obtained a high school diploma. 46 (17.2%) reported they had some college, but no degree. The rest of the options were barely chosen. Out of our 267 participants, 130 (48.7%) had prior experience with recruitment/selection in the workplace, while 112 (41.9%) did not. When asked about their identity as a gamer, most applicants stated that they like playing video games (65.5%), but most did not identify as playing a lot, being a gamer or playing more than others. Additionally, 31 (11.6%) of the participants had experience with gamebased assessment prior to the study, while 122 (45.7%) did not, and 89 (33.3%) reported that they were not sure. The limitations of the study were that the participants had to have a basic understanding of the English language. The participants were also required to be at least 18 years old.

Measures

The variables measured were conscientiousness, perceived fairness and organizational attractiveness. Conscientiousness was measured using a 7-point Likert scale. On either side of the scale an antonymous word would be placed (example: thorough versus careless for conscientiousness, and rude versus polite for agreeableness). The participants had to choose how much they identified with either of the words. There were ten questions for conscientiousness. For perceived fairness, there were two questions. Each of the questions was measured using a 5-point Likert scale, ranging from "very fair" to "not fair at all". The same scale was used for organizational attractiveness, but that scale used six questions.

Procedure

The procedure of the research was different between two situations. The first situation is that the link to the survey was sent out to people, where they could finish it in their own time, at a location of their own choosing. Either on a laptop, PC, or mobile device. The second situation was that students from the Faculty of Economics and Business at the RUG participated in the study at the Business Research Lab. The procedure for the participants was the same otherwise. Respondents first completed the ethics section. After that they could answer non-mandatory questions related to their demographics. Next, they filled out questions related to their personality or attitudes, pertaining to conscientiousness, agreeableness, technological self-efficacy and self-esteem. After this they played two small games that can be used in workplace recruitment, followed by questions related to their attitudes and reactions towards the game-based assessments.

Results

Analytic Strategy

All analysis but one was conducted using SPSS v. 29. The Sobel Test was used for this extra computation of the mediation effect of perceived fairness on the relationship between conscientiousness and perceived fairness. The hypotheses were checked by individually checking the correlations between the items. This was done as a combined variable, and by correlating each item individually. Subsequently, a regression analysis was performed. The information gained from this was used to test the hypotheses. For one of the questions, the data had to be inversed.

Assumption checks

The assumptions for linear regression were checked for conscientiousness, perceived fairness and organizational attractiveness. None of the variables turned out to be normally distributed. This should be taken into consideration when discussion the results. (Table 1).

Table 1

	Kolmogor			Shapiro-		
	ov-			Wilk		
	Smirnov					
	Statistic	df	Sig.	Statistic	df	Sig.
Conscienti	0.08	211	0.00**	0.99	211	0.03
ousness						
Fairness	0.13	203	0.00**	0.97	203	0.00**
Attractive	0.13	203	0.00**	0.97	203	0.00**
ness						

Hypothesis Testing

Hypothesis 1

The first hypothesis proposed that there would be a positive correlation between conscientiousness and perceived fairness. Table 1.1 shows the overall correlation between conscientiousness and perceived fairness. The correlation (r = -0.003) is nearly zero, suggesting that there is no relation found between the two variables. Each individual item regarding conscientiousness was tested for correlation with each individual item regarding perceived fairness. Here the highest correlation found between two individual items was r = 0.210, which is considered weak. Thereafter, a regression analysis was performed, the results of which are visible in Table 1.2, 1.3 and 1.4. An R Square of 0.000 is found, indicating that 0% of the variance in perceived fairness is accounted for by conscientiousness. Additionally, a significance of p = 0.97 was found. Based on these results, Hypothesis 1 was rejected.

Hypothesis 2

The second hypothesis proposed that there would be a positive correlation between perceived fairness and organizational attractiveness. Akin to the method of Hypothesis 1, Table 2.1 shows the overall correlation between perceived fairness and organizational attractiveness, r = .24. This is higher than the previous one, but still quite low. This suggests a possible weak relationship between perceived fairness, but no strong evidence. In Tables 2.2, 2.3, 2.4 and 2.5, the results of the regression analysis are shown. These show that 5.8% of the variance in organizational attractiveness is explained by perceived fairness. That is very low. The significance test shows a value of p = <0.001, which would indicate that perceived fairness has a small but significant relation to organizational attractiveness. These results provide evidence that supports Hypothesis 2.

Hypothesis 3

The third hypothesis it was proposed that perceived fairness had a mediating effect on the relationship between conscientiousness and organizational attractiveness. To assess this, a regression analysis was performed. This analysis showed the indirect of conscientiousness on organizational attractiveness, via the mediator variable perceived fairness. The results in Tables 3.1, 3.2 and 3.3 show how the indirect effect of perceived fairness was measured. The p-value of the indirect effect is p = 0.97, indicating there is no mediator effect of perceived fairness on the relation between conscientiousness and organizational attractiveness. This leads to the conclusion to reject Hypothesis 3

Table 0.1

Normality test for Conscientiousness

	Kolmogorov- Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Conscientiousness	0.083	211	0.001	0.986	211	0.033

 Table 0.2

 Normality test for Perceived Fairness

	Kolmogorov- Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Fairness	0.125	203	< 0.001	0.972	203	< 0.001

Table 0.3 *Normality test for Organizational Attractiveness*

	Kolmogorov- Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Attractiveness	0.125	203	< 0.001	0.967	203	< 0.001

Table 1.1Overall correlation between conscientiousness and perceived fairness

		Correlation	Count	Lower C.I.	Upper C.I.
Conscientiou	Perceived	-0.003	194	-0.144	0.138
sness	Fairness				

Table 1.2 *Regression analysis on conscientiousness and perceived fairness: correlations*

		Fairness	Conscientiousness
Pearson Correlation	Fairness	1.000	-0.003
	Conscientiousness	-0.003	1.000
Sig. (1-tailed)	Fairness		0.485
	Conscientiousness	0.485	
N	Fairness	194	194
	Conscientiousness	194	194

Table 1.3

Regression analysis on conscientiousness and perceived fairness: Model Summary

Model	R	R Square	Adjusted R	Std. Error of the
			Square	Estimate
1	0.003	0.000	-0.005	0.81106

 Table 1.4

 Regression analysis on conscientiousness and perceived fairness: ANOVA

Model		Sum of	df	Mean	F	Sig.
		Squares		Square		
1	Regression	0.001	1	0.001	0.001	0.969
	Residual	126.301	192	0.658		
	Total	126.302	193			

Table 2.1Overall correlation between perceived fairness and organizational attractiveness

		Correlation	Count	Lower C.I.	Upper C.I.
Conscientiou	Perceived	0.241	202	0.107	0.367
sness	Fairness				

 Table 2.2

 Regression analysis on perceived fairness and organizational attractiveness: correlations

		Fairness	Conscientiousness
Pearson Correlation	Fairness	1.000	0.241
	Conscientiousness	0.241	1.000
Sig. (1-tailed)	Fairness		< 0.001
	Conscientiousness	< 0.001	
N	Fairness	202	202
	Conscientiousness	202	202

 Table 2.3

 Regression analysis on perceived fairness and organizational attractiveness: Model

 Summary

Model	R	R Square	Adjusted R	Std. Error of the
			Square	Estimate
1	0.241	0.058	0.054	0.71009

Table 2.4

D .	7 .	. ,.	7	. 1	c ·	1370T71
Regression	analysis o	n conscientiousness	and	nerceived	tairnocc.	AN(I)VA
Tregression	analysis of	i conscientionsness	$\alpha n \alpha$	percervea	juii iicss.	21110721

Model		Sum of	df	Mean	F	Sig.
		Squares		Square		
1	Regression	6.237	1	6.237	12.369	< 0.001
	Residual	100.845	200	0.504		
	Total	107.082	201			

 Table 2.5

 Regression analysis on conscientiousness and perceived fairness: Coefficients

Model		Unstandardized	Coefficients	Standardized	t	Sig
		В	Std. Error	Coefficients		
				Beta		
1	(Constant)	1.827	0.190		9.633	< 0.001
	Fairness	0.219	0.062	0.241	3.517	< 0.001

Table 3.1Regression analysis on the mediating effect of perceived fairness on the relation between conscientiousness and organizational attractiveness: Coefficients of conscientiousness

Model		Unstandardized		Standardized	t	Sig
		В	Std. Error	Coefficients Beta		
				Deta		
1	(Constant)	2.955	0,263		11.234	< 0.001
	Conscienti	-0.003	0.082	-0.003	-0.038	0.969
	ousness					

Table 3.2

Regression analysis on the mediating effect of perceived fairness on the relation between conscientiousness and organizational attractiveness: Coefficients of conscientiousness and perceived fairness

Model		Unstandardized	Coefficients	Standardized	t	Sig
		В	Std. Error	Coefficients		
				Beta		
1	(Constant)	1.297	0.294		4.409	< 0.001
	Conscienti	0.168	0.071	0.163	2.347	0.020
	ousness					
	Fairness	0.214	0.063	0.237	3.413	< 0.001

Table 3.3

Regression analysis on the mediating effect of perceived fairness on the relation between conscientiousness and organizational attractiveness: Sobel test of mediator effect

	Input
A: Correlation Conscientiousness and	-0.003
Perceived Fairness	

B: Correlation Perceived Fairness and	0.214
Organizational Attractiveness	
Standard Error A	0.082
Standard Error B	0.063

Test	Test statistic	Standard Error	<i>p</i> -value
Sobel Test	-0.037	0.018	0.971
Aroian Test	-0.035	0.018	0.972
Goodman Test	-0.038	0.017	0.969

Discussion

Game-based assessments are a relatively new method of selection, that has several clear advantages. As selection has been under scrutiny in the past, any new method would need to be examined, as to avoid issues such as gender bias (Heilman et al., 2015).

The purpose of this study was to investigate the relationship between the personality aspect conscientiousness and the applicant reactions and attitudes, specifically perceived fairness and organizational attractiveness. As a result of this, the first hypothesis states that conscientiousness is positively correlated to perceived fairness.

The results do not support Hypothesis 1. In opposition to the inference drawn based on the research that found a positive correlation between conscientiousness and the need for competence (Prokesova et al., 2019) and the need for competence and perceived fairness (Buil et al., 2020), conscientiousness is an ineffectual predictor for perceived fairness in this sample. It explains 0% of the variance and has a negligible positive correlation. A possible reason for this might be that the sample consisted of young people, many of whom did not have previous experience with recruitment procedures. It is possible this may affect their perception of what a fair recruitment procedure consists of. Perhaps a sample that has on average more experience with recruitment can more clearly compare game-based assessment to the types of assessment they are used to. It seems possible this would yield different results. Another possibility is that the game-based assessments used in this research were not designed in a way that allows for the need for competence to be filled, at least to a significant extent. Given that the previous findings based their results on studies using more job-specific games, it might be that those job-specific games were vital in fulfilling of the need for competence. When this factor is affected, relationship between conscientiousness and perceived fairness is as well.

Given that one of the proposed advantages of game-based assessments is a higher level of perceived fairness, this research aimed to study the relationship between perceived fairness and organizational attractiveness as well. Therefore, the second hypothesis suggests a positive correlation between perceived fairness and organizational attractiveness.

Hypothesis 2 was supported by the findings. As expected from the research conducted by Lowery (2017), perceived fairness was found to be positively correlated with organizational attractiveness. While the correlation is weak, and the variance in organizational attractiveness explained by perceived fairness is low, it was found to be significant. The positive correlation between perceived fairness and organizational attractiveness not only feels logical, it is reported in multiple different studies (Georgiou & Nikolaou, 2020; Lowery, 2017), even rejected candidates report higher levels of organizational attractiveness when they felt the procedure was fair (Schinkel et al., 2013). A fair way of assessment could indicate a good understanding of what the job needs.

The earlier proposed separate relationships are between conscientiousness and perceived fairness, and perceived fairness and organizational attractiveness. We proposed that if there is a positive correlation between conscientiousness and perceived fairness, as well as a positive correlation between perceived fairness and organizational attractiveness, perceived fairness would mediate the relationship between conscientiousness and organizational attractiveness. Based on this, the third hypothesis suggest an indirect relationship between conscientiousness and organizational attractiveness mediated by perceived fairness.

The results did not support the third hypothesis. Given that no evidence was found for a relationship between conscientiousness and perceived fairness, the mediation hypothesis between perceived fairness conscientiousness and organizational attractiveness was brought into question. The same arguments for the rejection of the first hypothesis apply here. The study utilized a sample of young people, with limited job experience. In a study that aims to research work-related situations, it seems plausible that job experience would have an impact. The same goes for the game-based assessments themselves. As stated earlier these were not designed specifically for the job that the applicants had in mind. The situation might be that our subjects did not feel like they were a proper reflection of the job-specific skills they feel are needed for the job they have in mind. This may affect the levels of perceived fairness and organizational attractiveness.

Theoretical and practical implications

The results of this study add to the existing literature regarding recruitment in general, and more specifically to recruitment using game-based assessment. Our results show no significant relation between the personality trait conscientiousness and the reactions of perceived fairness or organizational attractiveness. Given the limitations of our research and the existing literature that supports this phenomenon, there is reason to believe it can be found in future research. Our research highlights several factors that could influence the process of recruitment through game-based assessments. One of these is perceived fairness. We found that a higher level of perceived fairness indicated a higher level of organizational attractiveness. This means that organizations interested in using game-based assessments should focus on different points. One of their goals should be to utilize game-based assessments that score high in perceived fairness, since this will likely correspond to a higher level of organizational attractiveness, leading to a higher likelihood of the desired applicants accepting a hypothetical job offer. Furthermore, organizations should be aware that different groups may respond differently to game-based assessment. Before using it as a method of selection, it would be best to consider their target group, or likely group of applicants, and check the whether the existing literature contains useful information.

Strengths and limitations

In our study there are several strengths to be highlighted. Our sample consisted mainly of students from the same age group (18-25) and nationalities (Dutch and German). This is helpful, since it lowers the likelihood of alternative explanations or inconsistencies in the results. While it decreases the generalizability, it increases the value the study has for a specific group. The availability of actual game-based assessments is another strength to our study. The ability for the applicants to play the game-based assessments highly increases the validity of their reported attitudes and reactions.

The study is not without limitations either. The game-based assessments were not specifically designed for a certain field of work. Instead, they tested general cognitive abilities. While this did allow us to accrue a larger sample, it possibly limited the experience of the subjects. A more intensive game, related more closely to the job that our subjects would be applying for, would result in a clearer idea of what the reaction to game-based assessment would be. Furthermore, the homogeneity of the sample does not allow for generalization. Given that our sample was young, mainly from only two nations, of the same education level, experienced with technology and unexperienced with workplace recruitment, means that a large portion of the applicant population was not accounted for in this sample.

There was no control group either, which created a situation in which we could not compare our findings to a group that did not take part in a game-based assessment. Lastly, the participants were under no real pressure throughout the study. There was a time element to the game, but no punishment or reward based on their performance. In a situation where the job of an applicant is actually on the line, reactions and attitudes might be different.

Future research

In line with the limitations mentioned, future research should aim to create a situation that would be more representative of a recruitment process. Primarily with the use of games related to specific jobs. While using a game specifically designed for a certain branch of work may lower the generalizability of the research, it highly increases the validity of the results. Firstly, because it would allow participants to feel more engaged in the game itself. By putting them in a situation they might actually encounter, it is possible they would answer more truthfully and be more motivated to perform. Secondly, there might be differences in reactions and attitudes towards game-based assessment between different types of work. By separating them from each other, the possibility of these differences influencing results are eliminated. Aside from that, more diverse samples should be used in order to create a proper idea of reactions and attitudes towards game-based assessment. This could be done in the form of fewer, heterogenous studies or multiple homogenous studies on different groups. Future research should also try and compare game-based assessment to other forms of recruitment. The conclusions derived from it mean very little when not compared to other methods. The element of motivation is also one that future studies should try to include. Possibly in the form of a reward for the best performing subject(s).

Conclusion

The novelty of gamified recruitment is a strong argument for the necessity of future research (Vardarlier, 2021). The efficiency of game-based assessments could be a popular motivator for organization to implement them heavily into their selection processes. This study found evidence for a positive correlation between perceived fairness and organizational attractiveness. While this may not be the case exclusively in settings using game-based assessment, it does highlight a focus point for organizations on what selection procedure to choose. There are several variables that could have an effect, that still need to be studied. If game-based assessments are to become a mainstream method of selection, there needs to be substantial evidence for its validity and fairness.

References

- Aiman-Smith, L., Bauer, T.N. & Cable, D.M. Are You Attracted? Do You Intend to Pursue?

 A Recruiting Policy-Capturing Study. *Journal of Business and Psychology* **16**, 219–237 (2001). https://doi-org.proxy-ub.rug.nl/10.1023/A:1011157116322
- Bazerman, M. H., Schroth, H. A., Shah, P. P., Diekmann, K. A., & Tenbrunsel, A. E. (1994).

 The Inconsistent Role of Comparison Others and Procedural Justice in Reactions to

 Hypothetical Job Descriptions: Implications for Job Acceptance Decisions.

 Organizational Behavior and Human Decision Processes, 60(3), 326–352.

 https://doi.org/10.1006/obhd.1994.1088
- Bhatia, S. (2018). Applicant reactions to game-based assessments: The effect of flow, fairness, and fit. *Dissertation Abstracts International*, 79(9-B).
- Bertogg, A., Imdorf, C., Hyggen, C., Parsanoglou, D., & Stoilova, R. (2020). Gender

 Discrimination in the Hiring of Skilled Professionals in Two Male-Dominated

 Occupational Fields: A Factorial Survey Experiment with Real-World Vacancies and

 Recruiters in Four European Countries. KZfSS Kölner Zeitschrift Für Soziologie Und

 Sozialpsychologie, 72(S1), 261–289. https://doi.org/10.1007/s11577-020-00671-6
- Buil, I., Catalán, S., & Martínez, E. (2020). Understanding applicants' reactions to gamified recruitment. *Journal of Business Research*, 110, 41–50.
 https://doi.org/10.1016/j.jbusres.2019.12.041
- Deterding, S. (2011), "Situated motivational affordances of game elements: a conceptual model", paper presented at, CHI 2011, Vancouver, BC, p. 2.
- Dineen, B. R., Noe, R. A., & Wang, C. (2004). Perceived Fairness of Web-Based Applicant Screening Procedures: Weighing the Rules of Justice and the Role of Individual Differences. *Human Resource Management*, 43(2–3), 127–145. https://doi-org.proxy-ub.rug.nl/10.1002/hrm.20011

- 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
- Fetzer, M., McNamara, J., & Geimer, J. L. (2017). Gamification, Serious Games and Personnel Selection. *The Wiley Blackwell Handbook of the Psychology of Recruitment, Selection and Employee Retention*, 293–309.

 https://doi.org/10.1002/9781118972472.ch14
- Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, Motivation, and Learning: A Research and Practice Model. *Simulation & Amp; Gaming*, 33(4), 441–467. https://doi.org/10.1177/1046878102238607
- Georgiou, K., & Nikolaou, I. (2020). Are applicants in favor of traditional or gamified assessment methods? Exploring applicant reactions towards a gamified selection method. *Computers in Human Behavior*, 109, 106356.

 https://doi.org/10.1016/j.chb.2020.106356
- Harold, C. M., Holtz, B. C., Griepentrog, B. K., Brewer, L. M., & Marsh, S. M. (2015).
 Investigating the Effects of Applicant Justice Perceptions on Job Offer Acceptance.
 Personnel Psychology, 69(1), 199–227. https://doi.org/10.1111/peps.12101
- Heilman, M. E., Manzi, F., & Braun, S. (2015). Presumed incompetent: perceived lack of fit and gender bias in recruitment and selection. *Handbook of Gendered Careers in Management*, 90–104. https://doi.org/10.4337/9781782547709.00014
- Landers, R. N. (2015). An Introduction to Game-based Assessment: Frameworks for the Measurement of Knowledge, Skills, Abilities and Other Human Characteristics using Behaviors Observed within Videogames. *International Journal of Gaming and Computer-Mediated Simulations* 7(4):Iv-Vii, 7(4), 4–7.

- https://www.researchgate.net/publication/281274750_An_Introduction_to_Game-based_Assessment_Frameworks for the Measurement of Knowledge Skills Abilities and Other Human Characteristics using Behaviors Observed within Videogames
- Lowery, Byron Shane, "Unfriend Me! Applicant Reactions to the Use of Social Networking Information During the Hiring Process" (2017). LSU Doctoral Dissertations. 4148. https://digitalcommons.lsu.edu/gradschool_dissertations/4148
- Midão, L., Pedreiro, E., Pinho, M. S., Dias, I., Almada, M., Garcia, K. R., Rodrigues, L. S.,
 Christensen, C., Pereira, P. T., Bertram, M., Busse, G., Quarta, B., Poulain, M. M.,
 Heery, D., Ruseva, G., Irbe, M. M., Amaral, M., & Costa, E. (2020). Computer Skills
 Among the Community-Dwelling 55+ European Population Based on Survey of
 Health, Ageing, and Retirement in Europe. *International Journal of Digital Literacy*and Digital Competence, 11(1), 31–45. https://doi.org/10.4018/ijdldc.2020010102
- Ohme, M., & Zacher, H. (2015). Job performance ratings: The relative importance of mental ability, conscientiousness, and career adaptability. *Journal of Vocational Behavior*, 87, 161–170. https://doi.org/10.1016/j.jvb.2015.01.003
- Prokesova, L., Vaculik, M., Kasparkova, L., & Prochazka, J. (2019). An integrated model of work engagement: How the satisfaction of basic psychological needs explains the relationship between personality and work engagement. *Psihologija*, *52*(3), 265–284. https://doi.org/10.2298/psi181204004p
- Roberts, B. W., Jackson, J. J., Fayard, J. V., Edmonds, G., & Meints, J. (2009).
 Conscientiousness. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 369–381). The Guilford Press.

- Schinkel, S., van Vianen, A., & van Dierendonck, D. (2013). Selection Fairness and

 Outcomes: A field study of interactive effects on applicant reactions. *International Journal of Selection and Assessment*, 21(1), 22–31. https://doi.org/10.1111/ijsa.12014
- Srivastava, S. (2018). Family-to-work interface and job performance: The moderating influence of conscientiousness. *Indian Journal of Community Psychology*, 14(2), 273–291. https://link.gale.com/apps/doc/A567426509/AONE?u=groning&sid=bookmark-AONE&xid=8ffc99a9
- The Case for Procedural Justice: Fairness as a Crime Prevention Tool. (n.d.). Retrieved

 October 30, 2022, from https://cops.usdoj.gov/html/dispatch/09-2013/fairness as a crime prevention tool.asp
- Vardarlier, P. (2021). Gamification in human resources management: An agenda suggestion for gamification in HRM. Research Journal of Business and Management, 8(2), 129-139.
- Viswesvaran, C., & Ones, D. S. (2004). Importance of Perceived Personnel Selection System Fairness Determinants: Relations with Demographic, Personality, and Job Characteristics. *International Journal of Selection and Assessment*, 12(1–2), 172–186. https://doi.org/10.1111/j.0965-075x.2004.00272.x