Perceptions and attraction: A mediating analysis of Game-based Assessment in personnel selection

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Abstract

This study aims to explore the influence of Game-based Assessment on participants reactions in recruiting. We are making use of the organizational justice framework and Signaling theory to understand how process satisfaction, perceived predictive validity and organizational attractiveness can be enhanced. We compared the results of the Game-based Assessment methods to Traditional Assessment methods. The participants, in total 338 employees, were either assigned to the digital version of the Wisconsin Card Sorting Test (WCST) or the gamified version, the Gamified Set Shifting Task (GSST). To test the hypotheses, we conducted a regression- and mediation analysis and tested whether scores of GSST are higher than the WCST scores. We found positive correlations of the variables. However, against our theoretical postulation, we found no mediation effect between the study variables. Furthermore, we have not found evidence for the higher scores in the GSST Group. Despite the absence of foundational findings supporting our hypotheses, the study highlights the importance and the need for further investigation of Game-based Assessment methods.

Keywords: Game-based Assessment, process satisfaction, perceived predictive validity, and organizational attractiveness

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Introduction

In the constantly changing environment of recruitment and selection, it is crucial for companies to look for innovative methods to attract and identify the most qualified candidates. The choice of the right candidates is important for the organization's short- and long-term success in terms of productivity, self-efficacy and the adaptation to the job and the team. A good fit to the position can come with improved problem-solving thinking and advances in the work environment (Griffin & Hesketh, 2003).

Investing time and resources in assessment is necessary to increase the probability of long-term employment and eventually lessen the need for repeated recruitment. Because poor hiring decisions can be a potential threat for the organization's work environment and consequently costly for new recruitment selections. Therefore, the organizations profit from choosing the right candidate and minimize the likelihood of termination costs (e.g. Wells, 2013; Zeuch, 2014).

But how do organizations assess their potential employees? Lately, there has been a rise of studies on the application of gamification in the selection of employees (Georgiou et al., 2019). Gamification means that game elements are included in non-game contexts (Deterding et al., 2011). With reference to personnel selection, these game design elements can be added to traditional psychometric assessment to enhance the engagement (Armstrong et al., 2016).

According to Georgiou et al. (2019) the application of gamification outclasses traditional assessment methods in terms of providing predictive validity and preliminary evidence of their construct. Applicant reactions can have immediate and long-term

consequences for hiring decisions and willingness to take on the job offer. This aspect piques the interest of researchers in the field of employee selection. Here, the question arises of what kind of variables and assessment can predict a good choice of employees and furthermore how this assessment leads to organizational attractiveness in the perspective of current and potential future employees (Ryan & Polyhart, 2000).

As a potential employee's positive reactions to the assessment in the matter of enjoyment, job relatedness and acceptance (Kanning et al., 2006) might influence the perception of the organization' attractiveness (Georgiou & Lievens, 2022; Macan et al., 1994), we aim to explore these findings in terms of successful selection.

In this study, which is based on the insightful study of Georgiou and Nikolau (2020), our primary goal is to examine the complex dynamics surrounding influence of Process satisfaction on Organizational attractiveness. Georgiou and Nikolau (2020) discovered a mediating effect associated with process satisfaction, which led us to further explore the relationships between these two key variables. By inspecting the potential mediating effect of process satisfaction, we aim to examine how the satisfaction of processes within the assessment can contribute significantly to shaping the organization's attractiveness.

Additionally, we will expand our scope to investigate the variable of predictive validity, motivated by the enthralling findings of Hommel et al. in 2021 and various other studies, as Georgiou et al. in 2020. Predictive validity has been found to be a strong predictor of academic performance and stimulates us to question its impact on personnel selection methods. As we explore these variables, we seek to uncover the (multiple) connections between predictive validity and its impact on successfully predicting job performance in organizational settings.

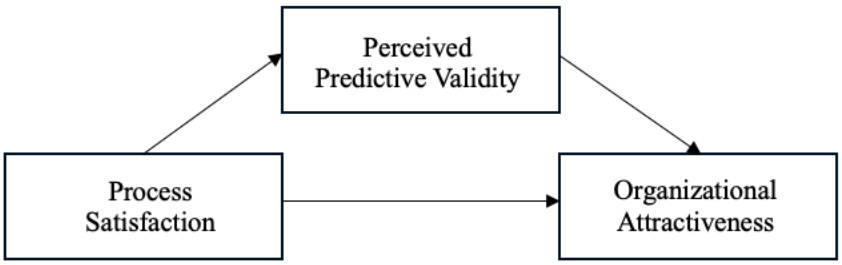
Essentially, we unfold our research in the context of Game-Related assessment and specifically on Game-Based Assessment, as it has been found to be an emerging area that has

attracted great attention. This innovative assessment method integrates game design elements into traditional psychometric assessments, as emphasized by researchers as Armstrong et al. in 2016. In our study, we will carefully analyze the use of Game-Based Assessment (compared to Traditional Assessment) and examine how these methods potentially reinforce the effects of process satisfaction and predictive validity on organizational attractiveness.

In brief, this study seeks not only to contribute to the existing knowledge of Georgiou et al. (2020) but also to expand our understanding of how the interplay between process satisfaction and perceived predictive validity can influence the perception of potential employees on organizational attractiveness. Those variables will be tested on Traditional Assessment and Game-Based Assessment. The theoretical model is represented in Figure 1.

Figure 1.

Theoretical model.



Game-Related-Assessment

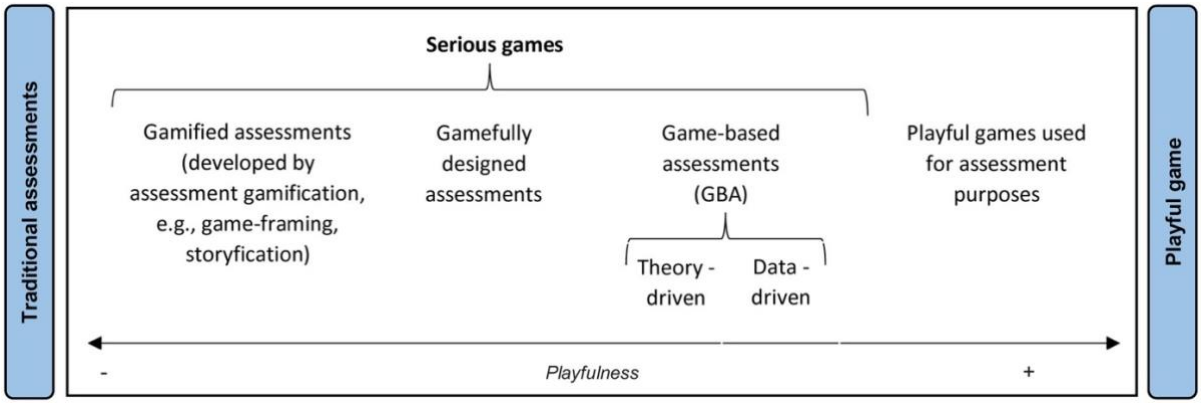
Game-Related Assessment can be divided into Game-based-, Gamefully-designed- and Gamified-assessments (See Figure 2; Pedro et al., 2022). Game-based assessment (GBA) is very similar to the existing psychometric assessment methods of assessment center and simulation. GBA can be designed so the player needs to engage in skills and behaviors that are required for the job (Landers & Sanchez, 2022). An example of gamefully designed assessment is given by Georgiou et al. (2019), who combined fantasy,

progress tracking game and story elements to gauge the participants' flexibility and decision-making. Gamified assessment integrates game design elements to traditional methods for example in personality questionnaires (e.g. Georgiou et al., 2019; Landers et al., 2020). Landers (2015) reported that the gamified assessments may increase the accuracy of measurement, the quality and consequently improves the experience of the candidate. This would make the gamified assessment more attractive to organizations than the traditional assessment methods.

Hommel et al. (2021) created a gamified assessment, which added for example the mechanisms of feedback or reward systems to expand the probability of success to an existing assessment. Ensuring this information in terms of applicant reactions, it is of interest whether game-related-assessment is more likely to increase organizational attractiveness as opposed to Traditional Assessment. Since the right assessment choice can help to reduce the risk of choosing the wrong candidate and consequently reduce the waste of time and costs. Additionally, it is interesting for organizations, as the usage of assessment methods leading to organizational attractiveness might increase the number of applicants and lead to finding the right candidate for the job. Furthermore, we would like to enhance our knowledge on applicant reactions and Game-Based-Assessment including its outcomes in terms of recruitment. Therefore, we will focus on Gilliland's Model of Organizational Justice Theory and Signaling Theory. We want to find out how the processes are influencing the perceptions of the participants and their attraction to organizations.

Figure 2.

A classification of game-related assessments



Gilliland's Model - Organizational Justice Theory

Gilliland's Model (Figure 3) is a theoretical basis that discusses applicants' reactions to employment selection systems (Gilliland, 1993). Central to this model are procedural justice rules and distributive justice rules, which influence the outcome of the hiring process and the applicants' perceptions of fairness. Perceptions of organizational justice within assessment procedures, as revealed by Smither et al. (1993), are strongly related to various recruitment outcomes, including job search decisions and attractiveness.

From here, follow APA7 guidelines as explained in the (online) resources. Note that the headings of a paper depend on the type of paper, journal policies and personal preferences. Pay special attention to the formatting of tables and figures.

The application of Gilliland's Theory of Organizational Justice (Gilliland, 1993) exceeds a basic theoretical construct as it provides a solid basis for understanding and analyzing the dynamics of Organizational Justice in terms of employment selection. A central aspect of Gilliland's model concerning the fairness of procedures in selection processes is Procedural justice. It is especially of interest to the present discussion as it provides a lens

through which we can explore the integration of perceived predictive validity and process satisfaction into Gilliland's model.

Here, the model is especially helpful to get insight into the game components that create more positive reactions of the assessment method and enhance organizational attractiveness (Georgiou et al., 2020). At first, we look at perceived predictive validity within the organizational justice theory. Perceived predictive validity describes to what extend the participant believes that the assessment method used predicts job performance (Hausknecht et al., 2004).

Regarding the domain of Procedural Justice, perceived predictive validity can be viewed as an additional procedural rule. This rule controls the perceived accuracy and relevance of the assessment characteristics (Gilliland, 1993). In this context, participants will view the selection process as fair when they sense high levels of perceived predictive validity. This aligns with the perception of fair assessment methods. Gilliland (1993) described the model of Organizational justice theory by influencing the participants reactions to the assessment and in turn shaping their perceptions of fairness. Integrating perceived predictive validity aligns with this model as it contributes to the satisfaction of selection procedures.

Secondly, for further understanding of the model we integrated process satisfaction. Process satisfaction summarizes the satisfaction with the procedures and methods used in the assessment. This aligns with the Procedural justice rules by Gilliland as high measures in process satisfaction led to perceiving the assessment methods as transparent and consistent (Harris, 2000; Gilliland, 1993).

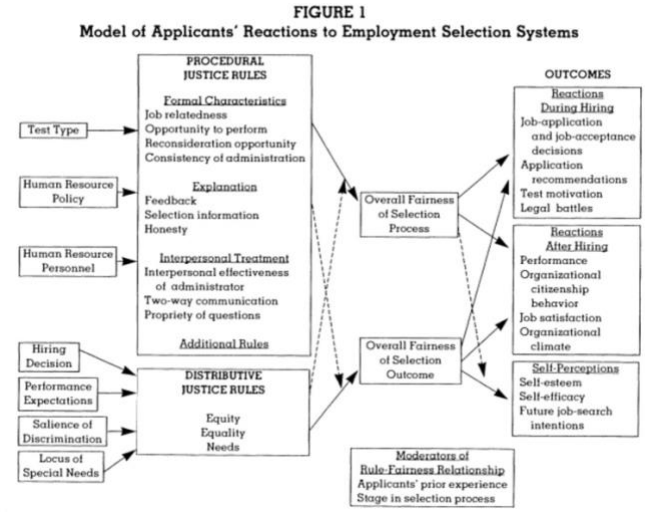
On the one hand, process satisfaction contributes to the overall perception of fairness in the participants and consequently reflects Procedural justice. On the other hand, candidates that are satisfied with the assessment methods are more likely to show positive reactions and

in turn view the organization as more attractive (Macan et al., 1994). Hence, the model of Organizational justice by Gilliland can be used to show the positive relationship between process satisfaction, applicant reactions and consequently organizational attractiveness.

In conclusion, perceived predictive validity and process satisfaction can be integrated into Gilliland's Organizational justice model. Here, perceived predictive validity can be seen as an additional procedural rule and process satisfaction as an extra component of Procedural justice. Following, we gain a more comprehensive understanding of the participants reactions and the influence of organizational attractiveness in the dynamics of Organizational justice (Georgiou & Nikolau, 2020). In the context of employment selection, the model of Gilliland provides insight into optimizing organizational attractiveness to potential employees.

Figure 3.

Organizational Justice Theory by Gilliland.



Organizational attractiveness and Signaling theory

Organizational attractiveness is defined by applicants' position towards the organization as a possible employer (Wilhelmy et al., 2012) and is crucial in terms of assessment and participants reactions. That positive reactions of the assessment might spill over to the perception of the organization is also highlighted by the study of Georgiou et al. (2022). This effect is specifically important in the context of Game-based assessment, as applicant reactions influence the perceived effectiveness of the assessment and the attractiveness of the organization (Bauer et al., 1998).

To gain a comprehensive understanding of these complex dynamics, we also turn to Signaling theory, which plays a central role in our research. Signaling theory (Spence, 1973) suggests that organizations communicate their values and commitment to potential employees through various signals, with the employment process being a significant signal. Through Game-Related-Assessments, companies signal their acceptance of innovative technology and consequently their commitment to modernization. It also shows their commitment to providing an engaging work environment. These signals, according to Signaling theory, in turn shape the applicant's perception of the organization and influence the motivation of displaying interest in the company, namely the company's attractiveness as an employer (Celani & Singh, 2011, Spence, 1973).

Support for the relationship between Signaling theory and the use of gamification in assessment on organizational attractiveness is evident in studies such as Georgiou et al. (2020). They found that implementing gamification in assessment processes could bring a more appealing image of the employer to the potential employee by enhancing satisfaction and perceived fairness during the selection process, thereby expending the span of research on applicant reactions. Additional, Georgiou et al. (2020) found that "game-like experiences are

by nature enjoying, motivating and engaging", and in turn can serve as signals that candidates interpret in the job and organization values and attributes (Spence, 1973; Celani & Singh, 2011).

Georgiou et al. (2020) also tested the effect of perceived predictive validity and process satisfaction on process satisfaction and found a full mediation between the assessment method and fairness through process satisfaction. They also found that there was no direct effect of fairness on the assessment method but an indirect effect of fairness through process satisfaction, indicating that higher levels of perceived fairness is channeled through process satisfaction. But in turn, they did not find a significant effect through applicant's predictive validity perceptions.

In line with previous research by Hausknecht et al. (2004), Georgiou et al. (2020) found support for more favorable perceptions of the organization when a selection method is favored. They also found a partial mediation through process satisfaction and fairness perceptions between the method of assessment and organizational attractiveness. It can be assumed that inclusion of game fiction in assessment methods emerges as a signal to applicants, suggesting that the organization may be fairer and more favorable to work in and consequently more attractive compared to traditional assessment (Georgiou et al., 2020).

To sum up, applicant reactions and the inclusion of game fiction in assessment rises in importance for organizations as effort is made to enhance organizational attractiveness and employer branding. Therefore, it is important to look at the reciprocity of Signaling theory, perceived predictive validity and process satisfaction to gain understanding of how game elements impact the applicants' perceptions of organizations as potential employers.

Process satisfaction and organizational attractiveness

Process satisfaction describes how well the recruitment method and the expectations affiliate. Georgiou and Nikolau (2020) found significant levels of process satisfaction when gamified assessment was used. They also found that the participants in the gamified assessment, perceived higher levels of process satisfaction positively influenced the perceptions of test fairness compared to the traditional assessment group. These findings in combination with the model of Gilliland, which includes the perceptions of the applicants and their process satisfaction, are fundamental in the search of answers for the research of how process satisfaction influences organizational attractiveness. Accordingly, positive perceptions about the process might imply that the organization the participant applied for is fair and subsequently increases attractiveness in the company (Georgiou et al, 2020). Thus, we expect process satisfaction to be positively related to organizational attractiveness.

Hypothesis 1: Process satisfaction and organizational attractiveness are positively related, and the scores are higher in the GSST-Group.

Perceived predictive validity and organizational attractiveness

Perceived predictive validity, another applicant procedural justice perception, describes how and to what extent a method seems to be valid and predict the future performance in a job (Hausknecht et al., 2004). As stated before, research has found that including game elements in assessment methods can elicit positive perceptions of perceived predictive validity. In the context of new assessment methods Hausknecht et al. (2004), and other studies as Bauer et al. (2006), found support for the mediating role of procedural justice perceptions, including perceived predictive validity, on organizational attractiveness.

In our model, we propose that perceived predictive validity serves as a mediator in the relationship between process satisfaction and organizational attractiveness. We suggest that participants engage in Game-based Assessment and are satisfied with the process.

Consequently, the participant believes that the assessment accurately predicts job performance. Attributing to the Signaling theory, the positive perception of perceived predictive validity becomes a signal to the participants about organizational attractiveness in terms of fair selection processes and potential employer selection.

Therefore, the proposed model assumes that the positive influence of process satisfaction on organizational attractiveness is mediated by perceived predictive validity. We propose that the positive perceptions and satisfaction resulting from Game-based Assessment influence the beliefs of the participants in the validity of the assessment. In succession, it leads to greater organizational attractiveness as perceived predictive validity of the assessment signals the organization to use fair and effective methods in hiring.

Therefore, we propose the following hypotheses.

Hypothesis 2: Perceived predictive validity and organizational attractiveness are positively related, and the scores are higher in the GSST-Group

Hypothesis 3: Perceived predictive validity has a mediation effect on process satisfaction and organizational attractiveness, and the scores are higher in the GSST-Group.

Method

Participants

Data for this study came from 383 German-speaking participants. First, we used syntax in SPSS to delete all incomplete cases and to find the cases where the questions were answered with a “3” more than eight times, called “Fence sitting”. After this step, we manually checked for response biases where the same response was given more than seven times in a row and for those cases where no consent was given. We have found 42 cases to delete for Fence sitting and 3 cases for no consent given. After running the syntax file, 338 cases were left.

For this study, we considered the participants that were assigned to the gamified version and the digital version of the Wisconsin Card Sorting Task. Therefore, 183 cases were assigned to the Wisconsin Card Sorting Task and 155 cases in total were left for the gamified version (Appendix Table 1). The research sample of the WCST-Group consisted of 87 females (47%), 93 males (51%), 1 non-binary participant (1%) and 2 no specified participants (1%). The mean age was 30.9 years (*SD* = 10.4) and ranged from 18 to 65 years. The GSST-Group consisted of 84 females (54%), 69 males (45%) and 2 non-binary participants (1%). The mean age was 32.1 years (*SD* = 11.43) and ranged from 18 to 71 years.

Procedure

This paper is based on a larger study that was approved by the Ethics committee of the Faculty of Social and Behavioral Sciences of the University of Groningen. Participants were approached via social media or gathered through Prolific. They received a link that led them to the study on Qualtrics. First, subjects were provided with details about the aims of the study, with contact details for the researchers, Ethics Committee and the Data Protection Officer of the University of Groningen provided in case of queries or concerns. After completing their demographic information, subjects were asked to imagine a scenario in which they are applying for a Marketing Director position at a company and have been invited to participate in a selection assessment.

Participants were then directed to the main study where they were randomly assigned to either complete a digital version of the Wisconsin Card Sorting Task, a test that measures one's cognitive flexibility and problem-solving skills by having the subject sort cards to unknown rules which must be deduced on the go, (Stoet, 2017; www.psytoolkit.org) or an adapted, gamified version - Hommel et. al.'s (2021) Gamified Set Shifting Task. In the latter, instead of matching cards, participants had to match items and select a suitable person out of

five target groups. After a short introduction by a fictitious marketing manager who introduced the task, the five target groups were shown. They were represented by five avatars. The market items were displayed one at a time. Afterwards, participants received a virtual budget of $10.000 and were told to increase the organization's profit by correctly allocating the items to the five avatars. Correct allocations are awarded with an increase in budget of $500, while wrong decisions decrease the account balance by $500. In the study, performance graphs and account balances are shown to indicate the candidate's process. All instructions were in German and the questionnaire was also translated to German.

Subjects took part in the study voluntarily and provided consent beforehand. Participants recruited through Prolific received 7,28€ per hour. The remaining participants were not compensated.

Once the questionnaire was completed, the participants were debriefed about the aim (comparing the answers based on the assessment that was taken) and the settings of the two research conditions. Lastly, participants were asked if they still consented to the use of their responses.

Measures

For the calculations, we were looking at the total means of the following variables: "MeanProcessSatisfaction", "MeanValidityItems" and "MeanAttractivenessItems".

Process Satisfaction. For this study, one item was used to determine Process satisfaction. The item is "Overall, I was satisfied with this application process." which can be answered on a 5-point scale stretching from 1 (strongly disagree) to 5 (strongly agree).

Perceived predictive validity. Perceived predictive validity was measured with three items. One example is "I am confident that the examination can predict how well an applicant

will perform on the job". The responses were also recorded on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha for the digital version of the Wisconsin Card Sorting Task was .81 and .77 for the gamified version.

Organizational attractiveness. How attractive the organization appeared to the participants was measured with five items, and one of them being inversely phrased "I would not be interested in this company except as a last resort". Similarly, the 5-point scale was used ranging from 1 (strongly disagree) to 5 (strongly agree). Here, Cronbach's alpha was .92 for the digital version of the Wisconsin Card Sorting Task and .91 for the gamified version.

Results

Preliminary Analysis

To ensure accurate statistical analysis, we tested the assumptions of normality, homoscedasticity, and linearity (Verma & Abdel-Salam, 2019).

For the check of normality, we used a histogram for all three variables in the WCST-Group. The results showed that the data for all three variables was normally distributed. In addition, the scatter plot showed that the error term is constant. So, we concluded that the assumption of homoscedasticity was met. Linearity was tested with normal P-P plots, which showed linearity between all the variables.

Again, for the check of normality, we used a histogram for all three variables in the GSST-Group. Correspondingly to the first group, the results showed that the data for all three variables was normally distributed. In addition, the scatter plot showed that the error term is constant. Here, we also concluded that the assumption of homoscedasticity was met. Lastly, linearity was tested with normal P-P plots, which showed linearity between all the variables.

Descriptives and correlations

The description of the descriptives and correlations for the surveyed variables are provided in the following tables (Table 2 & Table 3). To check the correlation coefficients between the variables in the WCST-Group we looked at Table 2. Here we saw that Process Satisfaction and Perceived predictive validity were significantly correlated ($r = .569$; $p < .05$). In addition, Process Satisfaction and attractiveness were also significantly correlated ($r = .431$; $p < .05$). Lastly, perceived predictive validity and attractiveness were significantly correlated ($r = .308$; $p < .05$).

In the GSST-Group (see Table 2) we saw that process satisfaction and perceived predictive validity were significantly correlated ($r = .49$; $p < .05$). Furthermore, we found significant correlations for process satisfaction and attractiveness ($r = .32$; $p < .05$) and for perceived predictive validity and attractiveness ($r = .203$; $p < .05$).

Descriptive statistics can be found in Table 3. In the WCST-Group, the average scores on the Likert scales of the variables where slightly higher than the scores in the GSST-Group. Namely, in the WCST-Group we found for organizational attractiveness ($M = 3.23$, $SD = .85$), perceived predictive validity ($M = 2.23$, $SD = .93$), and process satisfaction ($M = 2.75$, $SD = 1.14$). In the GSST-Group we found slightly lower means for organizational attractiveness ($M = 2.84$, $SD = .87$), perceived predictive validity ($M = 2.07$, $SD = .76$), and process satisfaction ($M = 2.32$, $SD = 1.0$).

Table 2

Correlations for Non-gamified and Gamified Condition

	TaskNumber		Mean Attractiveness Items	Mean Validity Items	Mean Process Satisfaction
NonGamified_WCST	MeanAttractivenessItems	Pearson Correlation	1	.308**	.431**
		Sig. (2-tailed)		<.001	<.001
		N	183	183	183
	MeanValidityItems	Pearson Correlation	.308**	1	.569**
		Sig. (2-tailed)	<.001		<.001
		N	183	183	183
Gamified_GSST	MeanAttractivenessItems	Pearson Correlation	1	.203*	.320**
		Sig. (2-tailed)		.011	<.001
		N	155	155	155
	MeanValidityItems	Pearson Correlation	.203*	1	.490**
		Sig. (2-tailed)	.011		<.001
		N	155	155	155

Note. N = number of cases.

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3

T-tests of Group Statistics: Means and Standard Deviations for the study variables

TaskNumber		Mean	Std. Deviation	N
NonGamified_WCST	MeanAttractivenessItems	3.23	.85	183
	MeanValidityItems	2.23	.93	183
	MeanProcessSatisfaction	2.75	1.14	183
Gamified_GSST	MeanAttractivenessItems	2.84	.87	155
	MeanValidityItems	2.07	.76	155
	MeanProcessSatisfaction	2.32	1.00	155

Note. All ratings were on 5-point scales ranging from 1 = strongly disagree to 5 = strongly agree. Analysis based on N = 183 for the WCST-Group and N = 155 for the GSST-Group. N = number of cases.

Main Analysis

We conducted a regression analysis to test the two distinct groups, including one dependent variable and two independent variables, with one of them serving as a mediator.

For testing the mediating effect of perceived predictive validity (Hypothesis 3), we turned to PROCESS macros for SPSS and used Model 4 (Hayes, 2018). Here, we tested if the GSST-Group will show higher levels of organizational attractiveness than the WCST-Group, in terms of the mediating effect of perceived predictive validity on this relationship. We found the following results, for the WCST-Group for perceived predictive validity on organizational attractiveness showed $R^2 = .095$ which is a relatively small result (Chicco et al., 2021), indicating that 9.5% of the variance in organizational attractiveness is explained by perceived

predictive validity (Table 4). While looking at Table 5, we saw that process Satisfaction had a moderate effect on organizational attractiveness with $R^2 = .186$ and explaining 18.6% of the variance in organizational attractiveness. Process satisfaction and perceived predictive validity together showed a result of $R^2 = .192$ which is a slightly higher effect than the previous one and explains 19.2% of the variance in organizational attractiveness. When looking at the F-change statistic in Table 5 we found it to not be significant $F(1, 180) = 1.283$, $p > .05$. In conclusion, this result means that the addition of the perceived predictive validity does not significantly improve the model when added.

For the GSST-Group perceived predictive validity on organizational attractiveness showed $R^2 = .041$ which is a small effect, indicating that 4.1% of the variance in organizational attractiveness is explained by perceived predictive validity (Table 4). When looking at Table 5, we saw that process satisfaction had a moderate effect on organizational attractiveness with $R^2 = .102$, explaining 10.2% of the variance in organizational attractiveness. Process satisfaction and perceived predictive validity together showed a result of $R^2 = .105$ which is a slightly higher effect than the previous one, explaining 10.5% of the variance in organizational attractiveness. When looking at the F-change statistic in Table 5 we found it to not be significant $F(1, 152) = .48$, $p > .05$. In conclusion, this result means that the addition of the perceived predictive validity does not significantly improve the model when added.

Table 4

Model Summary with Organizational Attractiveness as Dependent Variable

					Std.	Change Statistics				
TaskNumber	Model	R	R^2	Adjusted R^2	Error of Estimate	R^2 Change	F Change	df1	df2	Sig. F Change
NonGamified_WCST	1	.31a	.09	.09	.81	.09	18.95	1.00	181.00	<.001
Gamified_GSST	1	.20a	.04	.03	.86	.04	6.58	1.00	153.00	.01

Note. Effects are significant at $p < .05$. We examined the impact of perceived predictive validity on organizational attractiveness.

a. Predictors: (Constant), MeanValidityItems.

Table 5

Model Summary with Organizational Attractiveness as Dependent Variable and Perceived Predictive Validity as Mediator Variable

					Std.	Change Statistics				
				Adjusted	Error of	R^2	F			Sig. F
TaskNumber	Model	R	R^2	R^2	Estimate	Change	Change	df1	df2	Change
NonGamified_WCST	1	.43a	.19	.18	.77	.19	41.39	1	181	<.001
	2	.44b	.19	.18	.77	.01	1.28	1	180	.259
Gamified_GSST	1	.32a	.10	.10	.83	.10	17.42	1	153	<.001
	2	.32b	.11	.09	.83	.00	.48	1	152	.489

Note. Effects are significant at $p < .05$. We examined the impact of process satisfaction and perceived predictive validity on organizational attractiveness. In Model 1, process satisfaction was used to predict organizational attractiveness. In Model 2, we added perceived predictive validity as mediator.

a. Predictors: (Constant), MeanProcessSatisfaction

b. Predictors: (Constant), MeanProcessSatisfaction, MeanValidityItems

Hypothesis Testing

Hypothesis 1 we expected that process satisfaction correlates positive with organizational attractiveness, and the scores are higher in the GSST-Group than the WCST-Group. In the WCST-Group, we have found a significant main effect (*B* =.32; SE = .05; CI = [.22; .42]; $p < .05$; Table 6). In the GSST-Group we have found (*B* = .28; SE = .06; CI = [.15; .41]; $p < .05$; Table 6). These findings suggest that there is a positive correlation between

process satisfaction and organizational attractiveness in both groups. When examining the effect of the model, discussed in the main analysis, we found R^2= .19 for the WCST and R^2= .10 for the GSST-Group. Surprisingly, we have not found support for our third hypothesis, that the GSST-Group has higher scores than the WCST-Group.

Hypothesis 2 stated a positive correlation of perceived predictive validity with organizational attractiveness, and the scores are higher in the GSST-Group. In the WCST-Group, we have found support with a significant main effect (*B* = .282; SE = .065; CI = [.154; .41]; p < .05; Table 7). For the GSST-Group we have also found support (*B* = .234; SE = .091; CI = [.054; .414]; p < .05; Table 7). We can conclude that there is, for both groups, a positive correlation between perceived predictive validity and organizational attractiveness. Comparing the results of the main analysis, WCST showed R^2= .09 and GSST showed R^2= .04. Again, we have found lack of support for higher scores in the GSST-Group.

The mediation analysis, based on PROCESS, showed no support for Validity mediating the effect of Hypothesis 3, since the indirect effect contained zero (*B* = .04; SE = .04; CI = [-.05; .12]; Table 8) for the WCST-Group. Finally, for the GSST-Group we have found no support for Hypothesis 3 (*B* = .03; SE = .04; CI = [-.05; .12]; Table 8). Linking the results of the Table 5, we have found R^2= .19 for the WCST-Group and R^2= .11 for the GSST-Group. Here, we found lack of support for the mediating effect and higher scores in the GSST-Group.

Table 6

Coefficients[a] Table using Organizational Attractiveness as Criterion Variable

Task-Number		Model	UC		SC			95% CI for B	
			B	SE	Beta	t	Sig.	LB	UP
Non-Gamified_WCST	1	(Constant)	2.34	.15		15.73	<.001	2.05	2.64
		MeanProcessSatisfaction	.32	.05	.43	6.43	<.001	.22	.42
	2	(Constant)	2.26	.16		13.73	<.001	1.94	2.59
		MeanProcessSatisfaction	.28	.06	.38	4.65	<.001	.16	.40
		MeanValidityItems	.08	.07	.09	1.13	.26	-.06	.23
Gamified_GSST	1	(Constant)	2.20	.17		13.11	<.001	1.87	2.53
		MeanProcessSatisfaction	.28	.07	.32	4.17	<.001	.15	.41
	2	(Constant)	2.11	.21		10.13	<.001	1.70	2.52
		MeanProcessSatisfaction	.25	.08	.29	3.29	<.001	.10	.40
		MeanValidityItems	.07	.10	.06	.69	.49	-.13	.27

Note. SE = standard error; LB = lower bound; UP = upper bound; CI = confidence interval; US = unstandardized coefficients; SC = standardized coefficients.

a. Dependent Variable: MeanAttractiveness (organizational attractiveness)

Table 7

Coefficients[a] Table using Organizational Attractiveness as Criterion Variable

		UC		SC	t	Sig.	95% CI for B	
		B	SE	Beta			LB	UB
WCST	(Constant)	2.603	.156		16.661	<.001	2.295	2.911
	MeanValidityItems	.282	.065	.308	4.353	<.001	.154	.410
GSST	(Constant)	2.354	.201		11.715	<.001	1.957	2.751
	MeanValidityItems	.234	.091	.203	2.565	.011	.054	.414

Note. N = 183 cases for the WCST-Group and N = 155 cases for the GSST-Group. LB = lower bound; UP = upper bound; CI = confidence interval; SE = standard error; US = unstandardized coefficients; SC = standardized coefficients.

a. Dependent Variable: MeanAttractiveness (organizational attractiveness)

Table 8

Model 4 Summary of PROCESS Analysis with Organizational Attractiveness as Dependent Variable and Perceived Predictive Validity as Mediator Variable

GSST Direct Effects (DV:	Predictor: Process Satisfaction		
Organizational Attractiveness)	Effect	SE	%CI
Process Satisfaction	.25	.08	[.1, .40]
WCST Direct Effects (DV:	Predictor: Process Satisfaction		
Organizational Attractiveness)	Effect	SE	%CI
Process Satisfaction	.28	.06	[.16, .40]
GSST Indirect Effects (DV:	Predictor: Process Satisfaction		
Organizational Attractiveness)	Effect	SE	%CI
Perceived Predictive Validity	.03	.04	[-.05, .12]
WCST Indirect Effects (DV:	Predictor: Process Satisfaction		
Organizational Attractiveness)	Effect	SE	%CI
Perceived Predictive Validity	.04	.04	[-.05, .12]

Note. Analysis is based on N = 155 for GSST and N = 183 for WCST. DV = dependent variable; SE = standard error; CI = confidence interval.

Discussion

The dynamic and constantly changing requirements in workplaces pose new challenges to researchers and practitioners in personnel selection. Thus, it is important to reevaluate what and how new employees can be assessed (Ployhart, 2006). With these challenges, the use of novel technologies has become more prevalent in selection processes (Woods et al., 2020; Hommel et al., 2021). As mentioned by Landers (2015), gamified assessments are seen as superior selection methods as they have the potential to increase the

accuracy and quality of measurement and consequently the candidates experience compared to traditional selection methods.

The goal of this study was to investigate the role of assessment in selection and the accompanying use of game-based assessment. We studied the reactions of applicants to game-based assessment in recruiting, and whether there are differences when compared to traditional assessment. Our investigation was supported by the organizational justice framework (Gilliland, 1993) to understand the addition of game elements to traditional assessment methods and consequently producing positive perceptions of process satisfaction and perceived predictive validity on organizational attractiveness (Georgiou et al., 2020). We also used Signaling theory (Celani et al., 2011) to explain how the conducted game-based assessment affects organizational attractiveness.

Our results revealed that we found no support for Hypothesis 1, which proposed a positive correlation between process satisfaction and organizational attractiveness and the higher scores in the GSST-Group. Both groups showed significant effects indicating that there is a positive relationship between process satisfaction and organizational attractiveness. These findings of significant effects are also supported by Georgiou and Nikolau (2020). But contrary to our findings, they have found that participants in the gamified task condition perceived higher scores on process satisfaction. In practical terms, these findings show that reactions to recruitment processes are variable in terms of task conditions.

We also found lack of support for Hypothesis 2, that proposed that perceived predictive validity and organizational attractiveness are positively related, and the scores are higher in the GSST-Group. We found support in both groups for a positive relationship between these two variables but lack of support for higher scores in the GSST-Group. Here, we have found a better rating for the WCST compared to the GSST. A reason for the better

rating of WCST can have different reasons. One reason can be the differences of complexity in both groups. As stated by Hommel et al. (2021), the GSST was modified to increase task difficulty and consequently participants achieved lower scores on the GSST-Group than the WCST-Group. Depending on the sample, participants might view the GSST as complex and difficult while other might view the WCST as not challenging. Our results disagree with the findings of Hommel et al. (2021), which showed a superior rating for GSST in terms of perceived predictive validity and justice perceptions, and agree with Georgiou et al., (2021), who have not found a significant effect for differences between these groups.

Lastly, we have not found support for Hypothesis 3, the mediating effect of perceived predictive validity on the relationship of process satisfaction and organizational attractiveness and neither for higher scores in the GSST-Group. As mentioned before, research by Hausknecht et al. (2004) and Bauer et al. (2006) highlight the importance of perceived predictive validity and perceptions of organizational attractiveness in assessment, and the mediating effect of perceived predictive validity on organizational attractiveness.

Regarding the results and against our expectations, the overall acceptance of the WCST was greater than the GSST, when the participants were introduced to the selection method and the fictitious job position. These findings disagree with the findings of Hommel et al. (2021) who found the overall acceptance of GSST to be superior, especially in terms of perceived predictive validity. A possible explanation for these variations might be the sample of both studies. Most of the study sample of Hommel et al. (2021) were student's and not employees, different to our study sample of employees. Consequently, it can be assumed that students have less experience in employee assessment and are therefore not familiar with traditional assessment methods, compared to employees. As mentioned by Hommel et al. (2021), the rating of GSST might get better when the description of the job involved contained more details and realistic descriptions of the requirements for the job.

Practical implications

As discussed previously, Game-based Assessment is used for enhancing organizational attractiveness. Georgiou and Nikolau (2020) discussed that gamified assessments elicit higher levels of process satisfaction and positively influences fairness perceptions in participants compared to traditional assessments. The findings complement existing literature on positive reactions influencing the perception of organizational attractiveness (Kanning et al., 2006; Georgiou & Lievens, 2022; Macan et al., 1994)

Our study contributes to the rising research on Game-based Assessment and organizational attractiveness (Armstrong et al., 2016). Here, the findings show positive correlation of participants reactions and organizational attractiveness in the Game-based Assessment. These align with previous findings of Georgiou and Nikolau (2020).

Perceived predictive validity has been found to mediate the effect on organizational attractiveness in the context of new assessment methods (Hausknecht et al. 2004; Bauer et al., 2006). However, we have not found support for the mediating effect of perceived predictive validity. In our sample, perceived predictive validity has not been found to have a mediating effect on process satisfaction and organizational attractiveness.

Furthermore, Hommel et al. (2021) have found superior rating for the GSST-Group. Against our expectations, we have not found support for the GSST-Group to have higher scores than the WCST-Group. Therefore, researcher should focus on enhance existing assessment techniques (Woods et al., 2019).

Limitations and suggestions for future research

There are several limitations in this study that should be considered in future research. As previously discussed by Hommel et al. (2021), the participants were assigned to either

version, so it is not possible to conduct a direct comparison of both groups. Future research might apply a more comprehensive design that allows a direct comparison of the effectiveness of the different assessment methods. A possible example, also discussed by Hommel et al. (2021), introduces a follow-up cross-validation study, to measure convergence of both groups.

Another limitation is the hypothetical selection process and environment, which might not fully uncover the motivation and characteristics of a real recruitment situation. This limitation is also discussed by Georgiou and Nikolau (2020). For real-world assessment situations, research should replicate the findings in field studies to improve external validity and as mentioned by Georgiou and Nikolau (2020) a longitudinal design should be used to assess applicants' reactions in real employee selections.

Thirdly, our study is based on only German-speaking participants. As language and cultural biases can impact perceptions and responses. Future research should strive for a cross-cultural sample to enhance the generalizability, external validity, and extensive understanding of game-based assessment in recruitment.

Also, it is important to note that the GSST is based on the WCST, which might have influenced the applicant's perception and caused the greater acceptance of the WCST. Explanations can be that the WCST is more popular and known for participants, while the GSST was modified to expand task difficulty (Hommel et al., 2021). As mentioned by Hommel et al. (2021), the rating of GSST might get better when the description of the job contained more details and realistic descriptions of the requirements.

As the use of different assessment methods might lead to different effects on the participants, it is important to use the findings with caution. Future research should focus on the framework in which assessments are conducted, for example within-subjects studies where participants must take part in both groups. Consequently, both groups can be compared

in terms of acceptance. Special focus should be made on the exploration of factors, for example job relevance, that impact the acceptance of Game-based Assessment (Georgiou and Nikolau, 2020).

Conclusion

The aim of the study is the understanding and investigation of reactions in the context of employee selection. We focused specifically on the application of Game-based Assessment, aiming to understand how process satisfaction and perceived predictive validity influence organizational attractiveness.

Summed up, the study revealed valuable perceptions about Game-based Assessment and the relationships between process satisfaction, perceived predictive validity and organizational attractiveness. We found that the addition of Game-based Assessment, in this case the GSST, did not increase the perceptions of organizational attractiveness and perceived predictive validity compared to WCST. Even though the results were not in favor of Game-based Assessment, previous studies have found that game-based assessment works in certain populations (e.g., Hommel et al., 2021). Therefore, it is important to continue studying the reactions on game-based assessment.

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Appendix

Table 1

Frequency Table: What is your age?

	TaskNumber		Frequency	Percent
NonGamified_WCST	Valid	Female	87	47.5
		Male	93	50.8
		Non-binary	1	.5
		Not specified	2	1.1
		Total	183	100.0
Gamified_GSST	Valid	Female	84	54.2
		Male	69	44.5
		Non-binary	2	1.3
		Total	155	100.0