Crossing the Real and Virtual Worlds: Adaptation of the Transfer Phenomena Scale Game (GTPS-20)

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Abstrack

The gaming industry in Indonesia is rapidly expanding, with a growing number of players, highlighting the need for appropriate instruments to understand its impact. This study aimed to adapt the Game Transfer Phenomena Scale (GTPS-20) into Indonesian and evaluate its psychometric properties. The adaptation process followed standard procedures, including forward translation, synthesis, backward translation, expert judgment, pretest, and submission, and was tested on 823 gamers across Indonesia. Results indicated that the Indonesian GTPS-20 demonstrated high content validity (0.93–1.00), strong item discrimination (0.608–0.756), excellent reliability (α = 0.956), and satisfactory construct validity based on confirmatory factor analysis (RMSEA = 0.023; SRMR = 0.037; CFI = 0.998; TLI = 0.998). These findings confirm that the adapted scale is a valid and reliable tool for assessing game transfer phenomena among Indonesian gamers and can support future research on the psychological and behavioral impacts of gaming.
Keywords: game transfer phenomena, instrument adaptation, confirmatory factor analysis, indonesian gamers

Abstrak

Industri game di Indonesia berkembang pesat dengan jumlah pemain yang terus meningkat, sehingga diperlukan instrumen yang tepat untuk memahami dampaknya. Penelitian ini bertujuan mengadaptasi Game Transfer Phenomena Scale (GTPS-20) ke dalam bahasa Indonesia serta menguji karakteristik psikometriknya. Proses adaptasi dilakukan melalui tahapan standar, yaitu forward translation, synthesis, backward translation, expert judgment, pretest, dan submission, kemudian diuji pada 823 gamer di berbagai wilayah Indonesia. Hasil penelitian menunjukkan bahwa GTPS-20 versi Indonesia memiliki validitas isi yang tinggi (0,93–1,00), daya diskriminasi item yang baik (0,608–0,756), reliabilitas yang sangat tinggi (α = 0,956), serta validitas konstruk yang memadai berdasarkan analisis faktor konfirmatori (RMSEA = 0,023; SRMR = 0,037; CFI = 0,998; TLI = 0,998). Temuan ini menegaskan bahwa skala adaptasi layak digunakan sebagai alat ukur yang valid dan reliabel untuk mengidentifikasi fenomena transfer game pada gamer di Indonesia, serta mendukung penelitian lanjutan mengenai dampak psikologis dan perilaku bermain game.
Keywords*: game transfer phenomena, adaptasi instrumen, confirmatory factor analysis, gamer Indonesia***.**

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INTRODUCTION

The development of technology has brought significant changes to various aspects of human life, including digital entertainment. One form of entertainment that has advanced rapidly is video games. Video games today are not only seen as mere entertainment media but also as educational tools, simulative training, and means to hone cognitive skills such as problem-solving (GomezRomero-Borquez et al., 2024). The video game industry has surpassed the film industry in revenue, with global players exceeding 2.6 billion and growing annually (Richter, 2022; Clement, 2024).

The gaming industry in Indonesia has experienced significant growth, especially since the COVID-19 pandemic. With a population of 278.69 million people in mid-2023, it is estimated that around 180 million people are gamers—around 64.5% of the total population (Amalia, 2023). This is supported by high internet penetration, which is 79.5% or 221.56 million internet users in 2024 (APJII, 2024),, which directly increases public access to video games.

According to the Oxford Online Dictionary, a gamer is someone who enjoys playing computer games. This definition was expanded by Kort-Butler (2021) someone who stated that a person is categorized as a gamer based on the duration and type of game played. The average gamer is between 18 and 34 years old, and spends around 6.33 hours per week playing games (Armstrong, 2023; Gilbert, 2024). Motivation for playing games is very diverse, ranging from relaxation, filling free time, to seeking cognitive stimulation through puzzle solving and social interaction (Howard, 2024). With a variety of genres such as First-Person Shooter (FPS), Role-Playing Games (RPG), Multiplayer Online Battle Arena (MOBA), to Virtual Reality (VR), games offer an immersive and immersive experience (Lord, 2024).

Along with its positive benefits, such as improved cognitive abilities, attention control, and emotional well-being (Granic et al., 2014; Nuyens et al., 2019; Wagener & Melzer, 2023), playing games can also have negative impacts if done excessively. Some of these negative consequences include depression, social isolation, decreased academic achievement, and addictive behavior (Düll et al., 2024; Nguyen & Landau, 2019; Sublette & Mullan, 2012).

One phenomenon that arises from intensive game play is the Game Transfer Phenomenon (GTP). The term was first introduced by Ortiz de Gortari (2010), who described it as a condition when elements of the game (visuals, sounds, body sensations, or thoughts) are carried over into the real world and affect an individual's perception and interaction with his or her environment. GTP experiences can include seeing icons from games in real life, hearing sounds or music from games when not playing, involuntarily performing movements that resemble game controls, to the automatic appearance of impulses or thoughts related to the game (Gortari & Griffiths, 2015).

Further research found that GTP is closely associated with gaming habits and player personality traits. Although not everyone who experiences GTP has a tendency to Problematic Video Game Playing (PVG), all individuals with PVG are reported to have experienced GTP (Gortari & Gackenbach, 2021). Symptoms of GTP can be in the form of altered visual or auditory perception, tactile experiences, automatic mental processes, and involuntary behavior (Ortiz de Gortari, 2019). Research also shows that female gamers and gamers based on augmented reality (AR) or hybrid reality (HR) are more likely to experience various forms of GTP (Sifonis, 2019).

The impact of GTP is ambivalent. On the one hand, GTP can provide benefits such as stimulating creativity, increasing alertness, and enhancing memory. But on the

other hand, this phenomenon can also cause psychological disorders such as sleep disorders, anxiety, depersonalization, and distress, and has the potential to aggravate mental disorders such as schizophrenia and depression (Gortari & Basche, 2021; Gortari & Griffiths, 2014a, 2014b, 2014c).

Gortari et al. (2015) developed the Game Transfer Phenomena Scale (GTPS-20), a psychometric instrument consisting of 20 items with 5 dimensions: altered visual perceptions, altered body perceptions, altered auditory perceptions, automatic mental processes, and actions and behaviours. This scale has demonstrated high validity and reliability, with Cronbach's Alpha values of 0.94 in the first sample and 0.93 in the second. The instrument has also been adapted to several languages such as Turkish (Dindar & Gortari, 2017), Polish (Cudo et al., 2021), and Spanish (Ortiz de Gortari & Cudo, 2023) demonstrating its versatility in various cultural contexts.

However, to date, there has been no adaptation of the GTPS-20 scale into Indonesian, despite Indonesia having a large number of gamers. Adaptation and validation of this scale are critical to understanding the extent to which GTP occurs among Indonesian gamers and to supporting further research in media psychology and cyberpsychology in Indonesia.

This study aims to adapt the Indonesian language of the Game Transfer Phenomena Scale (GTPS-20) and test its validity and reliability in the context of Indonesian culture. With the availability of standardized instruments, it is hoped that it can contribute to the identification, evaluation, and development of interventions on the psychological impact of video games on the gamer population in Indonesia.

METHOD

This research was conducted in two main stages: adaptation and evaluation of the psychometric properties of the Indonesian version of the Game Transfer Phenomena Scale (GTPS-20). The adaptation process is carried out by following the guidelines, Beaton et al. (2000) which consist of 6 steps. In the preparation stage before the adaptation stage, the researcher examined the original GTPS-20 instrument and developed a research protocol. The forward translation stage was carried out by three independent translators fluent in English and Indonesian, who produced three initial translations. The translation results were then compared and synthesized into an Indonesian version through discussions with a psychologist specializing in mental health and a game technologist to ensure the accuracy of meaning in psychological and technological contexts.

The next step is backward translation, involving three translators: two translate back into English without knowing the original version. In contrast, the other translator reviews the results of the backward translation to ensure equivalence of meaning and concepts with those in the original instrument. After that, an expert judgment was carried out by an expert committee consisting of five experts, namely a psychologist with a doctoral degree, a clinical psychologist with a master's degree, a master's degree in psychometrics, a master's degree in psychology, and a master's degree in technology, especially game development. Experts assess the semantic, idiomatic, experiential, and conceptual equivalence of each item in the instrument. In addition, the internal consistency of the instrument was assessed using Aiken's coefficient V (Aiken, 1985) to ensure the relevance of each item before proceeding to the readability test stage.

The resulting pre-final version was then tested for readability in a pre-test with 33 online gamers. This test aims to assess the clarity, readability, and comprehensibility of the instrument items. Feedback from participants is used to improve the instrument before

producing the final version. The final version of the GTPS-20 Indonesian was then sent to Dr. Angelica B. Ortiz de Gortari, the scale's original developer, to obtain confirmation of the adaptation results.

The second stage of this study is a psychometric evaluation of the Indonesian version of GTPS-20. The participants in this study comprised 823 active gamers from various regions in Indonesia. The demographic data collected include gender, age, region of origin, type of gamer, duration of gameplay, and frequency of video game play. The validity of the construct was tested using Confirmatory Factor Analysis (CFA) with reference to the five-dimensional model developed by Gortari et al. (2015). The feasibility of the model was assessed using several goodness of fit indices (Hu & Bentler, 1999), including the Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI) with a value of ≥ 0.95 as an indicator of eligibility, the Root Mean Square Error of Approximation (RMSEA) with a value of ≤ 0.08, and the Standardized Root Mean Square Residual (SRMR) with a value of ≤ 0.08. This process aims to ensure that the adapted instruments have an appropriate factor structure and can be used in the context of Indonesian culture.

RESULTS AND DISCUSSION

Results

The content validity test for this study involved five experts. The assessment is focused on the relevance of each item to the construct being measured as well as the clarity of the statement. Experts assessed items using four criteria: 1 = unclear and irrelevant; 2 = sufficiently clear and relevant; 3 = clear and appropriate; and 4 = obvious and highly relevant.

The assessment results were then analyzed using Aiken's V coefficient. Based on Aiken's standard (Aiken, 1985), the value of the minimum content validity coefficient with five experts is 0.80. Thus, all items on this adaptation scale are deemed valid and fall within the very high validity category. The results of the content validity assessment are shown in the following table

Table 1.
Content Validity

Item	Value	Validity	Item	Value	Validity
1	0.93	Valid	11	1,00	Valid
2	0.93	Valid	12	1,00	Valid
3	0.93	Valid	13	1,00	Valid
4	0.93	Valid	14	0.93	Valid
5	1,00	Valid	15	1,00	Valid
6	0.93	Valid	16	0.93	Valid
7	1,00	Valid	17	0.93	Valid
8	0.93	Valid	18	0.93	Valid
9	0.93	Valid	19	1,00	Valid
10	0.93	Valid	20	0.93	Valid

A total of 823 participants were included in the study (of 843), with 20 data points excluded as incomplete. The composition of the participants consisted of 52.6% males and 47.4% females, showing a balance, although males were slightly more dominant. The majority are aged 18–22 years (60.8%), followed by 23–27 years (29.6%), whereas those

aged over 27 years are relatively few. Participants came from various regions of Indonesia, with the largest proportion from Java (50.06%), followed by Maluku (15.07%) and Sumatra (12.28%). By gamer type, the majority are casual gamers (71.06%), with a small percentage of hardcore, novice, and professional gamers. The most common playing duration was 1–3 hours per session (40.1%), while the frequency of play was dominated by participants who played every day (49.45%).

Table 2.
Participant Demographics

Data Demographics		Sum	Presentation
Gender	Men	433	52,6%
	Woman	390	47,4%
Age	18 – 22	500	60,8%
	23 – 27	244	29,6%
	28 – 32	47	5,7%
	33 – 37	19	2,3%
	38 – 42	4	0,5%
	43 – 47	4	0,5%
	48 – 53	5	0,5%
Regional Origin	Java	412	50.06%
	Sumatera	101	12.28%
	Kalimantan	63	7.65%
	Sulawesi	57	6.93%
	Bali	21	2.55%
	Maluku Islands	124	15.07%
	Nusa Tenggara Islands	23	2.80%
	Papua	22	2.67%
Type of Gamers (self report)	Newbie	88	10,70%
	Casual	585	71,06%
	Hardcore	139	16,89%
	Professional gamer	31	3,77%
Long game play	<1 Hour	95	11.55%
	1 – 3 Hour	330	40.05%
	3 – 6 Hour	277	33.69%
	6 - 9 Hour	95	11.55%
	>9 Hour	26	3.16%
Frequency of playing video games	Less than 1 time	16	1,94%
	1 time a week	32	3,89%
	2 – 4 times a week	240	29,17%
	5 – 6 times a week	128	15,56%
	Every day	407	49,45%
Total		**823**	**100%**

The descriptive statistics indicate that the average item score ranges from 1.89 to 3.08. The highest scores were for items 9 and 15 (M = 3.08), whereas the lowest were for items 8 (M = 1.89) and 12 (M = 1.95). Most items have a score above 2.3, which indicates a good acceptance rate. Skewness (–0.221 to 1.180) and kurtosis (–1.300 to 0.047) values are still within the acceptable range (–2 to +2), so the data distribution is considered

normal (Field, 2018; George & Mallery, 2016). Overall, the data showed considerable variation in responses but still met the normal distribution assumptions.

The results of the item differentiation test showed that all items in the Indonesian version of GTPS-20 had an item-total correlation index above 0.30 (Azwar, 2025), with a range of 0.608 to 0.756. Item 14 had the highest correlation (0.756) and the lowest was Item 15 (0.608), which confirms that all items have adequate discriminating power against the construct being measured.

The construct validity test begins with testing the sufficiency of the sample through Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. The results showed an SME value of 0.970, exceeding the minimum standard >0.70 (Nkansah, 2018), which indicated that the data was adequate for factor analysis. Bartlett's Test is also significant at $p < 0.001$, indicating that the correlation between variables is large enough to warrant further analysis (Tabachnick & Fidel, 2012). The factor load based on the confirmatory analysis test was above the recommended limit of >0.50 (Brown, 2015), with a value range of 0.648 to 0.831. The item with the lowest factor charge is item 15 (0.648), while the highest item is item 10 (0.831). These findings confirm that all items exhibit strong correlations with the construct under study and therefore warrant retention.

Table 3.
Descriptive statistics

Item	Mean	SD	Skewness	Kurtosis	Correlation	Loadings
1	2,82	1,308	-0,086	-1,156	0,643	0.698
2	1,95	1,245	1,003	-0,275	0,699	0.755
3	2,29	1,307	0,503	-1,076	0,730	0.792
4	2,32	1,373	0,534	-1,092	0,698	0.759
5	2,30	1,377	0,564	-1,072	0,739	0.778
6	2,47	1,385	0,346	-1,254	0,729	0.771
7	2,42	1,377	0,418	-1,167	0,626	0.659
8	1,89	1,286	1,180	0,047	0,684	0.713
9	3,08	1,384	-0,221	-1,210	0,689	0.762
10	2,83	1,395	0,034	-1,300	0,745	0.831
11	2,56	1,388	0,301	-1,235	0,727	0.812
12	2,10	1,300	0.838	-0,562	0,727	0.791
13	2,33	1,404	0,581	-1,051	0,711	0.761
14	2,27	1,371	0,653	-0,912	0,756	0.809
15	3,08	1,396	-0,218	-1,218	0,608	0.648
16	2,44	1,401	0,416	-1,202	0,713	0.762
17	2,73	1,363	0,127	-1,227	0,644	0.687
18	2,30	1,372	0,628	-0,948	0,751	0.802
19	2,00	1,324	1,021	-0,316	0,711	0.754
20	2,06	1,336	0,935	-0,447	0,743	0.788

The reliability test was conducted using Cronbach's alpha (α). The analysis showed that the tested instrument had a reliability coefficient of 0.956. This value shows good internal consistency and meets the standard >0.70 (Price et al., 2017). In addition, Cronbach's alpha values per dimension are AVP (Altered Visual Perceptions) = 0.838, ABP (Altered Body Perceptions) = 0.821, AAP (Altered Auditory Perceptions) = 0.874, AMP (Automatic Mental Processes) = 0.833 and BA (Behavior and Action) = 0.845. The results of the analysis are presented in the appendix.

Table 4.
Reliability

Factor	Subscale reliability	Overall reliability
Altered Visual Perceptions (AVP)	0,838	0,956
Altered Body Perceptions (ABP)	0,821	
Altered Auditory Perceptions (AAP)	0,874	
Automatic Mental Processes (AMP)	0,833	
Behavior and Action (BA)	0,845	

The results of the Confirmatory Factor Analysis (CFA) indicated that the model exhibited excellent fit. A Chi-square/df value of 1.434 (<3.0) indicates an adequate fit, although this indicator is sensitive to sample size (Kyriazos, 2018). Other indices also met the fit model criteria, namely RMSEA = 0.023 (<0.08), CFI = 0.998 and TLI = 0.998 (>0.95), and SRMR = 0.037 (<0.08). Thus, the structure of factors in the model is consistent with empirical data and is statistically acceptable (Bentler, 1990; Hair et al., 2022; Hu & Bentler, 1999; Steiger, 1990)

Graph 1.
Plot Model

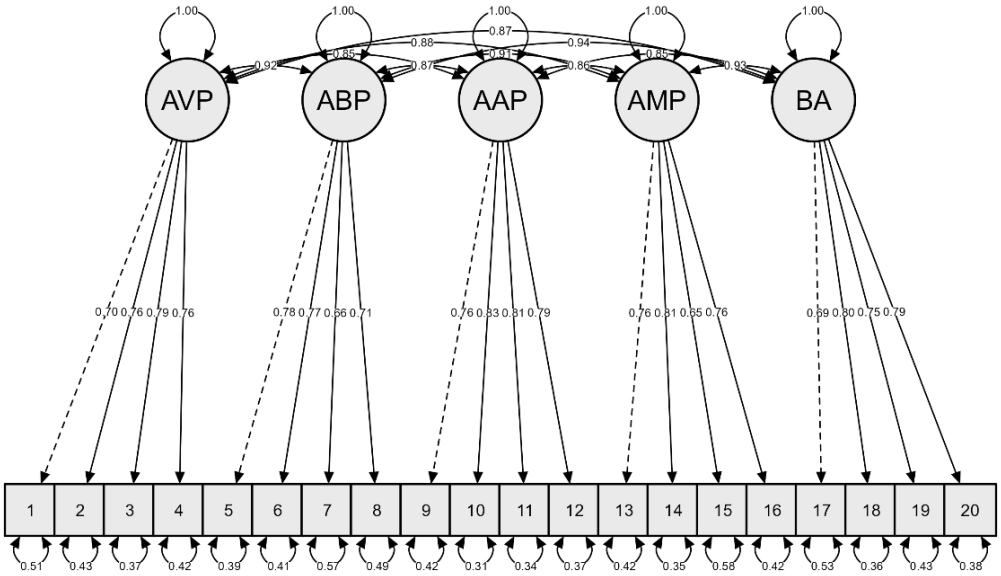

Table 4.
Model Fit

Chi-Square/df	RMSEA	SRMR	CFI	TLI
1,434	0.023	0.037	0.998	0.998

Discussion

The results of the item differentiation analysis showed that all items in the Indonesian version of the Game Transfer Phenomena Scale (GTPS-20) met the criteria for the Azwar (2025) item-total correlations, with values ranging from 0.608 to 0.756. This value indicates that each item has strong discriminative power, making it effective at distinguishing individuals with different levels of experience with the GTP phenomenon.

Reliability estimation using Cronbach's alpha yields a very high value of 0.956. Reliability per dimension was also adequate, with Altered Visual Perceptions (AVP) = 0.838, Altered Body Perceptions (ABP) = 0.821, Altered Auditory Perceptions (AAP) = 0.874, Automatic Mental Processes (AMP) = 0.833, and Behavior and Actions (BA) = 0.845. All of these values are above the minimum limit of 0.70 (Price et al., 2017) which indicates that the internal consistency of the instrument is excellent. These results are also in line with the reliability of the original version of GTPS-20 (Ortiz de Gortari et al., 2015) as well as adaptations in other languages, such as Turkish (Dindar & Ortiz de Gortari, 2017), Polish (Cudo et al., 2021), and Spanish (Gortari & Cudo, 2023).

The validity of the instrument's content was assessed through expert judgement by five experts from diverse backgrounds: clinical psychologists with doctoral degrees, clinical psychologists with master's degrees, lecturers in psychometrics, social psychology lecturers with experience in game play, and game development experts with master's degrees. Quantitatively, content validity was assessed using Aiken's V (Aiken, 1985), yielding a range of 0.93 to 1.00. Some items, namely 5, 7, 11, 12, 13, 15, and 19 obtained a perfect score (1.00), while others were worth 0.93. All of these results were in the high category (≥0.80), which confirms the relevance, clarity and cultural appropriateness of this instrument.

The analysis of construct validity begins with a sufficiency test of the sample. The Kaiser-Meyer-Olkin (KMO) value of 0.970 indicates excellent sample adequacy, and Bartlett's Test of Sphericity is significant ($p < 0.001$), indicating that the data warrant further analysis. The results of the Confirmatory Factor Analysis (CFA) showed that the factor loadings ranged from 0.648 to 0.831, with all items exceeding the 0.60 threshold. The values per dimension were also stable, namely AVP = 0.698–0.792, ABP = 0.659–0.778, AAP = 0.762–0.831, AMP = 0.648–0.809, and BA = 0.687–0.802. The results of the model feasibility test were also very good, with values $\chi^2/df = 1.434$ (<3.0), RMSEA = 0.023 (<0.08), SRMR = 0.037 (<0.08), and CFI = 0.998 and TLI = 0.998 which exceeded the minimum criteria of >0.95 (Kyriazos, 2018; Costa & Sarmento, 2019). Thus, the Indonesian version of GTPS-20 has proven to have strong construct validity.

The Indonesian version of the GTPS-20 is designed to measure non-volitional experiences among gamers during or after non-gaming. The scale comprises 20 items with a linguistically and culturally tailored response format: 1 = "Never", 2 = "Once", 3 = "Multiple Times", 4 = "Often", and 5 = "Always". The response was then transformed to a 0–4 scale according to the GTPS-20 scoring guide, yielding a total score ranging from 0–80. The interpretation of the score was divided into four categories, namely 0 = no GTP, 1–26 = low, 27–53 = medium, and 54–80 = high (Ortiz de Gortari et al., 2016).

Based on the test results on 823 participants, Indonesian gamers are on average at a low GTP classification, with an average score of 28.35, a minimum score of 0, and a maximum of 80. The majority of participants were classified as low. Most of the participants were casual gamers (71.06%) with a playing duration of 1-3 hours per session with a daily playing frequency. This may have contributed to the low GTP experience relative to hardcore or professional gamers, who tend to play for longer and more frequently. This is in line with the research of who found that the duration and frequency of gaming were associated with a high incidence of GTP. In addition, the findings Cudo et al. (2022) explain that the experience of GTP can improve with the intensity of play, and Gortari & Cudo (2023) that the type of game also facilitates the emergence of GTP in players. Thus, the results of this study provide an initial overview of the pattern of GTP experience in Indonesia, in which low intensity may reflect more balanced gaming behavior.

CONCLUSION

This study developed the Indonesian version of the GTPS-20, comprising 20 items, which was valid and reliable ($\alpha = 0.956$) and met criteria for content validity (0.93–1.00) and construct validity (RMSEA = 0.023; SRMR = 0.037; CFI = 0.998; TLI = 0.998). The relatively low average score indicates that the majority of participants who are dominated by casual gamers experience GTP at a low level. The Indonesian version of GTPS-20 can be used to measure and monitor the phenomenon of switching gaming experiences to real life in various groups of gamers. These results open up further research opportunities to examine the association between GTP and play duration, game genre, and social factors, as well as to observe the longitudinal stability of these experiences and to compare GTP with other countries. Future research is expected to test this instrument among adolescents with high gaming involvement, thereby enhancing the comprehensiveness and applicability of the understanding of GTP.

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