

# Towards a Tabletop Gaming Motivations Inventory (TGMI)

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**Abstract.** Tabletop gaming is currently experiencing a golden age. The size of the tabletop gaming industry and the number of people engaged with the hobby are at a peak, and are still increasing. However, what motivates people to engage with tabletop games is not well studied. This study aims to understand the motivations for tabletop game play; it does so by introducing a questionnaire, called the tabletop gaming motivation inventory (TGMI), to measure these motivations. The inventory is based on literature, in particular literature which deals with similar inventories used to investigate video gaming motivations. We carried out a survey with tabletop game players (N = 867). Our inventory is validated using factor analyses, which lead to a final questionnaire consisting of 11 factors based on 39 items. Moreover, we investigated how these motivations vary with respect to prior experience of players, their frequency of play and geographical locations.

**Keywords.** Tabletop Gaming, Player Motivations, Player Experience, Questionnaire Building

## 1 Introduction

The term “tabletop game” is an umbrella term which encapsulates traditional games, mass-market games and hobby games [1]. “Traditional games” refer to the games that have no authorship and are passed down from generation to generation, such as Chess and Go. “Mass-market games” refer to the games that are developed to be sold in large numbers for a prolonged time for years, such as Monopoly [2] and Pictionary [3]. “Hobby games” (sometimes called “designer board games”) refer to the commercial games that are developed for a specialized group of hobby gamers, such as Settlers of Catan [4] and Puerto Rico [5]. Embracing these categories, we define tabletop games, or “board games”, broadly as games that require a tabletop, are played on a tabletop, and feature physical components that are made of cardboard, plastic, wood, and similar materials.

Modern tabletop gaming is a billion-dollar industry and is growing steadily [6, 7], though it should be noted that a relatively small selection of games is responsible for the majority of the sales. The popularity of tabletop games can be found in multiple factors, such as (1) they support face to face interaction between players, (2) they come in a large variety of types and genres that feed players' need for novelty, (3) they help players to distance themselves from technology, and (4) they provide an opportunity for players to spend time with their families. The mobile market, on which digital versions of many tabletop games are available, expand the audience for these games and drive their growth in digital sector as well [8]. Tabletop games are also featured heavily in YouTube channels which review games; popular examples of such channels are "Rahdo Runs Through", "The Dice Tower", and "Shut Up & Sit Down". In addition to their social aspects, some tabletop games also allow for solo gaming, which appeals to players who prefer playing alone or cannot find playing partners [9].

The research on tabletop gaming has not kept up with the rising popularity of tabletop games. Recently the area started to attract more researchers, who wish to gain an understanding of the engagement of players with these games. The motivations for tabletop gaming are as yet unexplored in research, and no dedicated measurement tool exists to evaluate or survey the motivations of tabletop game players. Therefore, this study aims to provide a perspective on the factors which contribute to motivations for playing of tabletop games. It also aims to develop and psychometrically validate a tabletop gaming motivation questionnaire, which may be beneficial to researchers who are interested in studying tabletop games and their players.

## **2 Background**

### **2.1 The Questionnaire**

Research into tabletop gaming has been performed in the past. Most of this research is from the perspective of making computers play these games, but sporadically research investigates the history and culture of tabletop games. "A History of Board Games Other Than Chess" [10] and "The Oxford History of Board Games" [11] are two of the key texts in the area which inspect the history of tabletop games. The "Board Game Studies Colloquium" is a notable conference being held since 2014 and "Analog Game Studies" is an open-access journal that publishes work on tabletop game analyses and encourages analog game study theory.

Recently, research on modern tabletop gaming gained momentum. Literature can be found on multiple aspects of tabletop gaming, such as prototyping with tabletop games [12], understanding the tabletop play/design to improve digital design [13, 14], understanding the collaboration in tabletop play to inform future collaborative game design [15], reporting the development processes of tabletop games [16, 17], educational aspects of tabletop games [18-21], paratextuality in modern board games [22], translating board games [23], and how opportunities are created for play in the hobby when tabletop gaming is constrained by parenting [24]. Although research on tabletop gaming became more diverse in the last two decades, there are few studies that ad-

dress the measuring of tabletop gaming motivations/experiences. Some studies use digital game inventories such as the Game Experience Questionnaire (GEQ; [25]) to measure player experiences in tabletop gaming [26]. The GEQ was attempted to be validated as a tabletop game experience measurer. However, it is very high level and covers only a few aspects of tabletop gaming [27].

Since there is no questionnaire that specifically addresses tabletop motivations, we attempted to close that gap in the literature. To design a questionnaire which measures tabletop gaming motivations, we took a deductive approach and initially based our tabletop gaming motivation model on the literature of video gaming motivations. There are several major studies that attempted to delineate the factors contributing to video gaming motivations. One of them found that the main motivations for playing MMORPGs are achievement, social and immersion factors [28]. Another one proposed a more detailed taxonomy of video gaming motivations, and introduced the factors completion, escapism, story, customization, autonomy-exploration, loss aversion and social interaction [29]. Yet another study, utilizing Uses and Gratifications Theory [30], distinguish competition, challenge, fantasy, arousal, diversion and social interaction as the driving factors influencing players for video gaming [31]. Integrating these findings, a study attempted to come up with a unified model of gaming motivations [32]. As a result, it was stated that there are 13 dimensions to video gaming motivation: Customization, Escapism, Relationships, Completion, Story, Socializing, Loss Aversion, Fantasy, Competition, Arousal, Autonomy-Exploration, Challenge and Teamwork [32, 33].

Because of its all-encompassing nature, we decided to use this study as a starting point for our investigation of tabletop gaming motivations. However, in addition to these dimensions, we added the dimension of “Aesthetics” which was previously found as a motivating factor for tabletop gaming [34]. We also changed “Challenge” to “Mastery” to better fit the tabletop gaming terminology. Therefore, our final model and questionnaire consists of 14 dimensions. Where needed, we adapted the formulation of items from the literature to the tabletop gaming context, and added three items in the aesthetics scale. This then formed our questionnaire (Appendix A).

## **2.2 Motivations and Their Associations**

Motivations can be affected by player- based variables such as demographics or player characteristics. For instance, it was shown for digital games that prior experience of players can affect their competence in a game [35], their frequency of play might affect their engagement levels [36] and their geographical locations may influence their motivations [37]. We though similar associations might hold true in tabletop gaming domain and therefore, we also investigated whether prior experience, frequency of play and geographical locations were associated with player motivations to play tabletop games.

### 3 Method

#### 3.1 Procedure and Participants

We prepared and implemented the questionnaire, which we called the Tabletop Gaming Motivation Inventory (TGMI), in Qualtrics, which is a browser-based environment used for collecting participant data. We announced our study at the two most prolific websites for discussing tabletop gaming, namely boardgamegeek.com and shutupandsitdown.com. A link to the questionnaire was provided in the announcement. Data collection progressed from the 13<sup>th</sup> of February 2018 to the 17<sup>th</sup> of March 2018.

In total, 1038 players participated in the study. 171 of the participants were unengaged (agreed to participate in the first page of the questionnaire and then aborted without answering any item) and we therefore discarded their entries. We were left with 867 participants, which were all included in the analyses. Among 867 participants, 708 were male and 149 were female (10 chose “other” or “prefer not to say”). Average age was 39.12 (SD = 11.19). More than half of the participants had a college degree (459, 52.9%) and most of the participants were employed full time (617, 71.2%). 647 of the participants stated that they had at least middle class income.

On average, participants were playing tabletop games for 3.16 years (SD = 1.70) and they were playing 1.82 days per week (SD = 0.79) (Tables 1 and 2).

Years Playing	# of Participants	Percentage
1-5	227	26.2
6-10	157	18.1
11-15	84	9.7
16-20	47	5.4
More than 20	351	40.6
Total	867	100.0

**Table 1.** Years of Tabletop Game Playing

# of Days per Week	# of Participants	Percentage
0-1	322	37.1
2-3	414	47.8
4-5	95	11.0
6-7	36	4.2
Total	867	100.0

**Table 2.** Tabletop Gaming Frequency

More than half of the participants (52.7%) resided in the United States, followed by the United Kingdom (10.8%), Canada (9.1%), Netherlands (5.5%), Australia (3.7%) and Germany (2.5%). In total, participants came from 49 different countries.

### 3.2 Measures

We had an initial pool of 42 items, where there were 14 subscales each having 3 items. We adopted a seven-point Likert scale, with responses ranging from “Strongly Disagree” (1) to “Strongly Agree” (7). Each factor contributing to the overall motivation had its own score whereas the accumulated score of all the items represented the global score for overall tabletop motivation.

We also collected participant’s demographic information. The prior experience of the players were measured by the single question of “For how many years have you been playing board games?”. Players’ frequency of play was measured similarly by a single question: “How many days on average per week do you play board games?”. We also asked participants to state their country of residence.

## 4 Results

Initially, we carried out a Confirmatory Factor Analysis (CFA) to see if our developed motivational model fits well without any modification, using SPSS 22. A model fit is advised to be good depending on the values of the fit indices: TLI > .90, CFI > .90, RMSEA < .08 and SRMR < .09 [38] [39]. In our case, the result of the CFA did not show a good fit (TLI = .86, CFI = .88, RMSEA = .05, %90 CI [0.050, 0.055], SRMR = 0.07) and there were low loading items (such as Teamwork2 = 0.25 and Customization1 = 0.28). Therefore, we carried out an Exploratory Factor Analysis (EFA) to let the items load freely in their factors. The KMO (0.81), the communalities (> 0.20) and the Bartlett test [ $\chi^2(741) = 14127.91, p < 0.001$ ] verified the adequacy of the 42 items included in the EFA [40]. We extracted 11 factors with the total explained variance of 67% (Appendix B). There were no correlations between factors greater than 0.7 (Table 4), indicating good discriminant validity. Also, on average, every factor loaded more than 0.5 on its own factor indicating good convergent validity.

To be able to achieve the desired validities, we discarded items that cross-loaded or loaded poorly (i.e. Completion1: “I like to complete all the scenarios that the game offers”, Mastery3: “I enjoy finding new and creative ways to play board games” and Teamwork2: “It is important to me that I do not need support from other players to do well”). For poor loadings we used the cut-off point of 0.45 [41] and we accepted an item as a problematic cross-loading item if it loaded at least 0.32 on two or more factors [40]. We also checked if a cross-loading item was loading at least at 0.2 difference between factors [42, 43].

Most of the reliabilities values (Cronbach’s alphas) of the resulting sub-scales were above 0.70, indicating good reliabilities [44] and some of them were between .60 and .70, meaning that they were in acceptable limits [45] (Table 3). The Spearman-Brown reliability is a better reliability estimate for two item scales [46] and the values of Spearman-Brown coefficients of Customization ( $\alpha = 0.90$ ) and Socializing ( $\alpha = 0.74$ ) were acceptable. The reliability of the overall scale was good as well ( $\alpha = 0.85$ ).

We further analyzed the inventory to certify its reliability, convergent and discriminant validities: All of the composite reliabilities (CR) were above the threshold level of 0.7, ensuring reliability and all of the average variance extracted (AVE) val-

ues were above the threshold value of 0.50, ensuring convergent validity [47]. The square root of each construct's AVE value should be more than its correlation values with other constructs to ensure divergent validity [48] and this criterion was met as well (Tables 3 and 4).

With the modified and new version of the model, we have checked the factor structure of the remaining 39 item utilizing CFA. The result indicated a good fit (TLI = .90, CFI = .91, RMSEA = .05, %90 CI [0.044, 0.049], SRMR = 0.05).

Finally, we have investigated how motivations of the players differ in terms of their prior experience, their frequency of plays and geographical locations. Prior experience of players was negatively correlated with Customization and Arousal whereas frequency of play was negatively correlated with Socializing and Teamwork (Table 4). For geographical locations, we have aggregated the scores of the players in the same continent according to their respective country of residence. Welch's t-test analyses, which is used when sample sizes/variances are unequal [49], showed that players in North America are significantly more motivated by Mastery and Story-Fantasy when compared to players in Europe ( $t(544) = 2.82, p < 0.01$  and  $t(605) = 2.23, p = 0.03$ , respectively). Although players in North America were more motivated by Autonomy-Exploration than players in Oceania ( $t(41) = 2.20, p = 0.03$ ), they were less motivated than players in Europe ( $t(542) = -2.39, p = 0.02$ ). Player in Oceania were significantly more motivated in terms of Teamwork but less motivated in terms of Autonomy-Exploration compared to players in Europe ( $t(7) = -2.42, p = 0.05$  and  $t(48) = 3.22, p < 0.01$ , respectively). We did not analyze South America, Asia and Africa continents which had less than 30 participants [50]. Other pairwise comparisons - including total motivation scores- did not yield significant results (Table 5).

	Cronbach's $\alpha$	$R^2$	AVE	Sqrt(AVE)
Customization	.90	.87	.77	.88
Escapism	.92	.95	.87	.93
Relationship	.81	.85	.66	.81
Mastery	.71	.82	.53	.73
Fantasy-Story	.83	.83	.70	.84
Socializing	.74	.82	.70	.84
Competition	.81	.87	.53	.73
Arousal	.69	.85	.65	.81
Autonomy	.60	.78	.55	.74
Teamwork	.67	.81	.58	.76

		81		
Aesthetics	.84	82	.60	.77

**Table 3.** Cronbach's Alpha, Composite Reliabilities and Average Variance Extracted Values of the Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Customization	1												
2.Escapism	.16**	1											
3.Relationship	.13**	.13**	1										
4. Mastery	.08*	.02	.19**	1									
5.Fantasy-Story	.26**	.33**	.20**	.11**	1								
6.Socializing	.06	-.01	.41**	.19**	.19**	1							
7.Competition	.01	.13**	-.02	.17**	.003	-.11**	1						
8.Arousal	.13**	.17**	.22**	.38**	.20**	.21**	.07*	1					
9.Autonomy	.09**	.13**	.11**	.13**	.20**	.09**	.07*	.12**	1				
10.Teamwork	.16**	.12**	.27**	.15**	.37**	.32**	-.13**	.22**	.14**	1			
11.Aesthetics	.46**	.09**	.14**	.18**	.28**	.12**	.07*	.23**	.05	.24**	1		
12.Years Playing	-.07*	-.03	.05	-.05	.01	.05	.002	-.13**	-.002	-.01	-.06	1	
13.# of Days per Week	.02	-.02	-.06	.06	-.01	-.09**	-.06	.01	.01	-.08*	-.03	.02	1

\* p < .05, \*\* p < .01

**Table 4.** Factor Correlations

	S. America (N = 14)		N. America (N = 511)		Europe (N = 289)		Asia (N = 12)		Africa (N = 5)		Oceania (N = 36)	
	Mea		Mea		Mea		Mea		Mea		Mea	
	n	SD	n	SD	n	SD	n	SD	n	SD	n	SD
Customization	4.57	1.4	4.34	1.5	4.30	1.5	3.71	1.7	4.30	1.2	4.21	1.5
Escapism	3.67	1.9	3.92	1.6	3.71	1.5	4.03	1.7	4.80	0.6	4.06	1.6
Relationship	4.07	1.7	4.56	1.3	4.53	1.2	4.19	1.3	4.53	1.1	4.41	1.3
Mastery	5.68	0.9	5.68	0.7	5.51	0.8	5.52	0.9	5.60	0.5	5.50	0.8
Story-Fantasy	5.13	1.2	4.81	1.0	4.65	1.0	4.61	0.8	5.43	0.9	4.83	0.8
Socializing	5.18	1.5	5.59	1.0	5.46	1.0	5.08	1.0	5.70	0.9	5.33	1.0
Competition	2.10	1.0	2.55	0.9	2.43	0.9	2.78	1.1	2.10	0.7	2.46	0.9
Arousal	5.45	1.0	5.18	0.9	5.23	0.8	5.28	0.6	6.07	0.5	5.19	0.7
Autonomy	4.36	1.3	4.72	0.8	4.88	0.9	4.53	0.7	4.60	0.4	4.43	0.7
Teamwork	4.79	1.0	4.87	0.9	4.77	1.0	4.53	0.8	5.67	0.9	5.19	0.9
Aesthetics	5.86	0.8	5.57	0.9	5.53	0.9	4.97	1.1	5.67	1.5	5.44	0.8

**Table 5.** Breakdown of Means and Standard Deviations of Continents in terms of Motivations

## 5 Discussion

This study aimed to examine the motivations to play tabletop games and develop a reliable and valid questionnaire to measure them. We started from the video gaming literature and built on the pillars of major studies on motivations for gaming.

### 5.1 TGMI - The Questionnaire

The results were partially in line with our initial starting point. Some of the factors remained unchanged where corresponding items loaded well in their own respective factors. Escapism, Aesthetics, Relationship, Arousal and Autonomy-Exploration emerged as motivating factors as expected. Therefore it can be inferred that players may choose to play tabletop games because they like to escape real life issues, they like the look and feel of the game, they can form/continue relationships, they find the tabletop playing activity exciting, and they think tabletop gaming provides them with an environment in which they can be free to explore without external controlling. Since the items of Autonomy-Exploration did not specifically mentioned the exploration aspect of board games, we renamed this factor as “Autonomy”.

Besides the five aforementioned factors, Customization and Socializing were the two factors that were preserved as well, though for each one of their items had to be moved to different factors. The existence of these factors entail that players like to take care of their games, making them nicer and more eye pleasing, and that tabletop games create social affordances for players to interact with other players.

Some of the factors merged together. The Loss Aversion and Competition items loaded together and formed a single factor. This suggests that tabletop players who feel strongly about wanting to avoid losing are also motivated by a desire to compete with other players. We simply named this factor as “Competition”. Moreover, Completion items were correlated with Mastery items and formed a factor together as well. This might imply that, in the context of tabletop game playing, “completing a game” refers to acquiring the full mastery of that game in the mind of a player. We named this factor as “Mastery”.

The items of Story, Fantasy and one item from Customization loaded together and created a factor. Our tentative explanation for this is that it is not common for tabletop games to have a full-fledged story, and the ones that have a story mostly include fantasy elements such as out-of-world creatures, fables, tales or time travel [51]. Therefore, it is probable that tabletop players associate the story items with fantasy items. One item that we initially put under Customization (“I like to personalize my character if the game allows it”) also loaded in this factor; we assume that this is because this item refers to the role-playing aspect of gaming, and roleplaying frequently takes play in fantasy settings such as in D&D [52] or Call of Cthulhu [53].

Lastly, an item which we initially placed in the Socializing factor (“I enjoy helping other players”) loaded together with Teamwork items. We assume that this item was registered close to Teamwork by the participants because of its wording. It proved to be valid in the Teamwork factor, and also loaded much better than one other Team-

work item (“It is important to me that I do not need support from other players to do well”), which we ultimately discarded.

Looking at the factor correlation matrix, it can be seen that there are moderately and positively correlated factors ( $r > .30$ ; [54]). For instance, Aesthetics and Customization were associated, which implies that players who would like to make their games prettier were also motivated to play more aesthetically pleasing games. Socializing and Relationship were moderately correlated as well, suggesting that players who like to chat and interact with other players also like to share their more personal issues with them. Socializing was moderately associated with Teamwork, suggesting that players who like to chat, also like to cooperate. In terms of Arousal and Mastery, we speculate that players find it arousing to gain mastery of games, in general. Teamwork and Fantasy-Story were associated, suggesting that players like to cooperate in fantasy settings or story driven games. This might also be due to the fact that many cooperative games in the market are in a fantasy setting or are story driven such as Pandemic Legacy [55], Eldritch Horror [56] or Mice and Mystics [57]. Fantasy-Story was found to be moderately associated with Escapism. This is in line with the literature, since fantasy and escapism are stated as the sub constructs of the imaginal experiences [58]. This might suggest that players who play tabletop games to escape reality might be more inclined to prefer games that have a fantasy aspect to it.

Some factors were negatively associated, albeit with low correlations ( $r < 0.30$ ; [54]). Teamwork had a negative relationship with Competition, which was as we expected, as they are polar opposites. A negative relationship was observed between Socializing and Competition, which suggests that players who like to chat with and know other players do not like to compete with them. We wish to point out that this study does not claim any causation of factors since their relationships are entirely correlational.

## **5.2 Motivation - Prior Experience, Frequency of Play and Geography Associations**

We investigated how prior experience and frequency of playing were associated with the motivations (Table 4). Years of playing tabletop games, indicating how experienced a player is, was negatively associated with Arousal and Customization, suggesting that aged players may not feel aroused by tabletop play after a while and start to care less about the customization aspect of tabletop games. Also, the number of tabletop gaming days per week was negatively associated with Teamwork and Socializing suggesting that players who play more frequently may prefer games that are more competitive and they socialize less often during the game. However, it should be noted that these associations were zero-order and extremely weak ( $r \approx .1$ ).

We also investigated how the geographic location of the players affected their motivations. We found that, in general, Aesthetics in tabletop games was mostly appreciated by players in South America. Players in Africa were more motivated by Escapism, Arousal and Teamwork whereas players in Europe scored higher on Autonomy compared to other continents. Although this might give a general idea about how the geographic locations relate to tabletop gaming motivations, more targeted research is

needed in order to get more definitive results. While some differences found were significant, the overall picture that one gets when examining Table 5 is that motivations for playing games are rather similar in all aspects between the continents.

### 5.3 Limitations and Future Studies

There are some noticeable limitations and threats to validity in the study. Although we have developed the questionnaire with a broad definition of tabletop games in mind, it can further be segregated for traditional or mass market games. In addition, the subdivision of tabletop games (e.g. War Games, Abstract Games, Party Games or Strategy Games) might reveal different kind of motivations for each category and provide a more nuanced approach. To be able to better capture the motivations to play different kinds of tabletop games, more specific inventories might be required. Moreover, some of the significant correlations found can be due to the offers on the market and might not be reflecting the actual player motivations. For instance, players might be rating cooperation and story similarly (both as high or low) since cooperative games in the market mostly incorporate story elements in their design. Future studies can explicitly investigate the differences between such motivations. Also, cross-cultural validation is required to ensure the generalizability of this measurement. The questionnaire was distributed in English but filled in by participants from a wide variety of non-native-English-speaking countries. Future studies should take this into account and possibly translate the questionnaire.

Moreover, the participant pool that we used was likely to consist of a majority of enthusiastic players of tabletop games, so we may have missed the more casual game players. We can see this in the reported experience of the participants, of which 40% claimed to have over 20 years of experience with tabletop gaming, while only 26% reported 1-5 years of experience. To be able to capture better results, future studies should aim for a more normally distributed participant pool in terms of experience.

We also wish to point out that after the validation process, some of our subscales consisted of only two items. Although in some cases two item scales can be acceptable [59], three item scales are usually more robust [60].

Although we reported how motivations vary in terms of the continent players are from, one should be extremely cautious interpreting these results. The sample sizes of South America, Asia and Africa were radically small and future studies might aim for a more homogenous sample selection.

Lastly, this study had a deductive approach. Future studies may want to take an inductive approach to reveal tabletop gaming motivations, and investigate whether the results corroborate with the findings presented here.

As a next step we will be adding new items to the smaller number of item subscales, eliminating lower loading items from the higher number of item subscales, and consequently making the questionnaire a more homogenous scale by equalizing the number of items of the subscales.

## 6 Conclusion

This study was carried out to serve as a base for future studies on tabletop gaming motivations. The instrument described here is in ongoing development, and will be tested with other studies utilizing this instrument. We aim for it to open up some perspectives for researchers who will study tabletop game motivations and enjoyment of tabletop gaming. This study also took an initial step into revealing how tabletop gaming motivations are associated with prior experience, frequency of play and geographical locations. In the future, experimental studies that attempts to tie the motivations presented here to the game mechanics or genres might give better insights into player-tabletop game interaction. Practically, that may also serve as a tool for a board game recommendation system. Lastly, future studies might also investigate whether and how these newly discovered motivating factors are associated to tabletop purchase intentions.

**Note:** Appendix A (item pool) and B (factor loadings) can be found in:  
<https://drive.google.com/open?id=1GI0s5Y916DiriiOHbf1xHH4xdDaSvCqf>

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