Linking Digital Game-Playing Motivations to Food Consumption

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Abstract: As gamification and digital game playing is getting more and more popular, also business-life is increasingly relying on this phenomenon for attracting different consumer groups. To illustrate, food companies are trying to find new ways to appeal customers and answer to their market demands through development of new snacks concepts. Acquiring more in-depth understanding how snacks consumption, digital game playing and social media usage are intertwined in the consumers' mundane lives provides better chances for companies to develop matching product and service concepts. Our multidisciplinary Co-creative snacks –project connects applied research of food, consumer behavior and games. The aims of this study are 1) to specify a conceptual rationale for connecting the player motivations to the perception of food products and 2) to empirically identify consumer segments based on their player motivations and especially to show how they relate to differences in snack-eating preferences. Data on consumer behavior in snacking, games and use of social media was collected in Finland (n = 387) via online survey.

1. Introduction

Since Bartle's (1996) seminal MUD-player taxonomy, the identification of digital game-playing consumer segments has received notable attention. The main ways to categorize players include utilization of demographic, psychographic or behavioral bases (Hamari and Tuunanen, 2014), where player motivations served as key descriptors of consumer groups in roughly 40% of the studies. Even though the earlier work on player typologies (Bartle, 1996, Yee 2006) was game-genre specific, later work has shown that categorization can be utilized in several game genres (Kahn et al., 2015).

A closer look at the research on player motivations reveals two important shortcomings in current knowledge. Firstly, the majority of the research conducted so far has not tried to connect the player motivations to other consumption phenomena. This is surprising, since motivations specific to certain consumption domain, for example organic food favoring, have been demonstrated to spill over to consumption choice-making (e.g. Jägel, Keeling, Reppel, & Gruber, 2012; Elliott, 2013).

Secondly, research involving player motivations has been detached from the actual game design. Most of the current research looks at the players of existing games, and explains the reasons why they are playing games currently. Few exceptions to this exist, notable examples being Yee (2006) and VandenBerghe (2012). VandenBerghe's (2012) 'The 5 Domains of Play' is based on the Big 5 personality trait model developed in psychology, and his expertise is from the game industry. Yee's work started as academical research (e.g. 2006) based on existing games, but it has been turned into a consulting service for games industry, providing insight for the game designers.

Playing motivations such as achievement, affiliation and immersion reflect more general human needs. For example, in the light of Schwartz's value circumplex model (1992) (that is often regarded as a conceptualization of basic human motivations), one can easily see connections between 1) power & achievement values and achievement playing motive, 2) benevolence & conformity values and affiliation playing motive, and 3) stimulation & hedonism & self-direction values with immersion playing motivation. In turn, these values have repeatedly been shown to affect food choices (see e.g. Dreezens & Martijn & Tenbült & Kok & de Vries, 2005; Botonaki & Mattas, 2010).

If the game playing situations are scrutinized, it can be acknowledged that eating snacks is often connected with playing video games (Cronin and McCarthy, 2012). In these joint gameplay sessions, consumption of snack products plays a distinctive role – as a shared social ritual where food manifests itself as a vehicle of identity, community, imaginative escape, gustatory rebellion and prolonged hedonism (Cronin and McCarthy, 2011). The unhealthful linkage between simultaneous video game playing and eating has been substantiated. For example, Oldham-Cooper et al. (2015) found that those consumers, who played a computer game during lunch, felt less satiated, remembered less what they ate and consumed more snacks later than the control participants. However, gamification approaches in food industry can be employed in food education and lifestyle changes, healthcare (e.g. obesity prevention) and marketing (Könnölä et al. 2016). In this manner, the gamification integrated to food education activities may also increase willingness to taste and eat healthy food such as vegetables and berries among children (Hoppu et al. 2015).

Geeroms, Verbeke, and van Kenhove (2008) demonstrated that advertisements promoting fruit and vegetable consumption were more effective, if their message design acknowledged which qualitatively different health-seeking motives (energy, emotional well-being, outward appearance, physical well-being, self-management, social responsibility) were important for each target group. In the present research context, this suggests that the variation in the player motivations can lead to differential preferences for snack products. If so, then both societal and commercial promoters are provided with new insights for tailoring more healthy offerings to distinguishable consumer segments. Every new tool for combating the childhood obesity epidemic (Ogden et al., 2014) is valuable for food companies that have been accused for using in-game advertising and advergames for promoting unhealthy eating among vulnerable consumer groups such as adolescents (Terlutter & Capella, 2013).

The preceding discussion prompts two objectives for this research: 1) to specify a conceptual rationale for connecting the player motivations to the perception of food products and 2) to empirically identify consumer segments based on their player motivations and especially to show how they relate to differences in snack-eating preferences. Academically, this quest extends the current digital gaming literature in two ways. First, it develops a novel conceptual framework that ties various player motivations to snack consumption preferences. Second, more generally, it fosters the interdisciplinary interaction between the gamification and food consumption researchers that, in turn, can lead to new scientific discoveries and innovations.

2. Linking Player Motivations to Snack Consumption Preferences

Extant research has not so far attempted to conceptually link player motivations to snack consumption preferences. One way to achieve this is to utilize various (in)congruity theorizations (see e.g. Sirgy, Grewal, & Mangleburg, 2000; Spangenberg, Grohman, & Sprott, 2005; Allen, Gupta, & Monnier, 2008; Paasovaara, Luomala, Pohjanheimo, & Sandell, 2012). The basic principle of these formulations is that consumers strive for consistency in their beliefs and behaviors because inconsistencies produce feelings of unpleasantness and tension. Applying this idea here suggests that players prefer snack products whose consumption will facilitate the satisfaction of their corresponding motivations. Generally, player motivations can be divided into achievement, affiliative and immersive (Yee, 2006) whereas all food products have been proposed to possess various qualities such as healthiness, indulgence, novelty and extravagance (Warde, 1997). (Thomson, Crocker, & Marketo, 2010). Thus, it is proposed that consumers either consciously or unconsciously evaluate how (in)congruent the meanings triggered by the qualities of the encountered snack product are with the motivations they typically fulfill in their video game playing. This judgment, in turn, will determine their snack preference. Figure 1 below illustrates how player motivations and snack product qualities can become psychologically interconnected and guide choice behavior.
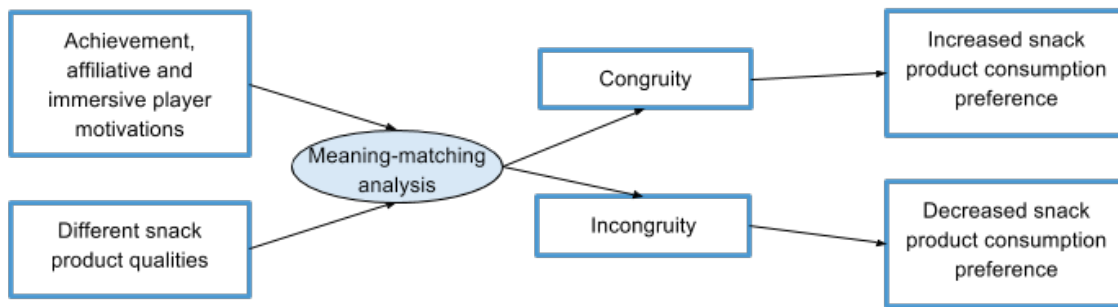
Figure 1. Player motivation – snack quality meanings (in)congruity model of food preference.

The food meanings triggered by snack products can be holistically captured, for example, using the formulations concerning food choice criteria (e.g. Fotopoulos, Krystallis, Vassallo, & Pagiaslis, 2009), food values (e.g. Lusk, 2011) or eating motivations (e.g. Renner, Sproesser, Strohbach, & Schupp, 2012). However, following de Boer, Hoogland, and Boersema (2007), a broader and more parsimonious option was preferred here relying on the well-established food antinomies (e.g. Warde, 1997; Luomala, Laaksonen, & Leipämaa-Leskinen, 2004). Food antinomies present the tendencies relating to food consumption as bipolar opposites of health and indulgence, novelty and tradition, economy and extravagance, convenience and care, and finally those of individuality and community (Leipämaa-Leskinen, 2007). In the Table 1, the potential (in)congruities between the player motivations and the meanings snack foods trigger are tentatively sketched. As introduced, there are several models for capturing player motivations. VandenBerghe's model requires the use of large Big 5's questionnaire, whereas Yee's model has more compact questionnaire, and for coherence and clarity Yee's (2006) taxonomy of player motivations was utilized in this exercise.

According to Yee (2006), achievement motivation comprises subcomponents of advancement, mechanics and competition. Snack products that trigger health meanings can be congruent with competition as they facilitate the ability to challenge others. In turn, indulgence-signaling snacks can hinder this. Mechanics concerns the interest in analyzing the underlying rules and system to optimize character performance (Yee, 2006). Thus, snacks cueing convenience meanings could be construed as congruent with mechanics, while snacks implying the investment of time and effort, referring to care (Warde, 1997), could not. Finally, as advancement reflects the desire to gain power, rapid progress and accumulation of in-game symbols of wealth and status (Yee, 2006), snack products activating individualistic meanings are possibly congruent with this motivational aspect. Commonality revolves around caring for and respecting others (Warde, 1997); thus, snacks evoking these meanings are hardly congruent with advancement.

Socializing (interest in helping and chatting with other players), relationships (desire to form long-term meaningful relationships with others) and teamwork (deriving satisfaction from being part of a group effort) make up the affiliation player motivation (Yee, 2006). Snacks conveying meanings imbued with tradition could be regarded as assistance to relationship-building, since they do not challenge prevailing norms and disrupt social conventions. The congruity between the motivational subcomponents of socializing, relationships and teamwork with commonality seems logical whereas these subcomponents of affiliation seem equally incongruent with individuality.

Lastly, immersion motivation can be split into 1) discovery – finding things other players are not familiar with; 2) role-playing – developing a character who interacts with others to create a shared story; 3) customization – tailoring the appearance and behavior of the developed character; and 4) escapism – avoiding thinking about real life problems (Yee, 2006). Snacks instigating indulgent associations can offer ways to escape the mundane reality ("hedonistic bliss") whereas snacks with healthy reputation are less likely to accomplish this. The motivational subcomponent of discovery may conceivably be related to the meanings emanating from novel and innovative snacks; their traditional counterparts appear more incongruent with it. Snacks emitting individualistic meanings can be interpreted as congruent with the customization motivation, but, at the same time, less incongruent with the role-playing motivation. The opposite can be postulated in the case of snacks with more communal meanings.

Table 1. Potential (in)congruities between the player motivations and the meanings triggered by snack foods (C = congruity; IC = incongruity).

Player motivations Meanings triggered by snack products	Achievement motivations	Affiliation motivations	Immersion motivations
Health - indulgence	C: Health is congruent with competition? IC: Indulgence is incongruent with competition?	No C or IC can be proposed.	C: Indulgence is congruent with escapism? IC: Health is incongruent with escapism?
Novelty - tradition	No C or IC can be proposed.	C: Tradition is congruent with relationship-building? IC: Novelty is incongruent with relationship-building?	C: Novelty is congruent with discovery? IC: Tradition is incongruent with discovery?
Economy - extravagancy	No C or IC can be proposed.	No C or IC can be proposed.	No C or IC can be proposed.
Convenience - care	C: Convenience is congruent mechanics? IC: Care is incongruent with mechanics?	No C or IC can be proposed.	No C or IC can be proposed.
Individuality - communality	C: Individuality is congruent advancement? IC: Communality is incongruent with advancement?	C: Communality is congruent with socializing and teamwork? IC: Individuality is incongruent with socializing and teamwork?	C: Individuality is congruent with customization? IC: Communality is incongruent with customization? C: Communality is congruent with role-playing? IC: Individuality is incongruent with role-playing?

Due to the pioneering nature of this inquiry, these propositions are suggestive at best. Thus, the empirical analysis does not directly seek to verify or falsify them, but offers an exploration into how player groups that have been identified on the basis of differences in the motivational orientations consume snacks. Yet, generally, the presented theorization does predict some variation between the player groups.

3. Research Methodology

The data (N = 387) were collected in Finland through on-line survey. Two channels were used to recruit study participants: a consumer panel provided by a marketing research company and Facebook-advertisements posted by certain major Finnish food companies. A possibility of winning gift certificates served as an incentive. In terms of the demographics, the sample can be described as follows. First, 58 % of study participants were females. Participants came evenly from various age, life stage and income level groups. However, 89 % of them resided in Southern or Western Finland, mainly (56 %) in large cities. The education level was quite high; 50 % of the participants had secondary education and 40 % tertiary. In conclusion, the sample does not fully socio-demographically represent the Finnish population, but still offers a solid base for valid findings and interpretations in national level.

In the questionnaire, there were three sections relevant to this study: 1) respondent background characteristics, 2) snack consumption practices and 3) digital game playing and use of gamified services. The critical constructs were measured using multi-item instruments. The snack consumption practices were captured in two ways. The items measuring snack choice preferences (57, scale 1-7) were inspired by the Food-Related Lifestyle-instrument (e.g. Grunert, Perrea, Zhou, Huang, Sörensen, & Krystallis, 2011), Eating Motivation Survey (Renner, Sproesser, Strohbach, & Schupp, 2012), and

quantified approach to food antinomies (Leipämaa-Leskinen, 2007). Additionally, the section included a 26-item snack consumption frequency battery (scale 1-6) which was tailored for the research purposes via continuous dialogue between consumer, food and gamification academics and industry experts. Player motivation items (31, scale 1-7) were adapted from Yee (2006), Yee, Ducheneaut & Nelson (2012) and Kahn et al. (2015).

Collected data is in ordinal scale on item level, which is deemed problematic on some publications but there is strong defense on this practice as well (see Norman, 2010). Following ibid., statistical analysis performed on the data is using factors and means instead of values from single items thereby utilizing the underlying robustness of the statistical method. The search for results commenced by an explorative factor analysis on the player motivation items. Next, a cluster analysis was performed on the emerging four player motivation factors. Finally, a series of ANOVA and post hoc Tukey's tests were conducted to detect possible differences between the identified clusters.

4. Results

The data fulfilled the basic preconditions for conducting factor analysis (KMO = .957; Bartlett's Test, approx. chi-square 8638, df = 351, sig. = .000). The common eigenvalue cut-off point of 1.0 was used to determine the appropriate number of factors. Four factors explained 70 % of the variation in the data. The first factor (9 items, α = .93) was interpreted to reflect Advancement, the second (8 items, α= .94) Role-playing & customization, the third Socializing & relationship-building (7 items, α = .92) and the fourth (3 items, α = .81) Escapism.

The factor scores served then as input in trialing various cluster solutions. After experimenting, the 4-cluster version was chosen (see Table 2) for its intuitive appeal, interpretability and concordance with previous work (e.g. Yee, 2006; Kahn et al., 2015). The first, and the largest cluster (N = 178) was named as Uninvolved players as they scored low on all of the motivational factors. Immersive players (N = 61) formed the second cluster; compared to other clusters they put the strongest emphasis on the motivational factor of Role-playing & customization. The third cluster was termed Social players (N = 71), because the Socializing & relationship-building motivated them the most. Finally, the fourth cluster (N = 77) consisted of those whose playing was chiefly driven by advancement.

Table 2. Cluster centers across Uninvolved, Immersive, Social and Competitive players for motivational factors.

Motivational game-playing factor	Uninvolved players (N = 178)	Immersive players (N = 61)	Social players (N = 71)	Competitive players (N = 77)
Advancement	-0.62	0.39	-0.02	1.15
Role-playing & customization	-0.36	1.51	0.55	-0.87
Socializing & relationship-building	-0.29	-0.76	1.61	-0.21
Escapism	-0.42	0.48	0.18	0.43
(A value near 0 denotes neutral stance towards a factor, whereas value near +1 denotes strong, and value near -1 a weak emphasis placed on the factor)				

Demographically, certain differences could be spotted across the player types. First, Uninvolved players predominantly consisted of females (66 %), whereas a male-majority (55 %) could only be observed in the Social player group. As regards the age, Immersive players were clearly the youngest (18-35) and older (46-65) players were over-represented in the Uninvolved and Competitive groups. Lastly and perhaps unsurprisingly, Uninvolved players spent significantly less time for digital games than other player groups.

The factor analysis on the 57 items tackling the snack choice preferences produced the nine criteria presented in Table 3. ANOVA revealed that the player groups differ in six of these criterias. To dig

deeper into the nature of these differences, numerable comparative Tukey's post hoc tests were conducted. They revealed three interesting between-group differences.

Table 3. The factor analysis of snack choice preferences.

Criteria	Health	Self-expression	Convenience	Pleasure	Mood-management	Price	Sociability	Variety & novelty	Freshness
Items	17	12	8	5	5	3	3	5	3
α	0.92	0.86	0.72	0.74	0.68	0.75	0.68	0.64	0.64
ANOVA		F=10.85, p<0.001	F=5.56, p<0.005	F=4.10 p<0.005	F=5.49, p<0.005		F=3.78, p<0.05	F=5.43, p<0.005	

Firstly, Social players appeared to weigh many of the snack choice criteria higher than other groups. For example, in their snack choices, Social players valued self-expression more (Mean = 2.82) than any other group (MUninvolved = 2.17, MImmersive = 2.27, MCompetitive= 2.24). Also sociability and freshness (compared to Uninvolved and Immersive players) as well as variety & novelty and mood-management (compared to Uninvolved players) were more appreciated by Social players. Secondly, snack product qualities did not seem to interest Uninvolved players as their choice criteria importance ratings were consistently lower compared to other groups. To illustrate, the mean for snack choice criteria of pleasure in the case of Uninvolved equaled 4.68, while this corresponding figure was for Immersive players 5.05 and for Competitive players 5.09. Thirdly, Immersive players rank the significance of convenience as a snack choice criterion higher (M = 5.42) than both Uninvolved (M = 5.03) and Social (M = 5.09) players.

According to several ANOVAs conducted, self-reported consumption of snacks differed between the player groups in 11/27 cases. This observation prompted a performance of a set of Tukey's post hoc tests. Roughly, the results can be condensed into two notions. First, Social players consumed many of the snacks more frequently than the other groups. For instance, they ate more frequently (M = 2.90) cereals as snacks than Uninvolved, Immersive and Competitive players (M = 2.28; M = 2.21; M = 2.14, respectively). Second, Competitive players snacked more often of protein food (M = 3.90), coffee (M = 5.51) and alcohol (M = 2.88) than Immersive players (M = 3.05; M = 4.79; M = 2.25, respectively).

5. Discussion and Conclusions

The current paper explored how digital game player motivations can be connected to different snack consumption preferences. The theoretical section sketched how player motivations of achievement, affiliation and immersion can be seen as (in)congruent with the snack meanings presented by food antinomies (Luomala et al., 2004; Leipämaa-Leskinen, 2007; Warde, 1997). The rationale with this congruency debate relied on (in)congruity theorizations (e.g. Sirgy et al., 2000; Spangenberg et al., 2005; Allen et al., 2008; Paasovaara et al., 2012) in which it is seen that consumers strive for consistency in their beliefs and behaviors across different consumption spheres to avoid unpleasant feelings. Thus, tentative interlinkages between playing motivations and snacking meanings were drawn.

In the empirical section, it was begun by categorizing players by their motivational bases. For this categorization, the digital game playing and use of gamified services section of the questionnaire was utilized. This questionnaire was not game-genre specific or limited to only those who play games regularly, thus providing multiscene view for the player categorization discussion (Kahn et al., 2015). The questionnaire was adapted from questionnaires of Yee (2006), Yee et al. (2012) and Kahn et al. (2015). The analysis strengthened the existence of the three categories defined by Yee (2006), with an addition of the fourth category of Uninvolved players. According to the results, the Uninvolved players spent significantly less time for playing digital games, which offers an explication for the emergence of this fourth group. When comparing the player categories of the current study to those discovered by Kahn et al. (2012), there were certain similitudes. Even though Competitive players have most resemblance with Kahn et al.'s (2012) Competitors, some similarities can be seen also with Completionists who want to master all elements in a game like Competitive players who are driven by

advancement motivation. Immersive players share characteristics with both Kahn et al.'s (2012) Escapists and Story-driven players, since Immersive players prefer role-playing and customization. On the contrary, Kahn et al.'s (2012) Smarty-pants were not apparent in our research.

As proposed by the theoretical framework, variation in snack choice preferences and snack-eating habits could indeed be detected between motivationally different players. Excitingly, the finding that Competitive players ate more protein-containing snacks and drank more coffee and alcohol is logical and could be expected on the basis of the framework which suggested meanings of indulgence in snacks consumption for those players that strive for achievement. Yet, in some instances, the theorization was misguided: convenience-signaling snacks seemed to match with the eating preference of Immersive players, whereas the expectation was to find a connection with the players seeking for achievement. The current finding implicating that Uninvolved players were also rather indifferent in regard to qualities of snack products provides further evidence for the (in)congruency theorizations (e.g. Sirgy et al., 2000; Spangenberg et al., 2005; Allen et al., 2008; Paasovaara et al., 2012) denoting that consumers strive to consume consistently across various fields, and in this case, consuming as uninvolved. However, when looking at other potential (in)congruities presented in the theoretical framework (see Table 1), they could not be found in the analysis. This sends an obvious signal for more research addressing the interlinkages between player motivations and snack consumption.

These results can be utilized in other research efforts related to gamification, especially when user categorization needs to be based on motivational consumer categories instead of traditional player types. Those pursuing advancement in player categorization can use our work to expand the aspects that affect the players and their motivation to play games. The results of this research can be also utilized in several ways in commercial purposes ranging from developing (adver)games for a certain snack, selecting snacks for marketing a specific game and for creating the snacks for players. Especially combining game design and snacks product development is valuable in the case of Social players: not only do they use snacks more regularly than other types of players, but they also weigh many (sociability, freshness, variety & novelty and mood-management) of the snack choice criteria higher than certain other groups. Interestingly, Social players appeared to score highest in self-expressive snacking, which in turn gives fruitful possibilities for marketing communications and game design. This does not rule out game development for the other groups: also their distinct characteristics should be taken into account and current investigation provides novel chances for that. To illustrate, protein food, coffee and alcohol were most valued by Competitive players whereas the convenience of snack products seem especially relevant to Immersive players.

As noted earlier, our population is skewed towards Southern and Western Finland, and its education level is quite high. This limits the generalization of the results on other populations, but in general level they are representative of Finnish consumers with varying age, life stage, income and daily activities as they do not represent any specific group per se.

Ethically the usage of gamification, especially for adolescents, for commercial purposes is questionable, but in practical level it is already used as one form of advertisement for all kind of products. Directly our research is interested on how to use gamification as a tool to create new kind of healthy snack products that are developed in co-creation process with the consumers and snack producers. This motivated us to see how gamification could be used for something that could be seen as a positive effort.

The current examination has shown promising results on (in)congruity in combining different consumption motivations, in this case snacking and digital game playing. However, this is a first attempt to show interlinkages between game playing and other consumption habits, and thus prompts need for further studies.

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