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# Does game self-congruity increase usage and purchase?

Robert Davis and Bodo Lang

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## Abstract

**Purpose** – *The aim of this paper is to measure the empirical relationship between self-congruity and game usage and purchase. This is important because it highlights that games affect self concept and the symbolic value that can be obtained from the game. It is aimed to implement this study across four game types.*

**Design/methodology/approach** – *A total of 493 consumers were surveyed and confirmatory factor analysis and structural equation modelling conducted across four game groups to model this same relationship.*

**Findings** – *It was found that self-congruity was positively related to game usage and purchase.*

**Practical implications** – *Game development for consumers online, on wireless devices and on consoles should place greater emphasis on the practical implications of self-congruity. Games impact self concept through self-congruity. So, it is important that marketers understand the potential harm and positive impact of games on the consumers' cognition.*

**Originality/value** – *This is the first paper to explore and model self-congruity and game purchase and usage behaviour. This paper is further unique because it provides results across four games groups: all games representing, followed by the alternative models, Sports/Simulation/Driving, Role-playing Game (RPG)/Massively Multiplayer Online Role-playing Game (MMORPG)/Strategy, and Action/Adventure/Fighting,*

**Keywords** *Self-congruity, Usage, Purchase, Computer games, Structural equation modelling, Consumer behaviour, Young consumers*

**Paper type** *Research paper*

## Introduction

This research models the relationship between the consumers' game purchase, usage behavior and self-congruity (Jie *et al.*, 2012; Karunaratna and Li Kee Goh, 2000; Johar *et al.*, 1991). Self-congruity is an important estimation of the cognitive effect of games on consumers as it measures the psychological link between the user's self-concept and the symbolic value that can be obtained from the game (Kang *et al.*, 2009; Sirgy, 1982; Johar and Sirgy, 1991) and game brand. In essence, self-congruity measures whether a consumer is influenced and persuaded by a brand. Because self-congruity has a significant effect on a consumer's emotive state, we believe that measuring this construct in the context of games consumption is an important endeavour for two reasons.

First, games are one of the most popular forms of personal and social entertainment and they are available on many platforms (Boyle *et al.*, 2012; Grammenos *et al.*, 2009; Stenbacka, 2008; Khan, 2002; Guth, 2003). For example, the UK market will grow by 7.5 percent between 2009 and 2012 (UKIE, 2011). The Entertainment Software Association states that in the USA total sales were \$US 24.75 billion in 2011 and sixty-seven percent of households play games. While it is difficult to get data on the actual market, a recent report

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by INZ (2010) on the New Zealand gaming consumer showed a consistent pattern of growth and behavior.

Second, because of this explosive growth and persuasive use of games in society, marketing academics and practitioners need to understand the positive or negative impact of consumption on the gamer's self-evaluation and other behavior (Hibberd, 2007; Boyle and Hibberd, 2005; Anderson and Bushman, 2002; Dill and Dill, 1998). Ashworth *et al.* (2010, p. 132) warn about the potential implications of ignorance in their findings:

... gamers were significantly less likely to believe that it was wrong for video games to portray behavior that would be considered inappropriate in real life. ... These results suggested that gamers were more likely than nongamers to hold norms that were specific to the gaming environment.

Therefore, many researchers espouse further exploration of the psychological interactions and effects (Choi and Kim, 2004; Kücklich, 2003; Woods, 2003; Aarseth, 2003) and particularly, for vulnerable consumers, we should question whether games are having a negative or positive impact (e.g., Dahl *et al.*, 2009; Dean, 2009; Harding *et al.*, 2009; Hernandez, 2008; de Chenecey, 2005). In this argument there are essentially two sides to a seemingly irreconcilable argument; against and for.

The argument against computer games is largely based on the effects on young consumers. For example, studies have found that games that encourage role-playing cause addictive use behaviors (Hussain *et al.*, 2012; Becker-Olsen and Norberg, 2010). Also, these compulsive behaviors cause children to be more hostile (De Simone *et al.*, 2012; Arriaga *et al.*, 2006) and in some instances, violent computer games can alter hormones during and after game play (Hossini *et al.*, 2011). Griggers (2009) has even found that violent games may disrupt somatic-emotional development. Alarmingly, they cite the case of Seung-Hui Cho, the shooter at Virginia Tech who compulsively played violent computer games. Other researchers support this view such as Clemente *et al.* (2008) who found computer games in under-18s fostered antisocial and aggressive behavior. Often games are blamed for sedentary adolescents, increased metabolic risk compared with their physically active peers (Pahkala *et al.*, 2012; Juresa *et al.*, 2012) as well as poor posture (Kratenova *et al.*, 2007).

What incites this debate is that knowingly, marketers understand the cognitive and behavioral effects on young consumers and they leverage them. As a result they use games to target children online, collecting detailed personal information (Jones and Reid, 2010) as well as manipulate the game architecture to significantly increase the recall of brand placement in games (Dardis *et al.*, 2012). Much of this research in marketing has been dominated by the advergames perspective of which there are numerous studies. While it is not the aim of this research to review this emerging body of knowledge, we encourage researchers and practitioners concerned about the persuasive "creep" of brands into the play environment (e.g. Cauberghe and De Pelsmacker, 2010; Prugsamatz *et al.*, 2010; Mackay *et al.*, 2009; Jin and Bolebruch, 2009; Winkler and Buckner, 2006; Yang *et al.*, 2006; Mau *et al.*, 2008; Molesworth, 2006; Schneider and Cornwell, 2005; Nicovich, 2005; Nelson *et al.*, 2004; Chaney *et al.*, 2004).

However, for all the evidence that suggests computer games harm young, vulnerable consumers, there is an equally convincing argument that suggests the alternative. Some researchers argue that the violent responses of gamers are a normal biological response: particularly in males. The hunter and gatherer now fights aliens in Halo. So, what is the issue? Halling and Tufte (2002) acknowledge games do affect children up to the age of 12 years. However, after 12 years they measured diminishing consequences. Other researchers also warn about generalizations across culture arguing that there are significant differences in tween consumption and responses to advertising (Andersen *et al.*, 2008). Some researchers such as Tocci (2007) have observed the legislative changes in the USA and France (e.g. Bejot and Doittau, 2004) to restrict the sale of video games to minors. They argue that it is based on moral panic and ignorance. Fisher (2011) and Harding *et al.* (2009) agree: such moves are unconstitutional and restrict the freedom of speech.

While these perspectives are valuable for our understanding, fundamental questions about relationship between game consumption and self-congruity have not been addressed, such as those concerning self-congruity and their relationship to game purchase and usage (Davis and Lang, 2011a). We believe that by measuring this relationship we will unlock a fundamental, but simple finding regarding the effects of games on consumers, that is, does the game influence a consumers concept of self and if so, does that effect game usage and purchase. Therefore, our research question is:

*RQ.* Does game self-congruity effect usage and purchase?

In our study, games are defined as computer-based “games” on a mobile device (e.g. Smartphone/iPad/iPhone) and/or integrated via the internet with devices such as the PC or MAC or on a console such as Microsoft Xbox, SONY PlayStation or Nintendo Wii (Connolly *et al.*, 2012; Davis and Lang, 2011a, b, 2012). To answer the research question we model the relationship between game self-congruity, use and purchase in the context of 4 game types (Davis and Lang, 2011b). Our four game types are grouped according to the conceptualization of Myers (1990), Apperley (2006) and more recent Davis and Lang (2011a, b, 2012):

1. all games representing our all games model and then alternative competing models;
2. Sports/Simulation/Driving, which places emphasis on hand/eye co-ordination/reflexes in real world environments;
3. Role Playing Game (RPG)/Massively Multiplayer Online Role-Playing Game (MMORPG)/Strategy, which places emphasis on characters that gain experience and power through encounters; and
4. Action/Adventure/Fighting, which places emphasis on simulations of futuristic and historical warfare and/or violent activity.

The contribution of this research is important, as fundamental questions about the link between self-concept and the games symbolic value and image will be established. Through this link we will understand what helps to drive purchase and usage. Social marketers and health professionals involved with game marketing and research may clarify whether they should focus on self-congruity to reduce harm or enhance the positive role of game play in the consumers' perceptions of self.

This paper is organized as follows. We begin with a presentation of our conceptual model and hypotheses that focus on the relationship between self-congruity and purchase/usage. The methodology is described along with the results of the study. Focus here is on the two-stage confirmatory factor analysis and structural equation model. The paper concludes with the discussion of our results as well as the managerial and research implications.

### Conceptual model and hypotheses

Aguirre-Rodriguez *et al.* (2012) concluded from an analysis of over 100 conceptual and empirical articles that self-congruity plays an important role in consumer decision-making and motivation (use and purchase). This finding has been supported by many studies. For example, Zarantonello and Luomala (2011) in the consumption of chocolate, Sirgy *et al.* (2008) on sponsorship and Randle and Dolnicar (2011) explaining volunteering behavior. Most of the work concludes that self-congruity is a measure of the cognitive link between the product or service image and, the consumers own self-concept (Kang *et al.*, 2009; Johar and Sirgy, 1991; Sirgy, 1982). This link motivates the consumer towards the brand because it indicates to the consumer the value that can be obtained from the use and purchase of the brand (Branaghan and Hildebrand, 2011; Quester *et al.*, 2000). Self-congruity is strongly persuasive as it often motivates a consumer irrationally through their emotion (Jie *et al.*, 2012). Recent work by Fang *et al.*(2012) has also shown the different effects of three self-congruity constructs: the brand's personality congruity, user imagery congruity and the brand's usage imagery congruity.

In an entertainment context, Close *et al.* (2009) found that self-congruity impacts the entertainment experience, communication effectiveness as well as loyalty to the brand experience (Mazodier and Merunka, 2012). Supphellen (2004) found that these effects are often through self-congruity and brand personality. Swinnen (2011), Hafedh and Faouzi (2008) Schramm-Klein *et al.* (2008) and Grewal and Mangleburg (2000) supports this finding in a service experience context as well as for brand relationships (Kim *et al.*, 2005). As Kang *et al.* (2009) argue, self-congruity plays an important part in the relationship between consumer and game. Such technologies allow for the expression of self and have a direct relationship with usage and purchase. This finding was supported by Merle *et al.* (2012) who found that the lack of direct experiential information impacts purchases in technology mediated environments. Self-congruity will have a significant and supporting mediating effect on this relationship.

In game self-congruity, there will be a direct link between the games images and projected experiences and the consumers' self-concept. This connection is complex for two reasons. First, the complexity, diversity and variability of the game images and experiences consumed by the game player. These could relate to a number of objects such as the: the physical technology, console/device brand, game brand, brands placed within the game, the gamer's character, other characters and the gamer's peers who play the game. The number and nature of these objects expands as the gamer goes mobile and/or moves online and into social media communities. Second, the complexity of self-concept. In the interaction between the symbolic value of these objects: what part of self-concept is being affected? For example, the actual, ideal, social and virtual self (Morschett *et al.*, 2008; Hafedh and Faouzi, 2008).

Therefore, to start to clarify this connection, we develop and present our hypotheses as follows. An important component with each of our 8 hypotheses is the individual relationship between self-congruity and usage/purchase. An individual positive effect is modeled as self-congruity's direct effect on game purchase OR usage (Davis and Lang, 2011a). We denote "individual" to be clear that use and purchase are not measured in a combined model with self-congruity. First, we hypothesize the positive effect of self-congruity on game purchase for our four game types. In this set of hypotheses we argue that self-congruity has a positive effect on game purchase individually. Therefore:

- H1. Self-congruity has a positive individual effect on game purchase for all game types.
- H2. Self-congruity has a positive individual effect on game purchase for Sports, Simulation and Driving game types.
- H3. Self-congruity has a positive individual effect on game purchase for RPG, MMORPG and Strategy game types.
- H4. Self-congruity has a positive individual effect on game purchase for Action, Adventure and Fighting game types.

Second, we hypothesize the positive effect of self-congruity on game usage for our four game types (Davis and Lang, 2011b). Therefore:

- H5. Self-congruity has a positive individual effect on game usage for all game types.
- H6. Self-congruity has a positive individual effect on game usage for Sports, Simulation and Driving game types.
- H7. Self-congruity has a positive individual effect on game usage for RPG, MMORPG and Strategy game types.
- H8. Self-congruity has a positive individual effect on game usage for Action, Adventure and Fighting game types.

These eight hypotheses cover usage and purchase individually over four game types. So the analysis of the path coefficients and SEM model fit will proceed to test eight hypothesized relationships between self-congruity and: game purchase and; game usage. Therefore, eight models are also compared.

## Method

Data was gathered through face-to-face interviews with 493 consumers in Auckland, New Zealand from the general public (Earl, 2012; Gazley *et al.*, 2011; Martin and Lee, 2004; Martin, 2004, Smith, 1999). Interviews were conducted in four geographic locations; east, west, south, north. The locations were greater than 30 kilometres from the central city district and from each other. Four different locations of data collection helped to ensure that that sample was representative of the population. Every potential respondent was asked to participate so that they had an equal chance to complete the survey. Those that agreed to participate were asked to respond to a structured questionnaire (Tables I and II). Respondents were screened with two questions:

1. "In the last week, did you play games on your computer (PC or MAC), or on a games console (perhaps through the internet), such as an Xbox, PlayStation or Wii that you purchased?" and then, if the answer was "yes".
2. What game did you play most often in the last week?

Question 1 established that the respondent was a regular player of the games they had actually purchased and Question 2 ensured that respondents had played mostly a game that was not preloaded on a computer such as Solitaire.

Table III shows the characteristics of the sample. 82 percent of the respondents were male and 18 percent were female. The majority of the respondents (77 percent) were 25 years and under. About 66 percent of the respondents had not received any degree and 77 percent were single. 39 percent of the respondents were Asians and 48 percent of the respondents were students. 48 percent of the respondents have an annual income of less than \$10,000. The samples demographics are generally consistent with the recent research by INZ (2010) on the New Zealand gaming consumer ( $N = 1958$ ). The questionnaire was designed to measure multi-item constructs. Throughout the whole questionnaire, a seven-point scale

**Table I** Questionnaire items

	Very rarely				Very often		
<i>Purchase behaviour: thinking about the types of games you buy please answer the following questions by providing a number between 1 and 7 where 1 means "very rarely" and 7 means "very often".</i>							
1. How often do you buy games?	1	2	3	4	5	6	7
2. How often do you buy the following game types?							
Action	1	2	3	4	5	6	7
Adventure	1	2	3	4	5	6	7
Driving	1	2	3	4	5	6	7
Fighting	1	2	3	4	5	6	7
Children	1	2	3	4	5	6	7
Educational	1	2	3	4	5	6	7
MMORPG (massively multiplayer online role playing game)	1	2	3	4	5	6	7
RPG (role playing game)	1	2	3	4	5	6	7
Simulation	1	2	3	4	5	6	7
Strategy	1	2	3	4	5	6	7
Sports	1	2	3	4	5	6	7
<i>Usage behaviour: thinking about the types of games you play please answer the following questions by providing a number between 1 and 7 where 1 means "very rarely" and 7 means "very often".</i>							
3. How often do you play the following game types?							
Action	1	2	3	4	5	6	7
Adventure	1	2	3	4	5	6	7
Driving	1	2	3	4	5	6	7
Fighting	1	2	3	4	5	6	7
Children	1	2	3	4	5	6	7
Educational	1	2	3	4	5	6	7
MMORPG (massively multiplayer online role playing game)	1	2	3	4	5	6	7
RPG (role playing game)	1	2	3	4	5	6	7
Simulation	1	2	3	4	5	6	7
Strategy	1	2	3	4	5	6	7
Sports	1	2	3	4	5	6	7

**Table II** Questionnaire items

		<i>Strongly disagree</i>					<i>Strongly agree</i>	
Thinking about [the games you most play from Q9, please answer the following questions by providing a number between 1 and 7 where 1 means 'strongly disagree' and 7 means 'strongly agree'.								
Self-congruity	4. Other players of this game are consistent with how I would like to see myself	1	2	3	4	5	6	7
	5. I am quite similar to the typical player of this game	1	2	3	4	5	6	7
	6. The image of the typical user of this game is similar with how I see myself	1	2	3	4	5	6	7

**Table III** Sample characteristics

<i>Variable</i>	<i>Categories</i>	<i>Percent of sample</i>
Gender	Male	82.2
	Female	17.8
Age	≤ 10	0.4
	11-15	4.3
	16-20	40.2
	21-25	37.1
	≥ 26	18.1
Ethnicity	NZ Pakeha	29.4
	Maori	7.5
	Pacific Islander	6.5
	Asian	38.5
	European	9.9
	Others	8.1
Marital status	Single	77.3
	Widowed	0.2
	Living with partner	13.8
	Married	7.3
	Divorced/Separated	1.4
Education	Non-degree	66.1
	Degree	33.9
Employment	Student	47.7
	Full Time	25.4
	Self-employed	4.9
	Unemployed	4.3
	Homemaker	0.4
	Part-time	6.7
Annual income	Student/Part-time	10.8
	< 10,000	47.5
	10,000-20,000	16.6
	20,001-30,000	7.5
	30,001-40,000	11.4
	40,001-50,000	9.5
	50,001-60,000	3.2
60,001-80,000	2.4	
	≥ 80,000	1.8

Note:  $n = 493$

was used to measure the constructs of interest (1 = "Strongly disagree", 7 = "Strongly agree"). To operationalize self-congruence (Helgeson and Supphellen, 2004) a variation of the Sirgy scale was used (Kang *et al.*, 2009).

### Analysis

The analysis tested the proposed conceptual model with confirmatory factor analysis (CFA) and structural equation modeling (SEM) (Davis and Lang, 2011b; Anderson and Gerbing,

1988). This approach was used to support model refinement and the assessment of model fit across four gaming types.

### *Confirmatory factor analysis*

This study adopted a two-stage process (Kline, 1998). The first stage of the process was to conduct separate measurement models for each latent variable. The structural model is created as the second stage of the process. Initial data screening was done for missing values and outliers, and the normality of the dataset was tested. We examined all scale items and reverse-coded when applicable to reflect the hypothesized directions. Seven respondents were excluded from the analysis because they did not complete some of the items in the questionnaire. The CFA/SEM procedure does not tolerate incomplete responses. Thus, 493 was the final sample size used in the analysis.

Before a CFA was completed the overall goodness-of-fit ( $KMO = 0.78$ ;  $sig = 0.00$ ) was assessed. Since KMO values between 0.7 and 0.8 are considered good (Hutcheson and Sofroniou, 1999, pp. 224-225), this indicates that factor analysis is appropriate for the data set. KMO values for individual variables are in the range of 0.6 to 0.8, which is above the bare minimum of above 0.5. Moreover, Bartlett's test is highly significant ( $p < 0.001$ ). The kurtosis values were acceptable indicating data normality.

The convergent and discriminant validity of the constructs was tested with CFA, which combined all constructs concurrently. Maximum likelihood estimation (MLE) was used to fit the models (Pampel, 2000). Construct refinement was through the analysis of covariance residuals and modification indices: exclusion of items was carried out until goodness-of-fit was achieved. Conventional measures were used to assess the model fit such as (Baumgartner and Homburg, 1996): Goodness-of-Fit Indices, chi-squared ( $X^2$ ), comparative fit index (CFI) and normalized fit index (NFI). For CFI and NFI, values close to 1 are indicative of good model fit (Bentler, 1990). The root mean square error of approximation (RMSEA) was calculated for the overall model; according to Bentler (1990), values below 0.08 are reasonable. Finally, the standardized root mean-squared residual (SRMR), as described by Hu and Bentler (1995), was used. Bentler (1990) argues that acceptable fit if the SRMR is less than 0.10 (Browne and Cudeck, 1993).

The final measurement models show a reasonably good fit and most of the fit indices are above or close to the required minimum threshold level. Construct reliability was 0.91, well above the recommended value (Bacon *et al.*, 1995). The average variance extracted (AVE) value was 0.78 (Chin, 1998; Fornell and Larcker, 1981).

### **Structural equation modelling (SEM)**

The SEM focused on the final analysis of the conceptual model. There are four forms of this model; the all games structural model and the alternative models. The all games model includes all the game types while the alternative models focus on each game category, namely:

- Sports, Simulation and Driving;
- RPG, MMORPG and Strategy; and
- Action, Adventure and Fighting.

The results of the SEM analysis and path coefficients for both models are displayed in Table IV. The reporting of a range of the goodness-of-fit indices for the tested models is consistent with the advice of Baumgartner and Homburg (1996). Across all game types with the exception of the all games model, our model indices, that is, GFI, CFI, TLI, RMSEA, SRMR and  $X^2/DF$ , all reveal adequate model fit in the relationship between self-congruity and game usage as well as purchase. However, we reject the action/adventure/fighting model because even though the model has acceptable fit both path coefficients between self-congruity and usage/purchase were not significant (Table IV).

**Table IV** Model fit

Model	Game	X <sub>2</sub>	DF	X <sub>2</sub> /DF Ratio	P	Model fit				SRMR	Conclusion	Standardised loading	Unstandardised loading	Path coefficients		Hypothesis	Conclusion	
						CFI	TLI	GFI	RMSEA					Standard error	t-value			P value
Self-congruity → Usage	All games Sports	382.12	53	7.21	0.00	0.82	0.78	0.88	0.11	0.09	Reject	0.16	0.11	0.04	2.82	0.01	H1	Reject
Self-congruity → Usage	Simulation Driving RPG	9.73	8	1.22	0.29	1.00	1.00	0.99	0.02	0.02	Accept	0.25	0.17	0.05	3.71	0.00	H2	Accept
Self-congruity → Usage	MMORPG Strategy Action	31.12	8	3.89	0.00	0.98	0.96	0.98	0.08	0.05	Accept	0.21	0.24	0.07	3.60	0.00	H3	Accept
Self-congruity → Usage	Adventure Fighting	26.68	8	3.34	0.00	0.99	0.97	0.98	0.07	0.05	Accept	0.01	0.01	0.05	0.20	0.85	H4	Reject
Game purchase	All games Sports	438.23	53	8.27	0.000	0.84	0.81	0.87	0.12	0.08	Reject	0.15	0.12	0.04	2.95	0.00	H5	Reject
Self-congruity → Purchase	Simulation Driving RPG	3.745	8	0.47	0.88	1.00	1.00	1.00	0.00	0.01	Accept	0.24	0.22	0.05	4.20	0.00	H6	Accept
Self-congruity → Purchase	MMORPG Strategy Action	17.91	8	2.24	0.02	0.99	0.99	0.99	0.05	0.04	Accept	0.18	0.21	0.06	3.30	0.00	H7	Accept
Self-congruity → Purchase	Adventure Fighting	36.20	8	4.53	0.00	0.98	0.96	0.98	0.09	0.05	Accept	0.02	0.02	0.05	0.35	0.73	H8	Reject

Notes: The models "All games" and "Action Adventure Fighting" are rejected overall because either the model fit and/or path coefficients do not fit or are not significant

## Discussion

The aim of this research is to confirm whether game self-congruity increases usage and purchase. In our analysis all of our models had adequate fit with the exception of the all games and action/adventure/fighting model (Kang *et al.*, 2009). Therefore, we conclude that across most game types self-congruity is positively related to usage and purchase. This finding is consistent with existing research that found that self-congruity had a positive effect on a consumer's attitude, intentions and behaviors (Alden *et al.*, 2010; Sirgy *et al.*, 2008).

We also argue that game types that were significant in the relationship between self-congruity and usage/purchase place a lot of emphasis in game play on the social experience and self-enhancement. Sports, simulation and driving and RPG, MMORPG and strategy are often team oriented and players "win" through improvement in their play behavior. The recent work by Aguirre-Rodriguez *et al.* (2012, p. 1179) and ShiXiong *et al.* (2010) argues that "self-congruity" effects are a function of underlying self-motive "socialness," and the "degree of self-enhancement sought."

We also conclude that the symbolic value gained from the sports/simulation/driving and, role playing game (RPG)/massively multiplayer online role-playing game (MMORPG)/strategy, drives a process of evaluation that leads to usage and purchase. Our study is consistent with the work of Koo (2009) who argues that while previous studies have focused on extrinsic values in experiential consumption, intrinsic experiential motives such as self-congruity are important motivator's as to why consumers play games.

What is interesting to explore is why the consumers process of self-congruity with action/adventure/fighting games, which place emphasis on simulations of futuristic and historical warfare and/or violent activity, did not affect usage or purchase. It would appear that there is no match between the games value expressive attributes and the consumers' self-concept. Support for this view comes from Sirgy *et al.* (2008) who argues that self-congruity will only effect consumers when they are directly involved in the interaction. It could be argued that consumers when they play such games do not perceive themselves to be directly involved in the interaction. This finding may conflict with the subjective view that, for example, violent computer games, create violent consumers. The lack of a relationship between self-congruity and game usage and purchase for the action/adventure/fighting genre may also be a function of gamers' expectation of what the "typical" gamer in this genre may be like. Perhaps this category, more than the others, may conform to the traditional stereotype of what a gamer is like and therefore, players of this type of game may attempt to actively disassociate themselves from this perception (Aguirre-Rodriguez *et al.*, 2012).

Consumers may play such games not to achieve high congruity between their self and the game, product and/or brand. Instead, different motivators towards usage and/or purchase may underlie such games, such as practicing new gaming skills, being seen to play the latest game, being able to join others who are playing a particular game on the Internet, escapism, wanting to assume a different personality, or at the most extreme level, facilitating a "personality shift". This finding is unique and important because it has also been widely reported that computer games in general effect the gamers self (Boyle and Hibberd, 2005). For example; violent computer games can create a violent self in younger consumers. The most important of these to date has been the work of Anderson and Bushman (2002) that developed the general aggression model and found that violent video games have short- and long-term effects. The work of Dill and Dill (1998) also provides a comprehensive review of the empirical evidence linking computer games with violence and self-concept. Despite our findings we advise caution.

## Implications

To discuss the implications of our findings we focus on young consumers and self-congruity moderators (Aguirre-Rodriguez *et al.*, 2012). We suggest the following as guidelines to marketers regarding the potentially negative effects of games on self-congruity, self-concept and young, vulnerable consumers:

- Marketers should be wary of brand-related strategies that increase purchase and usage that leverage differences in actual, ideal, and social self-concept and acceptance. Emphasis should be placed on playing the game for hedonic fun rather than self-enhancement and an improvement of self in social contexts.
- Consumption is motivated by the perception of the brand as a person or stereo type to be consistent with. Marketers should avoid brand-related strategies that encourage young consumers to be like game characters. Young consumers may not understand the difference between fictional and non-fictional characters and game-play.
- Consumption is motivated by the games product class and brand position. Marketers should avoid understand that young consumers maybe more vulnerable to games as a category and brands because of the halo effect. For example, very young consumers may perceive games to be a highly valued experience that enhances their social esteem and feelings of self-worth.
- Consumption is motivated by cognitive effort. Game play requires high cognitive effort so marketers should assess the potential effect of this level of cognition on their vulnerability. Young consumers maybe more vulnerable to the effect of telepresence and a higher level of involvement. They may start to ignore and avoid the physical world around them.
- Consumption is motivated by the perception of the game as a sum or individual personality traits. Marketers should be wary of the potential effects of impression formation and the games personality. Some consumers maybe more vulnerable to holistic and/or piecemeal processing.

### Limitations

The study is based only on a New Zealand sample. While such samples are well accepted in international journals and conferences on gaming and other aspects of consumer behavior (Davis and Lang, 2011a) we caution against "blind" generalizability. Further replication work and extension is required. We also suggest that different approaches to the measurement of self-congruity should be employed (Boksberger *et al.*, 2011). Also, some researchers may argue against our game groupings. It would have been possible to research games at an individual level. However, such a detailed analysis would have significantly affected our ability to engage in a CFA/SEM modeling process. We argue that when compared to all games: our game groupings are supported by the literature (Davis and Lang, 2012). Finally, our sample is biased towards males. We argue that when generally quantifying the gaming market it often includes more males than females. US market statistics from the Entertainment Software Association showed that in 2008 60 percent of all game players are men. Similar results are shown for the New Zealand market (INZ, 2010). We encourage future work to focus primarily on gendered-behavior rather than binary comparisons of biological sex-type.

### Future research

We suggest that future research extended this work to other samples, for example, comparing self-congruity and game usage and purchase between different geographies. It would be fair to assume that culture will play an important mediating role in the image relationship between game and self (Ye *et al.*, 2012; Liu *et al.*, 2010). The extension, replication work may also include the collection of qualitative evidence to help explain how other aspects of the consumers' self-concept impact the gamers cognitive response. In this study we have been generic in terms of self-concept. Further research could implore the link between game and the actual, ideal, social and virtual self (Morschett *et al.*, 2008; Hafedh and Faouzi, 2008) as well as the different components of the game "object" such as: the physical technology, console/device brand, game brand, brands placed within the game, the gamer's character, other characters and the gamer's peers who play the game. For example, Ibrahim and Najjar(2008) found that ideal self-image congruity had a more significant impacts on attitudes than did actual self-image congruity.

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### Further reading

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