Are casual gamers more susceptible to environmental stimuli? The interaction between arousal and involvement

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In this paper we aimed to understand the effect of the store's color on the intention to purchase microtransactions in video games. We emphasized understanding the effect of color (blue and red) on purchase intention when the relationship is mediated by the individual's degree of arousal and conditioned to the levels of involvement. The theoretical model used is inspired in the stimulus-organism-response paradigm (Mehrabian & Russell, 1974), and advocates that the warmer colors may have a negative response. The results of the quasi-experiment, in which only the ambient color was manipulated, showed that reddish colors induce a higher degree of arousal when compared to bluish colors. However, the impact on behavioral intention is indirectly proportional to the store environmental stimuli hue. Moreover, the conditional effect of involvement indicates that low-involvement gamers are more susceptible to persuasive influences of store environment color than high-involvement players.

Keywords: color, involvement, arousal.

Track: Consumer Behavior

1. Introduction

The video game market is expanding and is now one of the largest and most profitable fields in the technology industry (Choi, Ko, Medlin, & Chen, 2018). A current trend in this market is the adoption of business models that focus on increasing revenue through the commercialization of digital microtransactions, which includes low-priced content related to the aesthetics of the virtual avatar or generate a small competitive advantage to the user (Evers, Ven, & Weeda, 2015). This additional game content is marketed in online stores located within the video game and is usable after payment and download of the requested file.

There is ample evidence to prove the influence of store environmental factors, whether physical or virtual, on consumer behavioral intentions (Donovan & Rossiter, 1982; Eroglu, Machleit, & Davis, 2003; Van Rompay, Tanja-Dijkstra, Verhoeven, & van Es, 2012; Vieira, 2013). From the perspective of the stimulus-organism-response (SOR) paradigm (Mehrabian & Russell, 1974), the environment is composed of stimuli that interfere with the consumer's internal or organismic emotional state, culminating in an approach or escape response from this enclosure. From a retail perspective, the store atmosphere is considered an environment consisting of sensory stimuli that influence the consumers (Bellizzi, Crowley, & Hasty, 1983; Helmefalk & Hultén, 2017; Turley & Milliman, 2000).

Among the visual stimuli of the sales environment, the impacts of color on consumer buying behavior have been well investigated. Research on this topic is primarily related to the effects associated with signal tone variation (e.g. bluish vs. reddish colors) (Roschk et al., 2017). Reddish colors have a greater influence on the state of the individual compared to blue colors, however, their impact results in a lower behavioral intention (Bagchi & Cheema, 2013). Reddish hues induce a higher degree of arousal (Roschk, Loureiro, & Breitsohl, 2017; Valdez & Mehrabian, 1994) which, in turn, cause a greater motivation to move away from the environment (Mehta & Zhu, 2009). Thus, a store environment with predominately red hues is considered stimulating, but the high level of informational load eventually repels the customer to make a purchase at that point of sale (Menon & Kahn, 2002).

We understand that there is an indirect negative effect of reddish tints on buying behavior for additional gaming content. Based on the SOR paradigm, the background color of an online store would be relevant to the composition of the online shopping environment. It would not have a direct effect on consumer behavior as this effect would be explained by the perception of excitement from a red color palette, thus characterizing the perception of arousal as a psychological mechanism that explains consumer behavior given the color palette

used in the virtual environment. However, this mediated relationship is conditioned to the degree of involvement with the product, which moderates the relationship between store stimulus and customers' emotional reactions (Eroglu, Machleit, & Davis, 2003). The increased comprehension of the effect of color in an online shopping environment may be greater via a model that highlights how stimulating the online store environment (blue vs. red) influences behavior (purchase intent) through consumers' emotions (arousal), considering the levels of involvement.

We carried out a quasi-experiment aiming to advance the findings of Eroglu et al. (2003), Ettis (2017), Hsieh et al. (2018), and Puccinelli et al. (2013). This was conducted by utilizing an empirical analysis of the joint effect between the individual's degree of arousal and involvement with the product category in a new retail context by testing a conditional moderate mediation model (Hayes, 2018).

2. Hypothesis Development

The visual stimulus of color as influencing individual behavior has received considerable attention in marketing (Bagchi & Cheema, 2013; Bellizzi et al., 1983; Hsieh et al., 2018; Roschk et al., 2017; Singh, 2006), due to its psycho-physiological effect on the individual (Bellizzi & Hite, 1992) and its subsequent influence on the emotional state (Valdez & Mehrabian, 1994). Therefore, the color of the retail environment must harmonize with the other retail environmental factors to produce a greater degree of positive emotional reactions (Vieira, 2013). The indirect influence of color on the individual's emotional state can be measured from the PAD model (Mehrabian, 1996). I this work the focus is on the impact of the activation dimension called arousal. This dimension amplifies experiences within the store environment, which is related to consumer behavioral intentions (Roschk et al., 2017).

The color stimulus consists of three parts: hue (shade), saturation (according to Hogg, 1969, it is the subjective experience of wavelength spectral purity) and brightness (degree of darkness of color according to Gorn et al., 2004) (Ettis, 2017; Valdez & Mehrabian, 1994). In the retail context, hue is the most widely used component for empirical testing (Ettis, 2017), traditionally characterized as between warm colors (long wavelengths, such as red and yellow) and cold colors (short wavelengths, such as blue and violet) (Bagchi & Cheema, 2013; Cheng, Wu, & Yen, 2009; Puccinelli et al., 2013).

Reddish hues induce a higher degree of arousal (Roschk et al., 2017; Valdez & Mehrabian, 1994) which, in turn, cause a greater motivation to move away from the environment (Mehta & Zhu, 2009). Thus, an environment with predominately red hues is

considered stimulating from the consumer's point of view, but the high level of informational load eventually repels the customer to make a purchase at that point of sale (Menon & Kahn, 2002). Warm colors are psychologically perceived as more exciting and distracting, while cool colors are associated more with feelings of calm, tranquility and pleasantness (Bellizzi et al., 1983). Consequently, empirical findings arrive at the hypothesis that a reddish (vs. bluish) store environment tone induces a higher degree of individual excitement, versus the blue color, which enhances (vs. minimizes) behavioral intentions within the store (Roschk et al., 2017). However, we understand that this mediated relationship is influenced by the degree of involvement with the product. As a result, the general hypothesis of this research can be made explicit.

H1: The degree of involvement (DI) with the product moderates the mediated relationship between store environment color palette and purchase intention (PI) via the individual's degree of arousal (DA), where the mediated effect will be stronger in individuals with low product involvement.

H1a: The warm (versus cold) color palette used in the e-game store environment decreases (versus increases) the purchase intention of digital microtransactions by increasing the individual's degree of arousal.

H1b: The degree of involvement with the electronic game moderates the relationship between color of the online store environment and the individual's degree of excitement, e.g. the individual has a level of intensified agitation in the condition of low (versus high) involvement with certain electronic games.

3. Method

We performed a quasi-experiment (Hernandez, Basso, & Brandão, 2014). The research design consists of a moderate mediation model, with the color palette being the independent variable (IV) manipulated on two levels (blue vs. red), the individual's degree of excitement as a mediator variable (MEDV), the degree of involvement with the product as a moderating variable (MODV) and purchase intention as the measured dependent variables (DV) measured.

The stimuli were manipulated through photo-elicitation (Bateson & Hui, 1992), where static images were constructed from the web page of an electronic game (i.e. Pokémon: GO) varying only in the predominant color of the store environment (blue and red), totaling two stimulus variations (images available at the following link:https://imgur.com/gallery/otR1i76).

The profile of the chosen respondent is specific, as the individual is a Pokémon: GO player, since the respondents need to know the store environment and the digital microtransaction used in the study. The manipulated stimulus was presented to gamers through a self-administered questionnaire sent and answered in digital media via the QuestionPro tool.

After accessing the survey link through a social-based panel (e.g. Facebook, Instagram, Reddit, and WhatsApp), respondents were instructed that this is a market survey commissioned by the video game developer. Next, the manipulated image to be analyzed was presented with the available time for observation. Upon receipt of the stimulus, the subject advanced in the instrument and answered the questions in the following order: dependent variable measurement, manipulation check, attention check, covariate effect measurement and demographic data. Upon completion of answering the questionnaire, the debriefing message was automatically sent.

To measure the constructs, we chose scales already validated and tested in retail context. Therefore, the color manipulation check was performed similarly to the work of Ettis (2017), the arousal measurement scale of Kaltcheva and Weitz (2006) was used as a measurement of MEDV, the MODV was measured using a one-dimensional scale based on Vieira and Matos (2012) and the DV was measured by the purchase intention scale (Grewal, Monroe, & Krishnan, 1998). The scales used for the arousal and involvement constructs were used by means of a 7-point semantic differential, ranging from -3 to +3, while the purchase intention scale followed a 7-point type Likert scale, anchored between too low and too high. The covariates used were image quality, purchase frequency, congruence with the original image, quality of the microtransaction offered and the device used to answer the questionnaire.

The data analysis process was performed based on the ordinary least squares (OLS) regression approach via macro PROCESS (Hayes, 2018). The justification for choosing this tool lies in the conditioned mediated characteristic of the model that explains the phenomenon.

4. Results

The collection was online for two weeks through Pokémon: GO virtual communities. 235 complete questionnaires were obtained. From the total questionnaires, 106 (45.10%) confirmed having seen a predominantly blue store environment via the Ettis (2017) handling check. In contrast, 115 (48.94%) passed the reddish manipulation check, totaling 221 valid

respondents. An analysis of the impact of the covariates by regression was performed and we found that the covariates did not change the result of the conditional model. Figure 1 summarizes the result of the moderate mediation model obtained via bootstrapping with 10,000 subsamples as indicated by Hayes (2018).

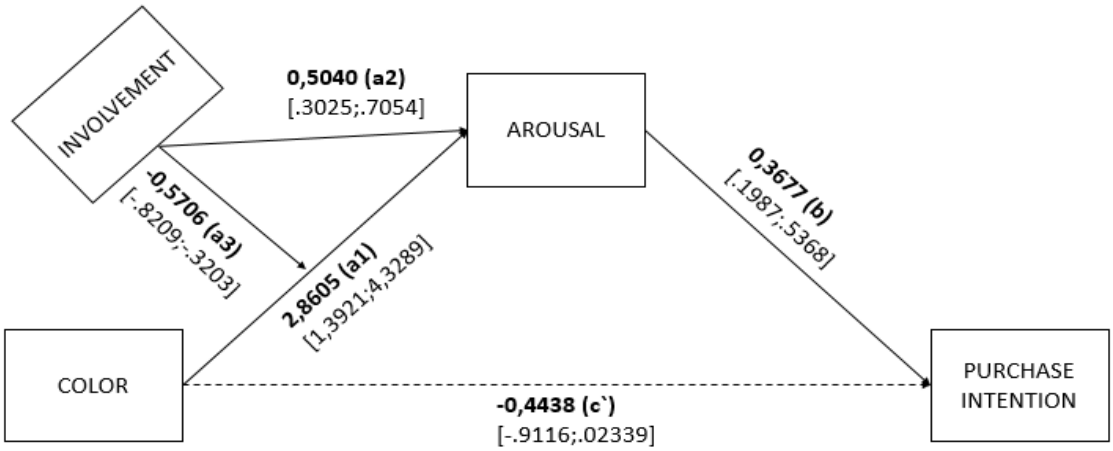

Figure 1 – Moderate mediation model

We can extrapolate that the direct relationship between ambient color and purchase intent (PI) is not statistically significant (c' = -.4438; p = .0628). However, the relationship between color and the individual's degree of arousal (DA) is statistically significant (a1 = 2.8605; p <.001), as is the influence of AR on PI (b = .3677; p <.001). Therefore, based on the conditioned relationship tests, the results show that there is a mediation process that explains the effect of store environment color on purchase intention, corroborating H1a. In addition, it was possible to infer that the degree of involvement with the product influences the consumer's level of agitation (a2 = .5040; p <.001) as well as its interaction with the color palette (a3 =-.5706; p <.001), although negatively. Therefore, we affirm that there is a moderating condition impacting the result, substantiating H1b.

In the analysis focused on the conditioned indirect effect, the various levels of the moderator impact the mediation result. Table 1 shows the centralization by the average of the moderate scalar values of the moderating variable.

Conditioning direct effect	Effect size	SE	LLCI	ULCI
Low involvement (a3 -1DP)	.2126	.1212	.0104	.4836
Medium involvement (a3MED)	-.2070	.0876	-.3986	-.604
High involvment (a3 + 1DP)	-.4168	.1454	-.7317	-.1667

Table 1 - Average of the moderate scalar values
Source: the authors, PROCESS.

In low involvement, the conditioned indirect effect is positive and statistically significant. Thus, individuals at this level of involvement are positively inclined to increase purchase intent due to arousal change when exposed to store environment stimuli. In a medium involvement relationship, the total indirect effect acts by mitigating the phenomenon, since the effect size is negative and significant. This issue is also highlighted, similarly in situations of high involvement, as its effect is also negative. Therefore, we affirm that when the individual reaches average levels of involvement with the product, the conditioned indirect effect begins to act to decrease the likelihood of purchase intention.

The effect size value of the moderate mediation index indicates that overall, by aggregating the three possible moderate mediated pathways, the conditioned indirect effect is statistically significant and acts by mitigating the main relationship [(a1 + a3) b = -.2068; LLCI = -.3721; ULCI = -.0809]. Thus, there is evidence of the existence of moderate mediation, corroborating hypothesis H1, as well as the empirical verification that the three indirect effects conditioned to the degree of intensity of involvement with the product are different from each other and distinct from the direct effect. The results support the assumptions of the SOR paradigm in the retail context of electronic game microtransactions, especially for the model proposed by Eroglu, Machleit and Davis (2001).

5. Conclusion

The visual stimulation of the color of the online store environment indirectly interferes with the purchase intention via modification in the individual's degree of arousal. Warm colors (e.g. red) generate a higher degree of arousal and, consequently, greater escape behavior (lower purchase intent), while cool colors (e.g. blue) generate higher purchase intent through decreased arousal. These results are in line with the conclusions regarding the impact of color tone on consumer behavior obtained by Van Rompay et al. (2012), Bagchi and Cheema (2013), and Hsieh et al. (2018). In addition, we reiterate the notion that individual consumer traits interfere with the influence of environmental stimulus on purchasing behavior (Eroglu et al. 2001; Menon & Kahn 2002).

The results of the moderate mediation analysis indicate that the gamer's degree of involvement with the electronic game moderates their contact with the online store environment. A player little involved with the video game is more influenced by the increase or decrease of arousal generated by the preponderance of warm or cold color palette, respectively, while the highly involved player has advanced knowledge about various aspects of electronic gaming, having the opposite effect.

This finding is the main component of originality and contribution because it advances the theoretical understanding by studying them together. An empirical approach was performed in a new retail context to prove that buying situations in a virtual environment should be understood on the basis of conditional models. This research can be continued with manipulations involving multiple properties of the construct, taking the focus off the test with only the color tone and adding brightness and saturation manipulations (Ettis, 2017). In addition, merging image and sound into a video simulation of the e-game store environment can produce larger effects sizes, in line with the assumption of multisensory manipulation (Helmefalk & Berndt, 2018; Helmefalk & Hultén, 2017). Strategies for promoting microtransaction sales in digital games must be built along with the process of segmenting the target audience of electronic gaming, as color can be interpreted as both a component stimulus of the store environment (Bellizzi et al., 1983) and as an attribute of a product, and thereby submitting to the assumptions of prospect theory (Kahneman & Tversky, 1979). This would also be a possibility for further research.

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