Journal of Retailing and Consumer Services 61 (2021) 102506

Contents lists available at ScienceDirect

Journal of Retailing and Consumer Services

journal homepage: http://www.elsevier.com/locate/jretconser

The role of culture and personality traits in board game habits and attitudes: Cross-cultural comparison between Denmark, Germany, and USA

Amit Bar [a,b,*], Tobias Otterbring [a]

[a] University of Agder, Universitetsveien 17, Kristiansand, Norway
[b] Aarhus University, Fuglesangs Allé 4, 8210, Aarhus V, Denmark

ARTICLE INFO

Keywords:
Board games
Big five
Personality traits
Cross-cultural comparison
Nordics
Toy industry

ABSTRACT

This study investigated whether variations in personality traits are related to board game usage patterns and attitudes, and whether such associations are expressed differently across countries that reflect different cultural orientations and values. A cross-sectional online survey was distributed among 486 Danes, Germans, and Americans, whose personalities were assessed through the NEO-FFI questionnaire. Participants also indicated their liking levels, attitudes, and playing frequency of board games. Results showed significant associations between personality traits and board game-related attitudes and habits. However, these associations were moderated by culture and primarily predicted responses among Danish participants, but not their American or German counterparts. These findings have important implications for the board-game industry, a multi-billion-dollar market worldwide. Furthermore, findings can shed light on how to better personalize and design board games according to personality traits and culture-specific preferences, which should have a significant impact on the user experience and ultimately increase sales.

1. Introduction

Games are recreational activities that are characterized by several features, such as organized play of two sides or more and an agreed upon set of rules. Board games are games that are played with a board, cards, dice, and tokens. A board game limits the range of stimuli players are exposed to. The board serves as the field of play as it establishes the relevant space and objects. Board games fall into two categories: competitive games, in which players form strategies that oppose the other players (Jones, 2000), and cooperative games, which model situations in which players have neither completely opposing nor completely coinciding interests (Nasar et al., 2002).

Board games have been a subject of research for more than 100 years; however, little is known regarding which specific factors influence people's board game-related preferences, playing patterns, and their propensity to engage in such social activities. Previous studies have shown that board games reflect people's intellectual abilities and strategic thinking (Gobet et al., 2004), support collective creativity in innovation activities (Parjanen and Hyypiä, 2019) and may facilitate relaxation by fostering a low-level attentional focus (Pham and Sun, 2020). For these and other reasons, there have been multiple calls for more research in the consumer behavior literature on the generic topics of play and games, but also specifically on board games (Argo, 2020; Högberg et al., 2019; Holbrook et al., 1984; Holt, 1995; Kim and Song, 2020; Prentice, 2016). To address these calls for further research, the primary purpose of the current study was to examine variations in personality traits and their associations with board game usage patterns and attitudes, and whether such associations are manifested differently in countries characterized by different cultural orientations and values.

1.1. Cultural differences in consumer behavior

To understand variations in consumer behavior across cultures, differences in cultural orientation need to be considered. The Individualism-Collectivism model examines the way people evaluate personal and joint goals based on their cultural orientation (Singelis et al., 1995). Individuals from collectivistic cultures show high levels of motivation when achieving group goals (Niles, 1998), as they perceive themselves as a part of the group. While people in collectivistic cultures value group goals over personal goals (Batson, 1993), people in individualistic cultures seek self-actualization, and generally emphasize autonomy and personal goals over the goals of the group (Otterbring and

* Corresponding author. Aarhus University, Fuglesangs Allé 4, 8210, Aarhus V, Denmark.
E-mail addresses: amitb480514@gmail.com (A. Bar), tobias.otterbring@uia.no (T. Otterbring).

https://doi.org/10.1016/j.jretconser.2021.102506
Received 23 November 2020; Received in revised form 28 January 2021; Accepted 6 February 2021
Available online 24 February 2021

Lu, 2018). Furthermore, interpersonal relationships in individualistic cultures involve cooperation only to the extent that cooperation benefits the individual, and individual behavior is guided by personal attitudes rather than social norms (Singelis et al., 1995). However, there is some variation between individualistic societies, as studies have found that American individuals tend to have the highest achievement values (Feather, 1998), while other individualistic societies, such as the Nordics, were found to have different attitudes towards such achievement values. Swedes, for example, usually do not like to stand out (Daun, 1991) and Danes tend not to value braggarts and extroverted success (Askgaard, 1992).

The Horizontal-Vertical model examines attitudes towards success and helps in understanding value structures in different individualistic and collectivistic cultures (Singelis et al., 1995). In horizontal societies, equality is highly valued, while in vertical societies, inequality between people is based on hierarchy (Singelis et al., 1995). As such, individualistic cultures can be divided into two distinct orientations: Horizontal Individualism and Vertical Individualism (hereinafter referred to as HI and VI, respectively). HI is a cultural orientation that highlights the autonomy of the individual. Individuals are seen as independent of one another, but they are also perceived as equal to others. VI is a cultural orientation characterized by inequality between independent individuals, with an emphasis on competition (Triandis and Gelfand, 1998). The United States and the Nordics share similar approaches regarding individualism, yet they tend to differ along the horizontal and vertical measures (Hofstede, 1980). In one study, people in Scandinavia showed antipathy towards extroverted successful people, while Americans found them inspiring (Markus and Kitayama, 1991). Danes have a horizontal orientation, similarly to the Nordic culture they belong to (Singelis et al., 1995). This behavior in Nordic cultures could be related to Janteloven, a set of moral attitudes and behaviors first formulated in a satirical novel in the 1930s, which describe the tendency of people in these cultures to think and behave equally to each other and discourage conflicting behavior. In contrast, the United States is considered a vertical society (Singelis et al., 1995).

1.2. Culture and gaming patterns

Cultural orientation influences many aspects of life within each culture, possibly also gaming patterns, which are indirectly affected by measures of vertical and horizontal individualism–collectivism (Lee and Wohn, 2012). Indeed, different types of games have evolved in different countries: American-style and European-style games ("Eurogames"). These game types indicate the origin of the game, but also describe the mechanism of the system of play (Woods, 2012). In American games, luck tends to play an important role in winning, while European games are designed to require strategic thinking and analysis (Mayer and Harris, 2010). Germany has led the board game industry for many years. In fact, traces of toy production have been found since the 14th century, and Nuremberg is often considered the "toy capital of the world" (Woods, 2012). Following World War I and II, the German industries were transformed into military production factories, and Germany lost its lead in toy production (Burton, 1997). The history of board games is connected to the historical and political changes among the countries where board games evolved, meaning that culture has a major contribution in forming gaming approaches and attitudes. Nevertheless, other factors may contribute to personal preferences and habits in board game play, including personality traits.

1.3. Personality traits and gaming patterns

Unlike learned behaviors, which are usually manifested in a specific domain, personality traits are more general tendencies that are reflected in various aspects of one's life (Costa and McCrae, 1985). One of the most influential personality models is the Big Five model. McCrae and Costa (1983) created the Neuroticism, Extraversion, Openness (NEO) inventory, a 144-item questionnaire assessing these three factors. In this model, Neuroticism refers to an individual's tendency to feel depressed, anxious, and emotional; Extraversion refers to the individual's tendency to be active, socially involved, and talkative; and Openness refers to facets of curiosity, imagination, and creativity (Costa and McCrae, 1985). As the five-factor model of personality was fully established, the questionnaire was expanded to also include items assessing Agreeableness and Conscientiousness. The addition of these scales resulted in the NEO Personality Inventory (Costa and McCrae, 1985) and in the Revised NEO Personality Inventory (Costa and McCrae, 1992). Agreeableness refers to an individual's tendency to be cooperative, kind, and empathic, while Conscientiousness is the tendency to be careful, systematic, efficient, and responsible (Barrick and Mount, 1991).

Researchers have explored which personality traits are related to the tendency of playing games. Bilalić, Mcleod, and Cobet (2007) found that children who play chess are more likely to score high on the Openness and Extraversion scales, while children who score high on the Agreeableness scale are less likely to play chess. In studies of online games, positive correlations were found between the tendency to play and Openness, Conscientiousness, and Extraversion (Teng, 2008). In a later study, Teng et al. (2012) found that online game usage during weekdays is positively correlated to the degree of Openness and negatively correlated with the degree of Neuroticism. Thus, the literature suggests that personality traits can predict usage of online games.

1.4. The present study

Although board games are in use worldwide, research regarding personality traits that are characteristic for board game users is lacking. Since board game play can be influenced by both social values and personality traits, the current study aimed to examine whether the relationship between board games usage patterns and personality traits is expressed differently across Denmark, Germany, and USA. Such an investigation is particularly relevant given the documented differences in the social structures of these cultures (cf. Nelson and Savitt, 2002). While Denmark and USA were chosen due to their horizontal and vertical cultures, respectively, Germany was selected for inclusion in the study due to its centrality in the "board game scene." Indeed, Germany is the place where European-style board games (Eurogames) were developed and is one of the leading European countries in terms of sales of board games. Moreover, games developed in Germany have become some of the most popular games in the world (for example, Catan). As such, Germany represents a culture in which board games constitute a central pillar of social life. Taken together, the present study incorporates both internal (personality) and external (cultural) factors associated with board game preferences and habits, thereby painting a more nuanced picture of board game play and the aspects that predict individuals' playing frequency, liking levels, and attitudes towards board games. Based on the reviewed literature, the study tested whether board game usage patterns would be associated with personality traits, such that individuals who indicate frequent use of board games and more positive perceptions towards such games in terms of liking levels and attitudes would score higher on Openness, and potentially higher on Conscientiousness and Extraversion, but lower on Neuroticism. The study also explored whether culture and personality traits would interact to influence participants' attitudes, usage frequency, and liking levels of board games.

2. Methodology

2.1. Participants

A total of 486 individuals from Denmark, Germany, and USA participated in the study, which was conducted as a cross-sectional survey. Participants were recruited mainly via social networks (especially in board game forums and groups) and consented to their included

in the study in the beginning of the survey. Eighteen participants were omitted from the statistical analyses because they completed less than 30% of the survey. Five participants were omitted since they completed the survey in less than 40 s. After these omissions, the final number of participants was 463: 166 Danes, 151 Americans, and 146 Germans. Of these, 57% were male, 41.7% were female, and 1.3% preferred not to declare their gender. The most frequent age category among participants (38.9%) was 35–49, with this mode age and the age distribution reflecting a more diverse set of participants than the typical student samples appearing in the majority of published articles in psychology, marketing, retailing, and service research (Cialdini, 2009; Otterbring, 2021; Pham, 2013). As such, the demographic profile of our participants resembles data obtained from field settings and investigations based on adult consumers (e.g., Ares et al., 2020; Machín et al., 2020; Otterbring, 2017; Otterbring et al., 2018; Rojas-Rivas et al., 2020). This means that our sample should be less prone to the WEIRD bias; that is, the over-reliance of data collected from people living in Western, educated, industrialized, rich, and democratic (WEIRD) societies (Henrich et al., 2010), with university students being the archetypical example of the WEIRD bias.

2.2. Materials

The NEO-FFI (Five Factors Inventory) was used (Costa and McCrae, 1992) to measure participants' personality traits. This is a short, 60-items version of the NEO-PI that has been used in numerous studies. This questionnaire examines personality over five dimensions: Neuroticism, Extraversion, Openness, Conscientiousness, and Agreeableness. Each personality trait is assessed using 12 items. Participants rate the degree to which each statement fits their experience over a scale of 1 ("Strongly disagree") to 5 ("Strongly agree"). An index was calculated for each personality trait. Indices were composed of a sum of the rating of each participant over the 12 items that represent each trait.

To measure board game-related constructs, participants were initially asked about their board game usage by indicating whether they play board games on a binary "Yes" or "No" question (i.e., "Do you play board games?"). Virtually all (96.5%) answered affirmatively. Participants also replied to items measuring playing frequency, liking levels, and attitudes towards board games. To measure playing frequency, participants were asked to rate the degree to which they agreed with the statement "I often play board games" on a scale from 1 ("Strongly disagree") to 5 ("Strongly agree"). In order to assess liking levels of board games, participants were asked to rate the degree to which they agreed with the statement "I like playing board games" on a scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). They further rated their attitudes towards board games on a scale anchored at 1 ("Negative") and 5 ("Positive"); see Table 1 for country-specific means and standard deviations on the key variables.

Table 1
Overview of key variables.

	Americans	Danes	Germans
Personality Traits[1]			
Neuroticism	30.15 (7.77)	29.58 (8.25)	31.64 (9.16)
Extraversion	40.10 (6.74)	42.14 (6.89)	39.99 (7.51)
Openness	43.13 (5.51)	41.94 (5.44)	44.87 (8.83)
Agreeableness	41.68 (4.43)	43.77 (5.58)	40.44 (5.11)
Conscientiousness	43.09 (6.61)	43.65 (7.49)	42.96 (6.76)
Board Game Variables[2]			
Playing Frequency	4.36 (0.84)	3.58 (1.18)	3.44 (1.09)
Liking Levels	4.80 (0.50)	4.63 (0.66)	4.50 (0.71)
Attitudes	4.87 (0.35)	4.66 (0.64)	4.54 (0.75)

Notes: [1]Means (and standard deviations), with each personality trait measured using 12 items on a 5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree) and captured through a sum score. [2] Means (and standard deviations), with playing frequency ("I often play board games") and liking levels ("I like playing board games") measured using a 5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree) and attitudes towards board games measured using a 5-point semantic differential scale (1 = Negative; 5 = Positive).

2.3. Procedure

The survey was built using the Qualtrics platform and accessed through a website. Participants were asked to read the instructions and choose their mother tongue from the bar on the top right of the page. The survey was offered in the three official languages of the countries where the research was conducted: Danish, German, and English. It was important to translate the survey to the participants' native language to get more valid results (Ellis et al., 2018). Participants were informed that this study examined attitudes toward playing board games. They voluntarily participated in the survey by giving their consent.

The first part of the questionnaire covered demographics: age, gender (male, female, prefer not to answer) and nationality (Danish, German, and American). The next part of the survey was the NEO-FFI Big Five personality traits questionnaire. Next, participants were asked questions about their consumption and usage of board games. The final part of the survey was optional: participants could choose to participate in a gift-card lottery and received a message thanking them for participating in the survey.

3. Results

3.1. Personality traits and frequency of playing board games

To test the relationship between the big five personality traits and participants' ratings on the statement "*I often play board games,*" a multiple regression was used, where participants' scores for the big five personality traits were the predictors (Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness) and board game usage frequency was the outcome variable. The overall model was significant ($F_{[5,457]} = 4.013$, $p = .001$), with roughly 4% of the variance explained by the predictors ($R^2 = 0.042$). More specifically, Openness, Conscientiousness, and Agreeableness were found to significantly predict participants' ratings on the frequency of playing board games. Openness was found to predict how often participants reported playing board games ($p = .004$), with people scoring higher on Openness playing board games more frequently. Similarly, higher scores on the Conscientiousness scale were also found to predict higher playing frequency ($p = .020$). Higher scores on Agreeableness, however, were associated with lower playing frequency ($p = .029$). A summary of these results is presented at the left-hand side of Table 2.

3.2. Personality traits and liking levels of board games

To investigate the associations between the big five personality traits and participants' liking levels of board games, a similar multiple regression was conducted, with the big five personality traits as the predictors and participants' liking levels of playing board games as the outcome variable. The overall model was significant ($F_{[5,457]} = 2.271$, $p = .047$), with approximately 2% of the variance explained by the predicting variables ($R^2 = 0.024$). Two traits were found to significantly predict the degree to which the participants liked board games: Neuroticism and Openness. For Neuroticism, the less neurotic the individual was, the more he or she liked playing board games ($p = .013$), and for Openness, the more open the individual was, the more he or she liked playing board games ($p = .024$; see the middle column of Table 2).

3.3. Personality traits and attitudes towards board games

Another similar multiple-regression was used to examine the relationships between the Big Five personality traits and participants' attitudes towards board games, with the big five personality traits again serving as predictors and board game attitudes as the outcome variable.

Table 2
The relationship between personality traits and ratings of playing frequency, liking levels, and attitudes towards board games.

	Playing Frequency				Board Game Liking				Board Game Attitudes			
	B	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*
Neuroticism	−0.009	0.007	−0.068	−1.301	−0.010	0.004	−0.131	−2.503*	−0.005	0.004	−0.067	−1.284
Extraversion	−0.008	0.008	−0.053	−1.009	−0.004	0.005	−0.039	−0.746	0.001	0.005	0.011	0.205
Openness	0.026	0.009	0.134	2.887**	0.012	0.005	0.106	2.258*	0.011	0.005	0.100	2.140*
Agreeableness	−0.022	0.010	−0.103	−2.193*	−0.004	0.006	−0.030	−0.634	−0.006	0.006	−0.051	−1.073
Conscientiousness	0.019	0.008	0.117	2.339*	0.002	0.005	0.018	0.365	0.007	0.004	0.082	1.630

+$p < .10$.
*$p < .05$.
**$p < .01$.

The overall model was significant ($F_{[5,457]} = 2.282$, $p = .046$), with around 2% of the variance explained by the predictors ($R^2 = 0.024$). Only the Openness score was found to significantly predict attitude towards board games ($p = .033$), with higher scores being linked to more positive attitudes towards board games (see the right-hand side of Table 2).

3.4. Culture moderates the impact of personality traits on playing frequency

To explore whether culture could moderate the impact of personality traits in predicting participants' playing frequency, we added culture as a variable in the playing frequency model described above. To this end, we performed an analysis of variance (ANOVA), where the predicting variables were the interaction terms between culture and each of the personality traits and the dependent variable was playing frequency of board games. The overall model was significant ($F_{[15,\ 447]} = 7.856$, $p < .001$). Furthermore, several of the interactions were significant, including the interactions between culture and participants' Neuroticism scores ($F_{[3,\ 447]} = 3.522$, $p = .015$), Extraversion scores ($F_{[3,\ 447]} = 4.735$, $p = .003$), and Openness scores ($F_{[3,\ 447]} = 7.924$, $p < .001$), respectively. The interactions between culture and participants' Agreeableness and Conscientiousness scores were not significant ($F_{[3,\ 447]} = 0.430$, $p = .731$; $F_{[3,\ 447]} = 2.255$, $p = .081$).

Since some of the interaction terms were significant, a follow-up analysis was performed to better understand the nature of these interactions. To this end, multiple regressions were performed separately for each culture, and scores for the personality traits served as predictors, while participants' ratings on the playing frequency variable acted as the outcome variable (see Table 3). Among Americans and Germans, the overall model was non-significant ($F_{[5,145]} = 1.259$, $p = .285$; $F_{[5,140]} = 2.205$, $p = .057$) and none of the personality trait scores were found to significantly predict participants' playing frequency of board games.

However, among Danes, the overall model was significant ($F_{[5,160]} = 5.072$, $p < .001$), with approximately 14% of the variance explained by the predictors ($R^2 = 0.137$). Specifically, Neuroticism, Extraversion, and Openness significantly predicted Danish participants' ratings on the playing frequency variable. As Openness increased, so did playing frequency ($p < .001$). For Neuroticism and Extraversion, however, individuals who scored lower on these traits tended to play board games more frequently ($p = .016$; $p = .004$).

3.5. Culture moderates the impact of personality traits on liking levels

A similar ANOVA was performed on participants' liking levels of board games, where the predicting variables were the interaction terms between culture and each of the personality traits. Again, the overall model was significant ($F_{[15,\ 447]} = 2.807$, $p < .001$), as were two of the interactions: the interactions between culture and Neuroticism ($F_{[3,\ 447]} = 3.738$, $p = .011$) as well as Openness ($F_{[3,\ 447]} = 4.546$, $p = .004$). The interaction between culture and Extraversion score was non-significant ($F_{[3,\ 447]} = 1.279$, $p = .281$). The same applied to the interactions between culture and Agreeableness ($F_{[3,\ 447]} = 0.284$, $p = .837$) and culture and Conscientiousness ($F_{[3,\ 447]} = 0.038$, $p = .990$).

A follow-up analysis using a multiple regression was performed separately for each culture to better understand the nature of the interactions. The personality traits served as predictors and participants' liking levels of board games acted as the outcome variable (see Table 4). Once again, the overall model was non-significant for Americans ($F_{[5,145]} = 0.165$, $p = .975$) and Germans ($F_{[5,140]} = 1.010$, $p = .414$), and none of the personality trait scores were found to significantly predict these participants' liking levels of playing board games. For Danes, however, the overall model was significant ($F_{[5,160]} = 3.528$, $p = .005$), with roughly 10% of the variance explained by the predictors ($R^2 = 0.099$). More specifically, Neuroticism and Openness were found to significantly predict participants' ratings. As the degree of Openness increased, so did the degree to which Danes liked board games ($p = .001$). For Neuroticism, Danes who were less neurotic tended to like board games more than those who were more neurotic ($p = .015$).

3.6. Culture moderates the impact of personality traits on attitudes towards board games

Another similar ANOVA was performed on attitudes towards board games, again with the interaction terms between culture and each of the personality traits as the predictors. The overall model was significant ($F_{[15,\ 447]} = 3.456$, $p < .001$). Furthermore, there was a significant

Table 3
The relationship between country, personality traits, and playing frequency of board games.

	Americans				Danes				Germans			
	B	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*
Neuroticism	0.007	0.008	0.072	0.781	−0.029	0.012	−0.201	−2.431*	−0.017	0.013	−0.122	−1.300
Extraversion	0.020	0.010	0.179	1.952+	−0.043	0.014	−0.250	−2.950**	−0.006	0.015	−0.037	−0.397
Openness	0.012	0.012	0.082	0.995	0.063	0.016	0.289	3.861**	−0.032	0.017	−0.161	−1.921+
Agreeableness	−0.009	0.013	−0.055	−0.666	−0.005	0.016	−0.025	−0.325	0.003	0.021	0.011	0.127
Conscientiousness	0.008	0.011	0.061	0.716	0.021	0.013	0.132	1.591	0.022	0.015	0.135	1.481

+$p < .10$.
*$p < .05$.
**$p < .01$.

Table 4
The relationship between country, personality traits, and liking levels of board games.

	Americans				Danes				Germans			
	B	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*
Neuroticism	−0.003	0.005	−0.053	−0.566	−0.017	0.007	−0.208	−2.469*	−0.015	0.009	−0.165	−1.724+
Extraversion	−0.001	0.006	−0.012	−0.128	−0.013	0.008	−0.140	−1.620	0.003	0.010	0.027	0.280
Openness	0.004	0.007	0.044	0.526	0.032	0.009	0.265	3.460**	−0.010	0.011	−0.079	−0.928
Agreeableness	0.003	0.008	0.035	0.416	−0.003	0.009	−0.028	−0.351	0.003	0.014	0.018	0.205
Conscientiousness	0.001	0.006	0.015	0.174	0.004	0.008	0.046	0.542	−0.004	0.010	−0.037	−0.393

+$p < .10$.
*$p < .05$.
**$p < .01$.

interaction between culture and Openness score ($F_{[3,\ 447]} = 5.717$, $p = .001$). None of the other interactions between culture and personality traits were significant.

The follow-up analysis, using three multiple regressions for each culture separately (see Table 5), revealed non-significant overall models for Americans ($F_{[5,145]} = 1.291$, $p = .271$) and Germans ($F_{[5,140]} = 0.991$, $p = .425$), and none of the personality traits were found to significantly predict these participants' attitudes towards board games. For Danes, on the contrary, the overall model was yet again significant ($F_{[5,160]} = 3.326$, $p = .007$), with approximately 9% of the variance explained by the predictors ($R^2 = 0.094$). Higher scores on Openness were found to significantly predict more positive attitudes towards board games ($p = .001$), whereas higher Neuroticism scores were found to significantly predict more negative attitudes towards board games ($p = .025$).

4. Discussion

This study aimed to investigate whether variation in personality traits is related to board game usage patterns and attitudes, and whether such assumed associations are expressed differently across countries that reflect different cultural orientations and values. The findings indicate that both personality traits and their interplay with culture are important in affecting board game-related preferences and usage patterns. Our main findings suggest that Neuroticism, Openness, Agreeableness, and Conscientiousness all play a significant role in predicting liking levels, playing frequency, and attitudes towards board games. Among these traits, Openness was found to consistently predict each of our three dependent variables, although the interplay between different personality traits and board game usage patterns and attitudes mainly applied to Danes, but not to Americans or Germans.

4.1. Personality traits and board game patterns

Personality traits were found to predict individuals' playing frequency, liking levels, and general attitudes towards board games. Individuals with higher levels of Openness and Conscientiousness and lower levels of Agreeableness reported playing board games more frequently. Low levels of Neuroticism and high levels of Openness were also found to predict preferences of playing board games, and Openness was associated with positive attitudes towards board games. These findings are in line with previous studies, such as that of Bilalić et al. (2007), which suggests that children with high levels of Openness and low levels of Agreeableness will have a preference towards playing chess. Further, the results parallel the findings of studies in the field of online computer games, which demonstrate that the tendency to play such games is related to higher levels of Openness and Conscientiousness, and lower levels of Neuroticism (Teng et al., 2012).

One of the findings that is consistent with previous research is the importance of Openness in predicting positive attitudes towards games generally, and towards board games specifically. Indeed, this personality trait was found to significantly predict all board game-related parameters in the current study. These results suggest that individuals who score high on this trait generally enjoy playing board games more than those who score low. Openness is related to the motivation to seek experiences (Zuckerman, 1979) and the readiness to fantasize (McCrae and Costa, 1986). Games, and especially board games, provide a variety of experiences and can be played in different environments and with different partners. As such, people who do not demonstrate openness to participate in new experiences may not enjoy playing games as much as people who score high on this trait. Furthermore, board games often encourage disconnecting from reality to engage in the "world" of the game. Thus, the enjoyment of fantasizing is a key factor that ultimately contributes to individuals' ability to enjoy such games. As Openness was found to be the strongest and most consistent predictor of usage patterns, liking levels, and attitudes towards board games, targeting individuals high on this trait might be an effective and profitable way to promote sales not only of new board games, but also of novel products and services with certain game elements and play-related aspects.

Another trait that was found as important in predicting frequency of playing board games was Conscientiousness. A possible approach to understanding the importance of this trait in predicting attitudes towards board games is through the structure of the game. According to Parlett (1999), the rules of the game are the game itself. Board games usually involve a set of rules and norms according to which players comply (Salen et al., 2004). Individuals who are less likely to comply with social norms are also less likely to enjoy complying with games that rely on a complex set of rules, which is often the case for board games.

The negative correlation found between Neuroticism and attitudes

Table 5
The relationship between country, personality traits, and attitudes towards board games.

	Americans				Danes				Germans			
	B	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*	*B*	*SE*	*b*	*t*
Neuroticism	0.001	0.004	0.038	0.409	−0.015	0.007	−0.191	−2.257*	−0.006	0.009	−0.066	−0.691
Extraversion	0.008	0.004	0.161	1.756+	−0.010	0.008	−0.113	−1.304	0.004	0.011	0.039	0.410
Openness	0.006	0.005	0.099	1.199	0.030	0.009	0.255	3.327**	−0.015	0.012	−0.113	−1.320
Agreeableness	−0.004	0.006	−0.052	−0.627	−0.004	0.009	−0.035	−0.439	0.008	0.015	0.047	0.538
Conscientiousness	0.004	0.004	0.074	0.867	0.007	0.007	0.083	0.977	0.008	0.011	0.069	0.736

+$p < .10$.
*$p < .05$.
**$p < .01$.

towards board games, particularly regarding liking of board games, may result from the tendency of highly neurotic individuals to avoid playing board games. Several inherent elements of board games may trigger strong emotional responses, such as feelings of helplessness and a lack of control, or frustration and/or embarrassment after losing. People who tend to experience strong emotional reactions may find such games hard to enjoy. Furthermore, the spectrum of emotions triggered by board games, which are often played in groups rather than individually, may explain the negative association found between the frequency of playing board games and Agreeableness. This trait is linked to the tendency to be liked and to be pleasant (Graziano and Tobin, 2009), and to the tendency to avoid conflicts. Thus, individuals who are preoccupied with other peoples' impressions of themselves and the way they are being perceived by others may prefer to avoid playing board games.

4.2. The role of culture and its implications

An examination of the explained variance of the models predicting board game usage frequency, liking levels, and attitudes by personality traits suggests that those traits explain only a small, yet significant proportion of the total variance (2.4–4.2%). Thus, further explorations of the interactions between personality traits and cultures were made. Separate statistical models in each culture yielded significant results specifically for Danes, in which Neuroticism, Extraversion, and Openness were found to predict reported frequency of playing board games, while Neuroticism and Openness were found to predict both the tendency to like board games as well as overall positive attitudes towards board games. These results are in line with previous findings on the Nordic market demonstrating that the Negative Affectivity trait (a trait similar to Neuroticism) is related to Swedes' tendency to gamble (Sundqvist and Wennberg, 2015). One possible explanation for these findings is that Denmark is a relatively homogenous culture, unlike the American and German cultures. Previous research has found support for the notion that Nordic cultures are considered homogenous in terms of their population (Bengtsson et al., 2010) and demonstrate high genetic homogeneity (Athanasiadis et al., 2016). Unlike the Nordic countries, Germany and USA are countries with higher ethnic and cultural diversity. Consequently, individuals in these cultures demonstrate higher individual differences and heterogeneity.

The findings of the present study suggest that when considering board game markets, conclusions may be drawn regarding the Danish market, and arguably other countries with high genetic homogeneity and similar cultural characteristics as Denmark. However, the US and the German markets are more complex and may need to be divided and considered as several distinct markets. These results also suggest that the cultural orientations of HI and VI are important in predicting board game habits, with liking levels, attitudes, and playing frequencies of such games being easier to estimate for people from horizontal individualistic societies (e.g., Denmark), where equality is highly valued, but more difficult for people from vertical societies (e.g., USA), characterized by competition and hierarchies. Furthermore, the obtained differences across countries indicate that the concept of contextual sensitivity is important to consider in research on board games and scholarly studies on game-related aspects, since contextual factors may play a prominent role in determining the replicability of this stream of research (Otterbring et al., 2021; Otterbring et al., 2020; Van Bavel, Mende-Siedlecki, Brady and Reinero, 2016). As an illustrative example from the current investigation, there was a positive association between participants' Extraversion scores and their playing frequency of board games at the borderline of statistical significance ($p < .06$) in the American sample, consistent with some prior related research findings (Bilalić et al., 2007; Teng, 2008). However, for the Danish sample, this pattern was entirely reversed, with lower Extraversion scores predicting higher playing frequency of board games ($p < .01$). Certain regional differences could also exist even *within* a country. Thus, considering that personality traits appear to emerge as a response to address certain key challenges associated with the specific environment and cultural context in which individuals grow up (Wei et al., 2017), further studies can test theoretically derived predictions postulating a culturally contingent role of personality traits on individuals' play- and game-related responses.

One of the personality traits that repeatedly was found to predict board game-related attitudes and habits in Denmark was Neuroticism. This trait has been previously associated with theories on approach-avoidance motivation. Approach motivation directs behavior towards positive, rewarding stimuli (Ariely and Loewenstein, 2006; Banovic and Otterbring, 2021), while avoidance motivation directs behavior away from negative or aversive stimuli (Elliot, 2006; Otterbring and Shams, 2019). Individuals differ in their general tendency to experience positive affect in response to positive stimuli, or in their motivation to approach such stimuli. Similarly, individuals differ in their tendency to experience negative affect in response to aversive stimuli, or in their motivation to withdraw from such stimuli (Sutton and Davidson, 1997). Different traits have been linked to the tendency to be particularly sensitive to rewarding or aversive stimuli (Otterbring, 2020). As neurotic individuals tend to be more sensitive to negative stimuli (Carver et al., 2000), such individuals may tend to avoid board games. This is in line with the findings of the present study, as Neuroticism was negatively associated with overall attitudes toward board games. From a practical point of view, toy companies might specifically address individuals higher on the neurotic scale to engage in board games by designing games that stimulate less negative arousal and aversive properties.

Another possible implication of the results from this study could be gearing board games genres towards specific personalities. In a study by Braun et al. (2016), the authors found several relationships between personality traits and video game preferences. For example, individuals who scored low in Neuroticism were found to prefer role playing and simulation games while individuals scoring high on Extraversion were found to prefer action games. Therefore, by linking certain personality traits with people's preferred game genre while taking cultural orientation into consideration, manufacturers should be able to personalize their offerings to the desires and key characteristics of their consumers.

However, the results reported herein suggest that design decisions regarding board games based on consumers' specific personalities seem to be relevant for the Danish market, where there was generally a consistent impact of personality traits on consumers' board-game related habits, attitudes, and liking levels. In the other countries examined, attempts to specifically tailor games that align with consumers' personality traits may backfire, likely due to more heterogeneous cultures with a greater diversity in ethnicity and cultural values. As such, while our findings suggest a limited generalizability in where to effectively use consumers' personality traits for design decisions and promotional activities of board games, the present study paints a more nuanced picture of the specific cultural contexts that may benefit from taking consumers' personality traits into consideration when designing and marketing such games.

4.3. Conclusion

This study investigated cultural and personality-related influences on board game playing patterns and preferences. The results revealed that addressing only the personality aspect had to some predictive value, but that the combination of both personality traits and cultural orientation yielded more accurate information regarding individuals' usage frequency, liking levels, and attitudes towards board games. These findings may influence marketing and audience-targeting strategies for board game companies. Thus, the current results have important implications for the board-game industry, a multi-billion-dollar market worldwide, and can shed light on how to better personalize and design board games according to personality traits and culture-specific preferences. Such personalization and design should have a significant impact on the user experience and ultimately increase sales.

Acknowledgement

The first author collected the data and wrote the initial draft of the manuscript. The second author acted as a supervisor and contributed with the conceptualization, study design, and the writing of subsequent drafts. Both authors approved the manuscript prior to submission and jointly declare that they have no conflicts of interest.

References

Ares, G., Antúnez, L., Otterbring, T., Curutchet, M.R., Galicia, L., Moratorio, X., Bove, I., 2020. Sick, salient and full of salt, sugar and fat: understanding the impact of nutritional warnings on consumers' associations though the salience bias. Food Qual. Prefer. 103991. https://doi.org/10.1016/j.foodqual.2020.103991.

Argo, J.J., 2020. A contemporary review of three types of social influence in consumer psychology. Consumer Psychology Review 3 (1), 126–140. https://doi.org/10.1002/arcp.1059.

Ariely, D., Loewenstein, G., 2006. The heat of the moment: the effect of sexual arousal on sexual decision making. J. Behav. Decis. Making 19 (2), 87–98.

Askgaard, H., 1992. As Denmark sees herself and is seen by others. Discover Denmark—On Denmark and the Danes: Past, Present and Future 7–26.

Athanasiadis, G., Cheng, J.Y., Vilhjálmsson, B.J., Jørgensen, F.G., Als, T.D., Le Hellard, S., Espeseth, T., Sullivan, F.F., Hultman, C.M., Kjærgaard, P.C., Schierup, M. H., Mailund, T., 2016. Nationwide genomic study in Denmark reveals remarkable population homogeneity. Genetics 204 (2), 711–722. https://doi.org/10.1534/genetics.116.189241.

Banovic, M., Otterbring, T., 2021. Athletic abs or big bellies: the impact of imagery, arousal levels, and health consciousness on consumers' attitudes towards plant-based protein products. Food Qual. Prefer. 87, 104067. https://doi.org/10.1016/j.foodqual.2020.104067.

Barrick, M.R., Mount, M.K., 1991. The big five personality dimensions and job performance: a meta-analysis. Person. Psychol. 44 (1), 1–26. https://doi.org/10.1111/j.1744-6570.1991.tb00688.x.

Batson, C.D., 1993. Communal and exchange relationships: what is the difference? Pers. Soc. Psychol. Bull. 19 (6), 677–683. https://doi.org/10.1177/0146167293196002.

Bengtsson, B., Strömblad, P., Bay, A.H., 2010. Diversity, Inclusion and Citizenship in Scandinavia. Cambridge Scholars Publishing.

Bilalić, M., McLeod, P., Gobet, F., 2007. Personality profiles of young chess players. Pers. Indiv. Differ. 42 (6), 901–910. https://doi.org/10.1016/j.paid.2006.08.025.

Braun, B., Stopfer, J.M., Müller, K.W., Beutel, M.E., Egloff, B., 2016. Personality and video gaming: comparing regular gamers, non-gamers, and gaming addicts and differentiating between game genres. Comput. Hum. Behav. 55, 406–412. https://doi.org/10.1016/j.chb.2015.09.041.

Burton, A., 1997. Design history and the history of toys: defining a discipline for the bethnal green museum of childhood. J. Des. Hist. 10 (1), 1–21. https://doi.org/10.1093/jdh/10.1.1.

Carver, C.S., Sutton, S.K., Scheier, M.F., 2000. Action, emotion, and personality: emerging conceptual integration. Pers. Soc. Psychol. Bull. 26 (6), 741. https://doi.org/10.1177/0146167200268008.

Cialdini, R.B., 2009. We have to break up. Perspect. Psychol. Sci. 4 (1), 5–6. https://doi.org/10.1111/j.1745-6924.2009.01091.x.

Costa, P.T., McCrae, R.R., 1985. The NEO Personality Inventory: Manual, Form S and Form R. Psychological assessment resources, Odessa.

Costa, P.T., McCrae, R.R., 1992. Normal personality assessment in clinical practice: the NEO Personality Inventory. Psychol. Assess. 4 (1), 5. https://doi.org/10.1037/1040-3590.4.1.5.

Daun, Å., 1991. Individualism and collectivity among Swedes. Ethnos 56 (3–4), 165–172.

Elliot, A.J., 2006. The hierarchical model of approach-avoidance motivation. Motiv. Emot. 30 (2), 111–116. https://doi.org/10.1080/00141844.1991.9981433.

Ellis, C., Thierry, G., Vaughan-Evans, A., Jones, M.W., 2018. Languages flex cultural thinking. Biling. Lang. Cognit. 21 (2), 219–227. https://doi.org/10.1017/S1366728917000190.

Feather, N.T., 1998. Attitudes toward high achievers, self-esteem, and value priorities for Australian, American, and Canadian students. J. Cross Cult. Psychol. 29 (6), 749–759. https://doi.org/10.1177/0022022198296005.

Gobet, F., Retschitzki, J., de Voogt, A., 2004. Moves in Mind: the Psychology of Board Games. Psychology Press, .

Graziano, W.G., Tobin, R.M., 2009. Agreeableness. In: Leary, M.R., Hoyle, R.H. (Eds.), Handbook of Individual Differences in Social Behavior. The Guilford Press, New York, NY, US, pp. 46–61.

Henrich, J., Heine, S.J., Norenzayan, A., 2010. Most people are not WEIRD. Nature 466 (7302). https://doi.org/10.1038/466029a, 29-29.

Hofstede, G., 1980. Motivation, leadership, and organization: do American theories apply abroad? Organ. Dynam. 9 (1), 42–63. https://doi.org/10.1016/0090-2616(80)90013-3.

Högberg, J., Ramberg, M.O., Gustafsson, A., Wästlund, E., 2019. Creating brand engagement through in-store gamified customer experiences. J. Retailing Consum. Serv. 50, 122–130. https://doi.org/10.1016/j.jretconser.2019.05.006.

Holbrook, M.B., Chestnut, R.W., Oliva, T.A., Greenleaf, E.A., 1984. Play as a consumption experience: the roles of emotions, performance, and personality in the enjoyment of games. J. Consum. Res. 11 (2), 728–739. https://doi.org/10.1086/209009.

Holt, D.B., 1995. How consumers consume: a typology of consumption practices. J. Consum. Res. 22 (1), 1–16. https://doi.org/10.1086/209431.

Jones, K., 2000. Non-predatory games. The Games Journal 8.

Kim, H.J., Song, H., 2020. Effort justification for fun activities? The effect of location-based mobile coupons using games. J. Retailing Consum. Serv. 54, 102029. https://doi.org/10.1016/j.jretconser.2019.102029.

Lee, Y.H., Wohn, D.Y., 2012. Are there cultural differences in how we play? Examining cultural effects on playing social network games. Comput. Hum. Behav. 28 (4), 1307–1314. https://doi.org/10.1016/j.chb.2012.02.014.

Machín, L., Curutchet, M.R., Gugliucci, V., Vitola, A., Otterbring, T., de Alcantara, M., Ares, G., 2020. The habitual nature of food purchases at the supermarket: implications for policy making. Appetite 155, 104844. https://doi.org/10.1016/j.appet.2020.104844.

Markus, H.R., Kitayama, S., 1991. Culture and the self: implications for cognition, emotion, and motivation. Psychol. Rev. 98 (2), 224. https://doi.org/10.1037/0033-295X.98.2.224.

Mayer, B., Harris, C., 2010. Libraries Got Game: Aligned Learning through Modern Board Games. American Library Association.

McCrae, R.R., Costa Jr., P.T., 1983. Joint factors in self-reports and ratings: neuroticism, extraversion and openness to experience. Pers. Indiv. Differ. 4 (3), 245–255. https://doi.org/10.1016/0191-8869(83)90146-0.

McCrae, R.R., Costa, P.T., 1986. Personality, coping, and coping effectiveness in an adult sample. J. Pers. 54, 385–405. https://doi.org/10.1111/j.1467-6494.1986.tb00401.x.

Nasar, S., Nash, J.F., Kuhn, H.W., 2002. The Essential John Nash. Princeton University Press, .

Nelson, M.R., Shavitt, S., 2002. Horizontal and vertical individualism and achievement values: a multimethod examination of Denmark and the United States. J. Cross Cult. Psychol. 33 (5), 439–458. https://doi.org/10.1177/0022022102033005001.

Niles, F.S., 1998. Individualism-collectivism revisited. Cross Cult. Res. 32 (4), 315–341. https://doi.org/10.1177/106939719803200401.

Otterbring, T., 2020. Appetite for destruction: counterintuitive effects of attractive faces on people's food choices. Psychol. Market. 37 (11), 1451–1464. https://doi.org/10.1002/mar.21257.

Otterbring, T., 2021. Evolutionary psychology in marketing. Deep, debated, but fancier with fieldwork. Psychology & Marketing 38(2), 229–238.

Otterbring, T., 2017. Smile for a while: the effect of employee-displayed smiling on customer affect and satisfaction. Journal of Service Management 28 (2), 284–304. https://doi.org/10.1108/JOSM-11-2015-0372.

Otterbring, T., Festila, A., Folwarczny, M., 2021. Replication and extension of framing effects to compliance with health behaviors during pandemics. Saf. Sci. 134, 105065. https://doi.org/10.1016/j.ssci.2020.105065.

Otterbring, T., Lu, C., 2018. Clothes, condoms, and customer satisfaction: the effect of employee mere presence on customer satisfaction depends on the shopping situation. Psychol. Market. 35 (6), 454–462. https://doi.org/10.1002/mar.21098.

Otterbring, T., Ringler, C., Sirianni, N.J., Gustafsson, A., 2018. The Abercrombie & Fitch effect: the impact of physical dominance on male customers' status-signaling consumption. J. Market. Res. 55 (1), 69–79. https://doi.org/10.1509/jmr.15.0247.

Otterbring, T., Shams, P., 2019. Mirror, mirror, on the menu: visual reminders of overweight stimulate healthier meal choices. J. Retailing Consum. Serv. 47, 177–183. https://doi.org/10.1016/j.jretconser.2018.11.019.

Otterbring, T., Sundie, J., Li, Y.J., Hill, S., 2020. Evolutionary psychological consumer research: bold, bright, but better with behavior. J. Bus. Res. 120, 473–484. https://doi.org/10.1016/j.jbusres.2020.07.010.

Parjanen, S., Hyypiä, M., 2019. Innotin game supporting collective creativity in innovation activities. J. Bus. Res. 96, 26–34. https://doi.org/10.1016/j.jbusres.2018.10.056.

Parlett, D., 1999. The Oxford History of Board Games. Oxford University Press, Oxford.

Pham, M.T., 2013. The seven sins of consumer psychology. J. Consum. Psychol. 23 (4), 411–423. https://doi.org/10.1016/j.jcps.2013.07.004.

Pham, M.T., Sun, J.J., 2020. On the experience and engineering of consumer pride, consumer excitement, and consumer relaxation in the marketplace. J. Retailing 96 (1), 101–127. https://doi.org/10.1016/j.jretai.2019.11.003.

Prentice, C., 2016. Leveraging employee emotional intelligence in casino profitability. J. Retailing Consum. Serv. 33, 127–134. https://doi.org/10.1016/j.jretconser.2016.08.011.

Rojas-Rivas, E., Antúnez, L., Cuffia, F., Otterbring, T., Aschemann-Witzel, J., Giménez, A., Ares, G., 2020. Time orientation and risk perception moderate the influence of sodium warnings on food choice: implications for the design of communication campaigns. Appetite 147, 104562. https://doi.org/10.1016/j.appet.2019.104562.

Salen, K., Tekinbaş, K.S., Zimmerman, E., 2004. Rules of Play: Game Design Fundamentals. MIT press, .

Singelis, T.M., Triandis, H.C., Bhawuk, D.P., Gelfand, M.J., 1995. Horizontal and vertical dimensions of individualism and collectivism: a theoretical and measurement refinement. Cross Cult. Res. 29 (3), 240–275. https://doi.org/10.1177/106939719502900302.

Sundqvist, K., Wennberg, P., 2015. Risk gambling and personality: results from a representative Swedish sample. J. Gambl. Stud. 31 (4), 1287–1295. https://doi.org/10.1007/s10899-014-9473-2.

Sutton, S.K., Davidson, R.J., 1997. Prefrontal brain asymmetry: a biological substrate of the behavioral approach and inhibition systems. Psychol. Sci. 8 (3), 204–210. https://doi.org/10.1111/j.1467-9280.1997.tb00413.x.

Teng, C.I., 2008. Personality differences between online game players and nonplayers in a student sample. Cyberpsychol. Behav. 11 (2), 232–234 ().

Teng, C.I., Lo, S.K., Lin, Y.L., 2012. Online gamer personality and weekday gaming tendency. Afr. J. Bus. Manag. 6 (2), 704–710. https://doi.org/10.5897/AJBM10.1610.

Triandis, H.C., Gelfand, M.J., 1998. Converging measurements of horizontal and vertical individualism and collectivism. J. Pers. Soc. Psychol. 74, 275–289. https://doi.org/10.1037/0022-3514.74.1.118.

Van Bavel, J.J., Mende-Siedlecki, P., Brady, W.J., Reinero, D.A., 2016. Contextual sensitivity in scientific reproducibility. Proc. Natl. Acad. Sci. Unit. States Am. 113 (23), 6454–6459. https://doi.org/10.1073/pnas.1521897113.

Wei, W., Lu, J.G., Galinsky, A.D., Wu, H., Gosling, S.D., Rentfrow, P.J., et al., 2017. Regional ambient temperature is associated with human personality. Nature Human Behaviour 1 (12), 890–895. https://doi.org/10.1038/s41562-017-0240-0.

Woods, S., 2012. Eurogames: the Design, Culture and Play of Modern European Board Games. McFarland.

Zuckerman, M., 1979. Sensation seeking and risk taking. In: Emotions in Personality and Psychopathology. Springer, Boston, MA, pp. 161–197.