Shuffling Deck of Personality: An Observational Study of Extraversion Traits while Playing Cards

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Abstract: Extraversion, a core trait within the Five-factor Model of personality, encompasses behavioural tendencies such as sociability, assertiveness, enthusiasm, and risk-taking. While numerous studies have explored extraversion through online games, the behavioural expression of this trait in offline group interactions remain underexplored. This study aims to describe how the facets of extraversion manifest during face-to-face gameplay using a structured behavioural observation approach. A subject was observed across two sessions of offline card games by three independent raters, with inter-rater reliability and composite score analysed to identify consistent trait expressions. The use of live, unmediated interaction allowed for the capture of rich social cues that are often muted in digital settings. Findings support the view that offline games provide a naturalistic and ecologically valid context to observe personality traits in action. This research contributes to a growing body of work advocating fir alternative methods in personality assessment, particularly in educational and group-based environments.

Keywords: Assertiveness, Extraversion, Five-Factor Model, Group Behaviour, Sociability

1 INTRODUCTION

Psychological research has consistently emphasised the substantial influence of personality traits on human behaviours. Extraversion, as proposed by Eysenck (1991), is closely linked to sociability, assertiveness, and a tendency toward engaging social interactions. The Big Five model (Costa & McCrae, 1985) similarly positions extraversion as a fundamental factor shaping how individuals interact socially. In contexts such as card games, anecdotal observations and prior studies (Jones, 2010; Davis & Robinson, 2015) suggest that extroverted individuals are often more assertive and strategic. These behaviours include risk-taking, open expression of thoughts, and enthusiasm in engaging with others. Empirical research also shows that extraverts actively participate in discussions and frequently take on leadership roles (Brown & Wilson, 2018; Tayler et al., 2019). This trait is particularly relevant in the context of games, which often serve as dynamic and interactive social settings. Fang and Zhu (2011) found that extraverted players are more likely to prefer games that involved cooperative, communication, and player interaction. Their study revealed that game genre preferences were positively associated with extraversion, suggesting that socially stimulating gameplay environments are especially attractive to extraverted individuals. Efforts to measure extraversion through in-game behaviours have also been explored by Van Lankveld et al. (2010). By creating a personality test within the game *Neverwinter Nights*, they identified specific in-game elements such as conversational style, exploration choices, and decision-making. These elements significantly correlated with extraversion scores on the NEO-PI-R. Their study demonstrated that behavioural cues within a game environment could serve as a valid indicator of personality traits, particularly extraversion and its facets. Notably, twelve out of twenty observed elements showed variation linked to extraversion, reinforcing the idea that personality can be behaviourally expressed in game-based contexts. Topete (2010) contributed to this discourse by outlining two competing perspectives on extraversion in online games. One perspective suggests that some individuals use online gaming as a way to avoid face-to-face interaction, while another holds that anonymity in online spaces allows people to more freely express their true personalities.

Although these studies provide rich insights into how extraversion relates to gaming behaviours, they primarily focus on online environments or digital platforms. Few studies have explored how extraversion is behaviourally expressed in offline group-based games, where real-time interaction, verbal cues, and physical presence are more pronounced. The

aim of this study is to describe the behavioural expression of sociability, assertiveness, enthusiasm, and risk-taking, a core trait of extraversion within the Five-Factor Model, while playing card games. A key benefit of this research is its use of an offline face-to-face setting to observe the dimensions of extraversion. By focusing on live interaction during card gameplay, this study captures the spontaneous social cues that are often obscured in online contexts (Topete, 2010). This provides a more ecologically valid understanding of how extraversion manifests in real-world social situations. By using offline card games as the observational context, this research seeks to explore the potential of offline gameplay as a practical tool for assessing personality traits in real-time social settings, with relevance to group dynamics, educational applications, and behavioural research.

2 MATERIALS AND METHODS

Theoretical Framework

This study employs the Five-Factor Model developed by Costa and McCrae (1996) as its primary theoretical framework. The main dimension that will be used is extraversion which are known for outgoing personalities, love for making social connections, and preference for engaging in stimulating group activities. The current research focuses solely on extraversion which is characterised by sociability, assertiveness, enthusiasm, and risk-taking. These dimensions were further broken down into measurable indicators such as social interaction, friendliness, leadership, dominance, excitement, positivity, adventurousness, and openness to novelty.

Extraverts are known for their outgoing personalities, love for making social connections, and preference for engaging in stimulating group activities. They frequently flourish in busy social settings, easily strike up discussions, and exhibit boldness in interpersonal interactions. The development of extroversion as a personality trait is influenced by a blend of factors. Biologically, extroversion is linked to the behavioural activation system (BAS) and dopaminergic processes, suggesting a biological basis. During adolescence, extroversion tends to increase, often in conjunction with heightened openness and reduced neuroticism. Additionally, factors such as self-rated physical attractiveness, other-rated physical attractiveness, and physical strength have been associated with greater extroversion among adolescents. Furthermore, extroversion is characterised by sociability and a preference for social activities, with individuals who enjoy social interactions more likely to exhibit extroverted traits. It's important to recognize that the development of extroversion is a multifaceted process influenced by genetics, environment, and individual differences, with specific contributing factors varying from person to person.

For sociability, the indicators are social interaction and friendliness. Social interaction is a high degree of extraversion characterised by a strong preference for social interaction and a tendency to seek out social gatherings and opportunities to connect with others. Friendliness is where extroverts are often perceived as warm, approachable, and friendly. For assertiveness, the indicators are leadership and dominance. Leadership is when extroverts often display assertiveness and may be drawn to leadership roles. They tend to be comfortable taking charge and making decisions in group settings. Dominance is when in social situations, extroverts may exhibit dominance or assertive behaviour, expressing their opinions and ideas confidently. For enthusiasm, the indicators are excitement and positivity. Excitement is when extroverts frequently experience excitement and enthusiasm for various activities and events. Positivity is where extroverts tend to maintain a positive and optimistic outlook, even in challenging situations. For risk-taking, the indicators are adventurous and openness to novelty. Adventurousness is when extroverts are more willing to take risks and explore new experiences, whether in social situations or other aspects of life. Openness to novelty is when extroverts embrace novelty and are open to trying new things stepping out of their comfort zones

Research Design

This study uses qualitative design with a case study approach. The research aimed to observe extraversion behaviours based on the Five-Factor Model of Personality (Costa & McCrae, 1996).

Participant

The subject of this study is a Bachelor student from Universitas Airlangga. The subject was selected through purposive sampling based on prior indications of extraverted behaviour; sociability, active social engagement, and responsiveness in group interactions. Participant consent has been obtained.

Data Collection

The observation will be done during card games by three different observers using a structured observation sheet; the observation will end after two card games have ended with a winner. The data collection was done over the course of two separate days.

The structured observation sheet is adapted from the Behavioural Report Form (BRF) developed by Paunonen and Ashton (2001), which was originally designed to assess Big Five personality traits through directly observable behaviours. The BRF facet of predictors of extraversion yielded mean behavioural correlations(r=.27), with a inter-observer consistency for extraversion of .80. The observer sheets use a 5-point liker scale (1=Never, 5=Always). Each dimension was represented by two specific indicators designed to reflect real-world expressions of extraversion. For sociability (1) "Enjoys attending social activities and parties" reflects participation in group settings and frequency of social engagement. (2) "Talks easily and spontaneously with others" captures verbal openness and approachability. (3) "Makes friends quickly in group contexts" indicates ease of initiating social connections. For assertiveness, (1) "Takes charge or leads group interactions" reflects willingness to initiate and direct. (2) "Speaks up to voice opinions or influence decisions" captures confident expression in group discussions. For enthusiasm, (1) "Shows excitement during interaction" conveys visible affect and expressive involvement. (2) "Maintains high energy when participating in gameplay" reflects sustained behavioural activation. For risk-taking, (1) "Makes bold or unconventional decisions during gameplay" indicates propensity to take chances. (2) "Attempts new or challenging strategies without prompting" reflects initiative and exploratory behaviour.

Observations are to be conducted at two different locations on November 25, 2023, and November 26, 2023. Each observation session is expected to last one hour.

Data Analysis
Fleiss' Kappa formula will be used for observer reliability and a paired t-test will be done for comparison of both observation days.

3 RESULTS

Table 1. Reliability Agreement by Dimension

Dimension	Day 1 (%)	Day 2 (%)
Sociability	66.6	77.7
Assertiveness	33.3	33.3
Enthusiasm	83.3	33.3
Risk-Taking	33.3	66.6

The observations across two days showed varying levels of inter-rater agreement for each behavioural dimension. Sociability demonstrated relatively strong and consistent agreement, increasing from 66.6% on day 1 to 77.7% on day 2. Enthusiasm showed high agreement on day 1 (83.3%) but decreased to 33.3% on day 2, which may reflect differences in behavioural expression or contextual shifts between sessions. Agreement for assertiveness remained stable at 33.3% across both days, suggesting this dimension may have been subtle or less overtly expressed. Risk-taking showed improved agreement from 33.3% to 66.6%, indicating clearer or more recognisable behaviours on the second day.

Table 2. Paired Sample T-Test

Variable Pair	Mean Diff.	t	df	p-value
Sociability Day 1-2	-1.11	-1.00	2	0.42
Assertiveness Day 1-2	0.00	0.00	1	1.00
Enthusiasm Day 1-2	5.00	3.01	1	0.20
Risk-Taking Day 1-2	-3.33	-1.00	1	0.50

The paired sample t-test showed no statistically significant differences in observed extraversion related dimensions between day 1 and day 2. Sociability slightly decreased (M=-1.11, $t(2)$=-1.00, p=.423), assertiveness remained unchanged (M=0.00), $t(1)$=0.00, p=1.000), enthusiasm increased (M=5.00, $t(1)$=3.01, p=.204) and risk-taking decreased (M=-3.33,

$t(1)=-1.00$, $p=.500$), though none of these changed were statistically significant. These results suggest that the subject's behavioural expression of extraversion remained relatively stable across the two observation sessions, with some fluctuations that may reflect contextual or situational influences

4 DISCUSSIONS

The findings suggests that sociability and enthusiasm were the most visibly expressed and consistently rated behaviour across both days. Sociability showed relatively strong inter-rater agreement on both days, with an increase from 66.6% to 77.7%, indicating that behaviours such as initiating interaction and engaging with others were readily observable and agreed upon by the observers. This supports previous literature which emphasises sociability as the most behavioural accessible facet of extraversion (Back et al., 2009). Enthusiasm also showed a high agreement on day 1 (83.3%), though it dropped to 33.3% on day 2, potentially reflecting differences in emotional tone of the gameplay or variations in behavioural intensity across sessions.

Assertiveness and risk-taking, on the other hand, showed variability. Assertiveness remained low in inter-rater agreement across both days (33.3%), which may suggest that assertive behaviours are more context-dependent or less overt in informal group settings. Risk-taking demonstrated an increase in agreement from 33.3% to 66.6%, possibly due to clearer behavioural cues emerging on the second day. Similar difficulties in reliably identifying assertiveness have been noted in behavioural studies of leadership and social dominance, especially in settings lacking formal role structures (Funder, 2009).

Although no statistically significant differences were found between day 1 and day 2 for any of the dimensions, mean differences were observed. This aligns with the notion that while extraversion is a stable personality trait, its expression may fluctuate depending on situational demands or mood states (Fleeson, 2001; McCabe & Fleeson, 2016). The observed fluctuations suggest that trait expression is dynamic, offering support to Whole Trait Theory, which posits that traits are not static but are manifested through patterns of behaviours across varying context (Fleeson & Jayawickreme, 2015).

This study aimed to explore the behavioural expression of sociability, assertiveness, enthusiasm, and risk taking during offline card gameplay. Through structured behavioural observation, the study offered a lens into how these traits are enacted in real-time, socially interactive environments.

These findings suggest that extraversion is indeed observable through specific behaviours such as initiating conversation, taking the lead in group dynamics, responding enthusiastically to in-game developments, and taking strategic risks. These observations align with previous work by Van Lankveld et al. (2010), who found that behavioural cues embedded in digital gameplay elements significantly correlated with extraversion scroes on the NEO-PI-R. However, while their study operated in a virtual world, the current research advances the literature by validating these trait expressions in a naturalistic, face-to-face environment. This setting enabled the capture of more subtle cues which are often limited or entirely absent in online contexts.

Additionally, the choice of card games as the setting offers a distinctive contribution to personality research. Compared to the digital platforms predominantly studied in literature such as Topete (2010). Furthermore, the study supports the premise that offline game environments offer higher ecological validity for observing personality traits in action. Unlike digital games that often constrain behaviour through structured mechanics (Van Lankveld et al., 2010), card games require spontaneous interaction, negotiation, and collaboration, making them ideal for capturing authentic expressions of extraversion in real time. This supports the idea that trait expressions are contextually bound and that their observation must consider the interactional and social environment in which behaviour occurs (Fang & Zhu, 2011).

One of the strengths of this study lies in its ecological validity. By observing behaviour in a naturalistic, interactive setting, the study provides richer, more nuanced perspective on how personality traits are enacted in real life. However, the study lacks the subject diversity as the sample consisted of a single subject. This limit generalisability and prevents the use of more robust statistical analysis such as correlation or regression. The reliance on a small number of observers also increases susceptibility to subjectivity and variance in behavioural interpretation, despite efforts to standardise rating procedures. Further research would benefit from having a larger sample size with more observer and conducting the observation over the course of more than two days.

5 CONCLUSIONS

This study contributes to the growing body of research on personality expression in gameplay by illustrating that extraversion can be reliably observed in offline group-based settings such as card games. These findings support prior claims that extraversion is linked to socially engaging and expressive behaviour (John & Srivastava, 1999; Van Lankveld et al., 2010), while also offering a contrast to research focused on online gaming contexts, which often involve varying degrees of anonymity and social inhibition (Topete, 2010).

The offline observational setting used in this study provides a valuable alternative to existing methodologies by enabling researchers to witness real-time behavioural cues that are often lost in virtual environments. As Fang and Zhou (2011) noted, extraverted players tend to prefer interactive and communicative gaming styles, and the live gameplay setting allows for such preferences to be captured and analysed more authentically.

This study helps fill a research gap by showing how personality can be expressed through naturalistic interaction rather than digitally mediated behaviour. It suggests that offline games may serve as meaningful tools for personality assessment and behavioural research, particularly in group dynamics and educational or therapeutic contexts.

Further studies should expand this approach by involving multiple participants, additional types of offline games, and longer observation periods to deepen understanding. Nonetheless, this study affirms that card games offer a useful window into the behavioural expression of extraversion, highlighting the continuing importance of context in personality research.

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