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Project Submission Sheet

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**Exploring the Relationship Between Parental Personality Traits, Family Functioning,
and Parent-Child Play.**

David Cullen

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Supervisor: Dr. Barry Coughlan

B.A. (Hons) in Psychology

National College of Ireland

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Abstract

This study explored the relationship between parental personality traits (as categorized by the Big Five Model), family functioning and parent-child play with the addition of demographic factors. The Parent Play Questionnaire was used to assess parental involvement, attitudes and digital media use. Early research into personality traits has shown the positive and negative associations related to each trait on life success, psychopathology, and on family life, including parenting techniques. This current investigation used a quantitative approach, utilizing a survey distributed throughout the general population $n=108$. Multiple regression analyses were performed, and several significant findings were revealed. Parental age was the strongest predictor of negative outcomes in all regression models which included attitudes towards play, overall play interactions and family functioning, suggesting older parental age is significantly linked to poorer outcomes. Agreeableness significantly predicted positive attitudes towards play as did Conscientiousness. For overall play interactions Conscientiousness predicted positive play interactions and involvement. Neuroticism significantly predicted poorer family functioning outcomes along with age. Higher income was positively associated with better family functioning. The overall strong significant finding between age and the dependant variables suggests the need for parental supports in older age parents to encourage play engagement. Future research could implement a longitudinal approach to assess the long-term effects of delayed childbearing, with the addition of a larger sample size and diverse socioeconomic backgrounds.

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Exploring the Relationship Between Parental Personality Traits, Family Functioning, and Parent-Child Play.

Introduction

Play is considered a complex pursuit which is integral to animal and human development and is defined by characteristics such as spontaneity, voluntary engagement and reward within rule-based structures (Eberle, 2014). Core aspects of play include spontaneity, voluntary action, reward centred, and at its core, intrinsically motivated (Panksepp, 1998, Lillard, 2014). Play is universally undertaken behaviour observed throughout species, from mammals such as primates to octopus, birds and humans, suggesting a strong connection to innate drives and evolutionary processes (Heintz et al., 2018, Jarmoluk & Pelled, 2024, Kaplan, 2024). Play is particularly important during infancy, where child play interactions are a crucial component of development, shaping neurological (Frosch., et al, 2019), psychological (Ho, 2022), and social development (Smith & StGeorge, 2022). It is well documented that these interactions influence many aspects of behaviour that persist across the life span (Yogman et al, 2018), promoting social attributes, cognitive functioning and emotional behaviour as well as developing empathy, resilience and problem-solving skills (Lee et al., 2020; Ahmed et al., 2023). Parental involvement in play is universally recognised with the type of play interactions notably shaped by a variety of factors including, environmental conditions, parental personality traits, and family dynamics (Wilson & Durbin, 2012).

Due to the developmental significance of play and its associated benefits, there is a need for understanding the role inherent parental characteristics, such as personality traits, influence parent-child play interactions. The Big Five model (John, Donohue & Kentle, 1991) includes the dimensions of conscientiousness, openness, agreeableness, extraversion

and neuroticism. To fully understand the role of play in child development it is necessary to explore the foundational theories underlying this area of research.

Play, Child Development & Theory

Evolutionary psychology provides a perspective on the innate drives during childhood development that occur when there are higher levels of neural, behavioural and cognitive plasticity, these phases allow children to adapt to varying environments (Bjorkland, 2020). This perspective alludes to the importance of these adaptive functions within childhood, such as cognitive immaturity and play behaviours which prepare humans for adult life (Bjorkland & Pellegrini, 2000).

Neurobiological research strengthens this idea, showing evidence of activity in the prefrontal cortex, associated with executive functions such as problem resolution and behavioural control. The amygdala is also involved, aiding in functions such as emotional regulation, fear response, memory and social behaviours, while the striatum which is involved in motivation and reward processing (Panksepp, 2010; Salzman et al., 2020; Rolls, 2023), signifying innate biological processes involved in play.

Research consistently points to the occurrence of different play types throughout child development. For example, Smith & Pellegrini (1998) provide a framework of three main categories of play: physical, object based and social. Further to this, Piaget's "theory of cognitive and social development" emphasizes the importance of play in the formation of social behaviours and problem solving. The initial theoretical framework by Piaget (1951) suggested that children actively explore the external environment through play which assists in the understanding of the world. With the perspective that play provides the foundations for a child's development, there is consistent curiosity around the impact parental personality traits influence these various aspects of play interactions. This theory provides developmental stages of play consisting of practice play between 0-2, symbolic between 2-7 and rule-based

games between 7-11 (Lillard, 2014). In addition to Piaget's framework, Smilansky et al (1968) provided additional components to the theory of play by categorising four dimensions, which include, Functional play, constructive play, Dramatic play and Rule based games. These categories occur at different developmental stages roughly until adolescents and provide have strong implications on learning (Gunes, 2021; Yesil, Erdiller & Metindogan, 2025).

Contrary to Piaget's theory, Vygotsky's theory of play proposed that the main function of play was to enhance social and cognitive development, this occurred by allowing a child to learn crucial skills such as self-regulation, learning cultural contexts and the development of abstract conceptions. He emphasized the role of rule based and imaginative play types which occurred in a Zone of Proximal Development, which enabled growth beyond the child's current abilities with the addition of social support. This theory highlights the significance of adult scaffolding during play and learning experiences, thus solidifying parental influences on child play and development (Vygotsky, 1976). In early stages of development, play aids in the exploration of autonomy and identity, with parent-child interactions at its core (Baker, Le Courtois & Eberhart, 2021; Winter-Lindqvist, 2013).

In addition to theories around play types and functions, parenting styles significantly shape and influence the dynamics of parent-child interactions, including play. Baumrind's (1966) foundational theory, aimed at identifying and defining three styles of parenting – permissive, authoritative and authoritarian approach, which vary in levels of control, responsiveness and warmth. These parenting styles influence the quality of parental play interactions with their offspring, affecting the overall developmental outcomes of children (Kong & Yasmin, 2022; Lanjekar et al., 2022).

Attachment theory, which was proposed by Bowlby (1969) led to the idea that early parental/caregiver relationships were a crucial component in shaping child development

(Bowlby, 1969). Ainsworth et al. (1978) demonstrated that securely attachment children display increased levels of cooperative play and increased exploratory behaviours, while insecure attachment may lead to in the benefits of play. Bowlby stated the important influence of secure attachment between parent and child in fostering emotional stability, prosocial behaviours and resilience. With further evidence suggesting that the absence of healthy attachment may lead to negative behaviours, such as anti-social tendencies, increased anxiety and psychopathologies. Strong evidence exists for this approach to infant attachment with a recent meta-analysis by Groh et al. (2017), revealing that overall, early attachment relationship to parents predicts socioemotional development. Since this meta-analysis, Stuart et al. (2024) additionally describes a significant, positive correlation that links secure maternal attachment and developmentally advanced play in infants. This finding reinforces the role of early bonding in forming play behaviours. Yet, while it centres on dyadic relationships, play occurs within a larger family context, thus suggesting the importance of examining the association between family contexts and play.

Family Functioning and Play Dynamics

The typical features of family functioning are defined as, stress management, problem solving and communication within the family unit (Ylven, Bjork-Akesson & Granlund, 2006). The relationship between family environment and developmental outcomes for children leading into later life is well documented (Bell & Bell, 2005; Lueken, Roubinov & Tanaka, 2013; Halliday et al., 2014; Xyrakis et al., 2022). Family functioning typically consists of specific categories; communication, organisation, cohesion, adaptability and emotional involvement (Lo, et al 2024), plays an important influential factor in child developmental outcomes.

Notably, Family systems theory first came to prevalence through family psychiatry in 1974, which proposes that families typically operate as a connected system that is influenced

by each members behaviour (Minuchin, 1974). The theory focuses on the family being an interconnected system suggesting that a change from one of the members can create a ripple effect across the entire family system (Johnston & Ray, 2016).

Additionally, a recent systematic review by Izzo, Baiocco & Pistella, (2022) highlights family function as a key predictor of happiness across the lifespan; however, the additional component of parental personality traits in moderating this relationship and influencing aspects of play quality has yet to be sufficiently examined and remains largely unexplored. The examination of these factors with parental personality traits in relationship to play may offer insights into early childhood developmental processes.

Existing research highlights the important role of family structure and functioning and alludes to the importance of family function on developmental outcomes for the child, particularly in fostering of resilience and social competence (Reiter, 2019). Children who belong to a structured family environment where communication and rules are consistent tend to display higher order emotional regulation and stronger social ability compared to children reared in more stressful, disorganised family environments (Grolnick & Ryan, 1989). Moreover, research consistently demonstrates the negative impact of dysfunctional family environments, often characterised by inconsistent parenting, emotionally detached relationships and high levels of conflict, can undermine the developmental benefits of stable family structures (Flores, Salem & Manfro, 2014). This highlights family functioning as a key determinant of socioemotional development, highlighting the importance of stable, supportive family dynamics in promoting positive developmental outcomes.

The interaction between personality traits and family dynamics may create a buffering effect for negative influences of maladaptive personality traits, such as neuroticism, thus preserve positive play interactions (Roulin, Dreiss & Kolliker, 2010). For example, parents with higher levels of neuroticism may have difficulties with regulating emotional responses

which negatively impacts on the parent-child play dynamic, however if communication and family functioning are orientated more positively it may mitigate these negative effects, thus enabling satisfactory play interactions (Aloia & Strutzenburg, 2023). Although further exploration into the mitigating effects surrounding play is warranted.

Parent-Child Play & Demographic Influences

The frequency and quality of play is often influenced by socioeconomic factors, digital media use, cultural expectations, parental personality traits, parental age and ACE's (Wong et al., 2020; Ying, 2024). Despite the importance of these factors, gaps remain evident in the current literature. ACEs are significantly correlated with maladaptive stress responses, contributing to mental health issues and physiological dysregulation across the lifespan (Webster, 2022, McLoughlin, Kenny and McCrory, 2021). Moreover, it is well established that play is often used as a form of interactive therapy, with effective results in addressing emotional and behavioural challenges (Ray et al., 2022).

Play interactions are conducted by either parent, with some research suggesting the quality of play in childhood varies depending on parental gender and the child's mood (Cabrera & Roggman, 2017). Observational research of pre-school age children from dual parent homes found fathers tend to become the primary choice for play when the infant is in a positive mood and mothers are typically the preferred option for caregiver support & comfort, although both parents can provide these specific engagements (Cox et al., 1992).

Family characteristics including relationship status, SES and the number of children in the household, play a significant role in influencing family functioning, parental availability and parental stress. Research indicates that low SES negatively impacts play behaviours and executive functioning in children, this is more evident in single parent households (Sarsour et al., 2010) although the existence of strong social support and positive maternal behaviours can mitigate these effects (Rochette & Bernier, 2014). Furthermore,

research on those within lower SES households tend to have children with higher levels of disruptive behaviour (Barry et al., 2005) and more attention difficulties (Wray et al., 2017). As for relationship status, single parent families particularly those with single mothers have been associated with poorer academic performance and increased behavioural problems. This is often attributed to time constraints and the added responsibilities of single parenting (Chavda & Nisarga, 2023). Further research supports this evidence by stating that children from such single parent homes, are at increased risk of developing Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiance Disorder (ODD) and increased depressive symptoms (Daryanani et al., 2016). However, research from Lee & Joo (2022) suggests that behavioural problems may be related to financial strain rather than maternal parenting practices.

To expand on the possible gender differences in play, research suggests mothers provide education focused play while fathers tend to engage in physical active play with their offspring. Educational games were of slightly lower quality when initiated by fathers compared to mothers but both parents provided high quality play interactions overall suggesting that the type of play, rather the sex of the parent (Teufl & Ahnert, 2022). Current research also supports the hypothesis that father-child play dyads contribute to child development in unique ways, such as social, physical, cognitive and emotional development (Pop & Thomsen, 2017). This suggests the need for identifying the relationship status of the parent(s) to investigate possible influences single parent families may have on parent-child play interactions. Parent playfulness has been examined to assess whether it may promote the child's emotional regulation with research demonstrating parental playfulness defined by amusing spontaneous acts, enhanced the child's ability to regulate emotion (Shorer et al., 2019). Indeed, the nature in which the parent interacts during play is essential to the effects

on the child's development, with positive affect shown during play linked to less behavioural issues (Schneider et al., 2022).

The number of children within the household determines attentional dispersion towards the children, with higher numbers of children correlated to but research points to a protective factor for child development with having siblings associated with better mental health outcomes (Grinde & Tambs, 2016). On the other hand, there are consistent findings that larger family size is correlated with lower cognitive ability and lower levels of educational attainment (Yu & Yan, 2023; Li, Zhang & Zhu, 2008). This suggests that, while sibling relationships can provide positive emotional benefits, larger family sizes may still pose challenges for developmental outcomes.

Personality Traits & Parent-Child Play

The topics covered so far, including family functioning and play are likely impacted by the general disposition of the parents. Personality traits are broad and unique patterns of behaviours, thoughts and feelings that develop through genetic, biological, neurological and environmental factors. (Sanchez-Roige et al., 2018; Truhan et al., 2022; Tafet & Nemeroff, 2016; Grusnik et al., 2019). These traits undergo change until early adulthood, from then on change remains relatively stable and consistent throughout the lifespan and are considered the building blocks of one's personality (Bleidorn et al., 2022).

The Big Five Model has provided insight into the implications of personality traits on human behaviour. The Big Five Inventory (BFI) (John, Donohue & Kentle, 1991), categorises personality traits into simplified domains. These domains; Agreeableness, Conscientiousness, Neuroticism, Openness and Extraversion (Soto, Kronauer & Liang, 2015). These traits have strong associations with parenting styles and parent child interactions such as play, with some research suggesting specific traits having more of an effect (Huver et al., 2010). Each of the traits, expanded on below, indicates an aspect of

personality that influences the behaviour of parents when engaging with family dynamics and interactions with their offspring, such as play.

Conscientiousness

Conscientiousness is indicative of structure, reliability and orderliness, parents high in this trait typically create stable, structured environments with clear routines and guidance (Heaven & Ciarrocchi, 2008). Conscientiousness is consistently shown to correlate to better life outcomes, specifically in the domain of career success, and some research has pointed to its benefits around longevity (Roberts et al., 2012), further evidence provided longitudinal data on 152 aging adults by Hill et al., 2013, found that higher levels of Conscientiousness were strongly associated with longevity. There are possible negative aspects of this trait with those who score extremely high end of the scale, for example, some individuals may be excessively strict, perfectionist, and have obsessive-compulsive tendencies possibly leading to a reduction in overall wellbeing (Carter et al., 2016). These tendencies may transfer into parenting techniques and styles thus leading to rigid, authoritarian approach. These mixed findings indicate further investigation is needed to fully understand the implications of openness in parenting.

Openness

Openness involves creativity, openness to new experiences and adaptability (Abu Raya et al, 2023; Christensen, 2018; O Súilleabháin, Howard & Hughes, 2018), with some research suggesting that parents high in openness support more creative and engaging styles of play and encourage exploratory behaviour (Metsapelto & Pulkkinen, 2003), while other research points to possible negative associations such as decreased ability in critical thinking skills (Martin et al., 2015), although, this research included a small sample size of 59 students, a larger sample could provide alternative findings. Research by Oie et al. (2020) found mothers higher in openness displayed better reflective functioning with their children,

whereas mothers low in openness displayed difficulties interpreting the emotional state of their child. These mixed findings indicate further investigation is needed to fully understand the implications of openness in parenting.

Agreeableness

Agreeableness is associated with sympathy, nurturing behaviour, high levels of compassion and honesty, this can be displayed as responsiveness and warm parenting behaviours (Van Heel et al., 2020; de Haan, Prinzie & Dekovic, 2009), high agreeableness in others was also associated with more sensitive care towards the child and a greater ability to deal with demanding behaviours, even when living in low levels of SES (Bradley & Corwyn, 2019), consequently, extreme levels of agreeableness are associated with possible negative outcomes such as heightened negative emotional responding (Finlay et al., 2017), and were associated with excessive leniency, ingratiating mannerisms and individuals may be perceived as gullible (Curseu et al., 2018). In comparison, individuals low in agreeableness can be viewed as antagonistic and unsympathetic (Scholz et al., 2022), with research on American and Chinese youth populations found low agreeableness correlated to excessive sensitivity (Wang et al., 2016). Overall, significant amounts of research point towards positive correlations between agreeableness and positive parenting outcome, although further exploration is needed on the possible negative effects of higher levels of this trait.

Neuroticism

High neuroticism involves high levels of negative emotion, stress, emotional instability, high sensitivity and is strongly linked with the development of psychopathologies (Lahey, 2009; Widiger & Oltmanns, 2017; Ono et al., 2017). Providing a possible manifestation of inconsistent and emotionally reactive parenting, which may create negative outcomes for child development and parent child bonding (Schulz et al., 2019; Madder et al., 2023; Zvara et al, 2019). Research consistently supports the relationship between neuroticism

and maladaptive tendencies. For example, a meta-analysis conducted by Prinzie et al. (2009) linked high levels of neuroticism with lower parental warmth, autonomy and behavioural control. Further evidence suggests that children of parents high in neuroticism displayed higher levels of rumination and were at higher risk of developing depressive symptoms (Sachs-Ericsson, 2014). Research also indicates that dysfunctional maternal personality traits such as Neuroticism were linked to higher anxiety levels and self-harming behaviours in children (Pearson et al., 2017) and leads to negative co-parenting behaviours, intrusive, strict and overbearing parenting styles (Zvara et al., 2019). Evidence suggests that maternal neuroticism impacts offspring with greater affect compared to paternal neuroticism (Ask et al., 2021), although research by Nigg & Hinshaw (1998) suggests that boys overt antisocial behaviours were linked to maternal traits such as higher neuroticism and lower conscientiousness co-occurring with anxiety and depression, whereas covert anti-social behaviours were linked to paternal traits such as higher openness and a history of substance abuse suggesting parental personality traits and parental mental health play distinct roles in child development with both parents contributing in unique ways. Although more research is needed on the effects of paternal neuroticism and child developmental outcomes.

Extraversion

Extraversion is displayed as high social functioning, high levels of positive emotion, high energy levels and risk-seeking behaviour (Prinzie et al., 2009; Glidden et al., 2010). Those with higher levels of this traits may be perceived as attention seeking, arrogant and domineering (Schafer et al., 2004). Within the realm of parenting, high extraversion is associated with more higher quality parenting practices (Koenig, Barry & Kochanska, 2010). For example, Rantanen et al (2015) found that high Extraversion predicts lower levels of stress over time. Further evidence suggests that higher Extraversion were associated with prosocial behaviours and lower levels of Extraversion was linked to emotional difficulties

(Ortiz & Barnes, 2018). Overall, these findings suggest extraversion is consistently associated with parental warmth, involvement and positive parent-child play interactions, though more research may be useful on the interactions with other personality and environmental dynamics.

Notably, personality traits are an area of research that attract differing opinions. Some criticisms view the big five personality traits as far too simplistic and suggest that they do not capture the deep intricacies of human personality and behaviour. Another possible weakness of the personality literature is the prevalence of self-reported data which is a considerable limitation of personality assessments such as social desirability bias (Latkin et al., 2017).

Rationale

Despite a large amount of literature focusing on personality traits and their relationship with behaviour and parenting, their specific role in predicting parental attitudes towards play, play frequency and digital media use remains under explored. Existing gaps within the current research lacks integration of family functioning, assessed via the Family Assessment Device-General Functioning (FAD-GF) subscale, with parent-child play, particularly with additional demographic variables such as age and SES. These demographic aspects such as parental age, SES and relationship status, are areas for further exploration. Given the global trend of delaying parenthood into later adulthood, it is essential to investigate the implications for parent child play warrant further investigation. Some research suggests that older parents may provide more financial stability and display higher levels of emotional maturity enhancing family cohesion with older children (Fingerman et al., 2015). However, research also suggests that challenges such as reduced energy levels and increased health concerns may strain parent child play interaction (Jadva et al., 2022). The additional influence of ongoing financial strains and the rising cost of living adds another level of

complexity, further emphasising the importance of how these demographic factors influence play engagement within families.

The literature emphasizes the importance of investigating the relationship between parental personality traits and family dynamics in relation to parent-child play interactions and behaviours (Denissen, van Aken & Dubas, 2009; Prinzie et al., 2009). Previous work has focused on examining specific areas of play such as the “play cycle” by observing parent-child interactions within a playground setting to observe parental behaviour, child behaviour and their link to specific personality traits (Daryanani et al., 2016, King, 2022), however the researcher emphasizes a need for further investigation in this area to address observational approach of the research. This current project therefore aims to explore how parental personality traits and family functioning influence parent-child play quality, by investigating the current research to evaluate the potential pathways that family dynamics/function and personality traits affect the developmental outcomes related to parent-child play interactions and the quality of these interactions.

By examining these factors, this research focuses on evaluating and investigating how personality traits and family functioning influence aspects of parent-child play quality. To guide the analysis, five research questions were developed to explore the relationship between parental personality traits, parent-child play interactions and family functioning.

Research questions

1. How do specific parental personality traits effect parental attitudes towards play?
2. Due to the increase in paternal age across western societies, is there a correlation between parental age and parent-child play interactions?
3. Are parents who are high in conscientiousness, less involved in play ?
4. Does high neuroticism predict negative attitudes towards play?
5. Does openness predict more positive attitudes towards play ?

Methodology

Sample & Recruitment

The aim of this research is to explore the relationship among parental personality traits, family functioning and parent-child play, including play frequency, parental attitudes, and digital media usage. The sample consisted of parents/guardians over the age of 18 with at least one child in their current home environment. Participants were recruited through a convenience sampling method predominantly from Co. Wicklow and South County Dublin in Ireland. Recruitment strategies included posting in online parent groups, through WhatsApp direct messaging, distributing physical posters throughout the community (e.g. - in local gyms and coffee shops in North Co. Wicklow) and online through social media posts which included a description of the eligibility criteria of the study and a link to the survey.

Eligibility criteria required participants to 1) be at least 18 years old, 2) have at least one child over the age of 1 and under the age of 12 years of age residing in their home environment, and 3) be fluent in English. The survey was designed to ensure that all questions were answered prior to submission, and incomplete non valid responses were excluded from the analysis.

Materials and procedure

Microsoft Forms was used to construct the research questionnaire, this was accessed via a secure QR code placed within the poster. Consent was obtained prior to data collection and participants were unable to proceed without consenting to data processing and data capture. Prior to collection a pilot was undertaken to ensure that the readability and function of the survey was satisfactory. The pilot study consisted of the administration of the survey on 2 sample participants. This questionnaire was anonymous and required participants to self-report answers. The research questionnaire included demographic questions and provided information on age, gender, relationship status, socio-economic status, and number of

children in the household. Consent forms and the information sheet were provided at the beginning of the survey questionnaire where forced responses were required to access the questions. The information sheet provided included all relevant information about the study including the possible risks, benefits, and privacy details. The questionnaire was accessible to participants once consent was provided. Participants were provided with detailed instructions prior to answering the validated scales. (see Appendix E

Appendix E1: Participant information sheet).

Variables

The survey began with demographic questions to capture relevant participant characteristics, including gender (male, female), age (≥ 18), SES, number of children in the home and relationship status (single, married, separated, divorced, widowed, cohabiting). SES was operationalised using income and categorised using the following bands: lower income ($<20,000/\text{year}$), lower middle ($20,000\text{--}40,000/\text{year}$), middle ($40,000\text{--}70,000/\text{year}$), higher ($70,000\text{--}100,000/\text{year}$).

Once demographic questions were completed participants had access to the Big Five Inventory which consists of 44 items on a Likert style scale ranging from “Disagree strongly” to “Agree strongly” to assessing personality traits, these personality traits include openness, extraversion, agreeableness, conscientiousness, and neuroticism. The McMasters family assessment device-general functioning is a 12-item subscale to the McMasters family assessment device which aims to measure general family functioning consisting of questions. (Appendix F: Validated measures). This survey included 3 questionnaires. Included in this survey was the Big-five Inventory (BFI) (John, Donahue & Kentle, 1991) which assessed five personality domains: Conscientiousness, openness, extraversion agreeableness and neuroticism.

McMasters family assessment device- general functioning scale, a subscale of the Family assessment device (Epstein et al., 1983) to measure family cohesion, problem solving and communication, and the Parent Play Questionnaire (PPQ) which consisted of three subscales, the first measure play frequency, the second to measure digital media use and the third to measure attitudes towards play (Ahmadzadeh et al., 2020). The questionnaires took the participant roughly 10-15 minutes to complete, the average completion time was 10:31. Participants were provided with detailed instructions before answering the scales provided in the survey. Once the survey was complete, participants were provided with a debrief sheet which thanked them for their contribution to the research and provided information on accessible supports for any distress that may have been experienced (see Appendix F: Validated measures).

The Big Inventory (BFI)

The BFI, developed by (John, Donahue & Kentle, 1991) is a 44-item self-report questionnaire designed to assess the personality traits of the Five Factor Model (FFM). These traits are conscientiousness, openness, agreeableness, extraversion and neuroticism. Items were developed from a pool of traits adjectives and short phrases and then refined through pilot testing (John et al., 2008). There are 8 to 10 items per trait, openness-10, Conscientiousness (9), Extraversion (8), Agreeableness (9), and Neuroticism (10). Responses are rated on a 5 point Likert scale ranging from “Disagree Strongly” to Agree “Strongly” it approximately half of the items reversed scored to reduce response bias.

The psychometric properties of the BFI have been extensively validated. John et al., (2008) reported strong internal consistency, with a Cronbach’s alpha coefficient averaging .83 across the five scales in large sample sizes. The alpha coefficients for each trait are as follows: Extraversion (.88), Openness (.79), Conscientiousness (.84), Agreeableness (.81) and Neuroticism (.87). These values suggest that the BFI demonstrates satisfactory reliability,

although some traits such as Extraversion and Neuroticism show higher reliability compared to others (Rammstedt & John, 2007; Lovik, Verbeke & Molenberghs, 2017). According to Balgiu, (2018), the psychometric properties of this scale are acceptable even with variation across traits, it displays good internal consistency. There is strong evidence to support cross cultural validity with validation across 50 countries supporting strong generalizability (Schmitt et al., 2007). Overall, the BFI displays strong reliability, validity and utility as a measure of personality (see Appendix F: Validated measures). Due to a technical error in the survey, the last four items of the BFI, were not collected, affecting two items for Openness, one for Conscientiousness and one for Agreeableness, for each participant the mean score of the available items per trait was calculated and imputed for the missing items. (see Appendix H).

Parent Play Questionnaire (PPQ)

The PPQ was designed to measure parent-child play frequency, the parental attitudes towards play interactions and digital media use. This scale has shown good internal consistency and normal distribution results (Ahmadzadeh et al., 2020). The PPQ includes questions based on play frequency which is comprised of 8 items covering a broad range of parent infant play types such as social play physical play and creative play. This is rated on a 6-point frequency scale (past 2 weeks), ranging from “Never” to “Several times a day”. The second sub-scale consisted of 3 items assessing infant exposure to digital media devices over the last 2 weeks. This was scored using a 6-point Likert scale ranging from never to several times a day. the final subscale was assessing parental attitudes towards play which consisted of 11 items on a 4-point Likert scale ranging from Never to Always. Psychometric properties were evaluated. Cronbach’s Alpha values (0.74-0.80) for frequency, (0.63-0.73) for digital media use and (0.69-0.80) for attitudes towards play evidence for construct validity and suggest that this newly created scale will fill the noticeable gap in scales to remotely measure

parent-child play interactions. The authors tested across diverse samples to ensure the PPQ's applicability to a range of family contexts, enhancing generalizability. Construct validity was assessed via pairwise correlations with validated parenting measures revealing significant associations. Quality control items ensured response validity. This multi-method approach provides the PPQ's reliability, validity and applicability across diverse family contexts.

Family Assessment Device – General functioning sub-scale

The FAD-GF subscale captures dimensions of family functioning, such as communication, behaviour control and responsiveness (Epstein et al., 1983), allowing an in-depth measure of the family's ability to create positive developmental outcomes through interactions and behaviours. A sub-scale of the (FAD) is the Family assessment device – General functioning (FAD-GF), which is a commonly tool used in assessing the general functioning of the family using a 12-item scale that measures overall family functioning and family health, addressing dimensions such as behaviour-control, communication, responsiveness and problem-solving . The psychometric properties of this scale are consistently found to be effective and research concluded satisfactory internal consistency (Miller et al., 1985). Cronbach's alpha indicated good reliability: Negative functioning ($\alpha=.82$), positive functioning ($\alpha=.78$) and emotional communication ($\alpha=.71$). higher scores reflect healthier functioning (Cong et al., 2022).

Analyses

Quantitative analysis was conducted with a cross-sectional survey study design was implemented in this study. A priori power analysis was conducted using G* Power 3.1 (Faul et al., 2007) to determine the required sample size for multiple regression analysis with six predictors (Big Five personality traits and family functioning). The analysis, assuming a medium effect size ($f^2 = 0.15$), an alpha level of 0.05, and a desired power of 0.80, the analysis indicated a minimum sample size of 100 participants would be necessary. This

exploratory research aims to examine the influence of parental personality traits on parent-child play including parental attitudes towards play, play frequency and child digital media in relation to parent-child play interactions.

Data analysis was conducted using descriptive statistics, correlation analyses, and multiple regression analyses to explore relationships between key variables. Pearson's correlation coefficients were imputed to explore bivariate relationships to provide insight into the strength and direction of relationships, identifying potential associations to inform subsequent regression analyses. Then, to examine the predictive personality traits with other key variables, multiple regression analyses were performed, separately regressing family functioning, parental attitudes towards play and parent play questionnaire total scores. The results present the coefficient of determination (R^2), which quantifies the proportion of variance in the dependant variable accounted for by the independent variables in the regression models. Unstandardized regression coefficients (B) and standardised beta coefficients (b) are provided, displaying the change in the dependant variable per one unit increase in each of the predictor variables, with other variables held. Standard errors (SE) are also included, where smaller values reflect greater accuracy in estimating population parameters and allow the assessment of statistical significance. Test statistics, computed as $t = B/SE$, assess the significance of each of the variable's contribution to the regression model. Analysis was conducted using SPSS, and statistical significance was set to $p < 0.001$.

Results

Descriptive statistics

A total of 108 parents ($n=108$) participated in the study, statistics for continuous variables are summarised in table 1. The sample was predominately female (89.8%) female, with male participants comprising of (10.2%). The mean age of parents was 38.57 years ($SD = 6.26$, range = 21-53). Participants reported an average of 1.98 children ($SD = 0.94$, range = 1-7). Family functioning was assessed using the Family Assessment Device-General Functioning subscale (Epstein et al., 1983), this had a mean of 18.61 ($SD = 5.533$, range = 12-46), indicating moderate family cohesion, the distribution was right-skewed (Skewness = 1.491, $SE = .233$) and kurtosis = 4.345, $SE = .461$), this was confirmed by non-normality tests (Kolmogorov-Smirnov $Z = 0.116$, $p = .001$; Shapiro Wilk = 0.884, $p < .001$). Personality traits were assessed using the Big Five Inventory-44 (John & Srivastava, 1999), the means and standard deviations for each trait are available in table 1. Play engagement and interactions were measured using the Parent Play Questionnaire (PPQ) (Ahmadzadeh et al., 2020), which includes three subscales, attitudes towards play ($M=41.52$, $SD = 6.17$, range = 27-59), play frequency ($M = 33.31$, $SD = 9.15$, range = 12-48), digital media usage ($M = 10.28$, $SD = 3.60$, range = 3-18), and PPQ total scores ($M = 85.11$, $SD = 12.93$, range = 50-115). The distribution of the number of children was right-skewed, with 37% having 1 child, 32% having 2 children, 17% having 3 children, and 14% having 4-7 children, this was confirmed by non-normality tests (Kolmogorov-Smirnov = .270, $p < .001$; Shapiro-Wilk = .785, $p < .001$) and a normal P-P plot displayed deviation at higher scores. Conscientiousness was approximately normal at 32-35, with test showing minor deviation (Kolmogorov-Smirnov = .118, $p < .001$); Shapiro-Wilk = .963, $p = .004$) but close alignment in the Normal P-P Plot. FAD-GF total scores displayed a left-skewed distribution, at 15-20 and moved off at higher values, points in the Normal P-P plot deviating from the line, most noticeable after 30,

this confirmed non-normality ((Kolmogorov-Smirnov = 0.116, $p = .001$; Shapiro-Wilk = .884, $p < .001$) The outlier was identified with a score of 46.

Table 1*Descriptive statistics for continuous variables*

Variable	M	95% CI	SD	Range
Age	38.57	[37.38, 39.76]	6.26	21-53
Number of children	1.98	[1.80, 2.16]	0.94	1-7
Big Five Inventory				
Openness	30.21	[29.79, 30.63]	2.23	24-46
Agreeableness	36.63	[35.77, 37.49]	4.51	23-45
Extraversion	24.84	[23.50, 26.18]	7.01	11-39
Conscientious	32.87	[32.29, 33.45]	3.03	24-39
Neuroticism	25.52	[24.49, 26.55]	5.38	11-37
Parent Play Questionnaire				
Frequency	33.41	[31.67, 35.15]	9.15	12-48
Digital use	10.28	[9.59, 10.97]	3.60	3-18
Attitudes towards play	41.25	[40.34, 42.70]	6.17	12-49
Total	85.11	[82.64, 90.61]	25.51	12-136
Family Assessment Device-General Functioning				
Total	18.61	[17.56, 19.67]	5.533	12-46

Note: n = 108, CI = Confidence interval. FAD-GF reflects family functioning as measured by the Family Assessment Device – General Functioning subscale (Epstein et al., 1983) and includes an extreme score of 46.

Frequencies for categorical variables are displayed in table 2. Most of the participants were married (73.1%), followed by those who were cohabitating (7.4%), single (4.6%) and divorced (12%). In terms of income 35.2% earn over 100,000 annually, 21.3% earn between 70,00-100,000 annually and 14.8% earn below 40,000 annually.

Table 2*Descriptive statistics for categorical variables*

Variable	Frequency	Valid %
Gender		
Male	11	10.2
Female	97	89.8
Relationship status		
Single	5	4.6
Married	79	73.1
Separated	1	0.9
Divorced	2	1.9
Widowed	13	12.0
Cohabiting	8	7.4
Total	108	100.0
Household income		
Lower income (<20,000/year)	5	4.6
Lower middle (20,000-40,000)	11	10.2
Middle (40,000-70,000)	31	28.7
Upper middle (70,000-100,000)	23	21.3
Higher (>100,000)	38	35.2
Total	108	100.0

Note: n=108

Inferential statistics

Correlation analysis was conducted on the parental personality traits, as described by the Big Five Inventory, on parental attitudes towards play, total PPQ scores and FAD-GF total scores. Pearson's correlation analysis revealed significant associations which support the regression findings (see Appendix B).

For parental attitudes towards play, significant correlations were identified with Agreeableness ($r = .31$, $p = .001$, moderate), Conscientiousness ($r = .22$, $p = .020$, small), Age ($r = -.27$, $p = .005$, small effect), number of children ($r = -.22$, $p = .020$, small effect), Neuroticism ($r = -.21$, $p = .026$, small effect) and extraversion ($r = .20$, $p = .038$, small effect). Non-significant correlations included openness ($r = -.11$, $p = .278$), gender ($r = .09$, $p = .357$), high income ($r = -.09$, $p = .360$), medium income ($r = .16$, $p = .107$), and relationship status ($r = .02$, $p = .865$).

For the total PPQ scores, significant correlations were identified with Agreeableness ($r = .24$, $p = .013$, small effect), Extraversion ($r = .25$, $p = .009$, small effect), Conscientiousness ($r = .21$, $p = .030$, small effect), Age ($r = -.42$, $p = p < .001$, medium effect), and Neuroticism ($r = -.22$, $p = .022$, small effect). Non-significant correlations included Openness ($r = -.05$, $p = .602$), Gender ($r = .09$, $p = .357$), High income ($r = -.11$, $p = .251$), medium income ($r = -.11$, $p = .250$), partnered ($r = .01$, $p = .894$) and number of children ($r = -.04$, $p = .697$).

For FAD-GF scores, significant correlations were identified. Neuroticism ($r = .37$, $p < .001$, medium effect), Extraversion ($r = -.33$, $p < .001$, medium effect), Agreeableness ($r = -.21$, $p = .033$, small effect), play frequency ($r = -.19$, $p = .05$, small effect), attitudes towards play ($r = -.24$, $p = .015$, small effect), PPQ total scores ($r = -.25$, $p = .01$, small effect), age ($r = .20$, $p = .041$, small effect) high income ($r = -.24$, $p = .014$, small effect). Non-significant findings include Conscientiousness ($r = -.06$, $p = .516$), Openness ($r = -.06$, $p = .508$), digital use ($r = -$

.01, $p = .937$), gender ($r = -.09$, $p > 0.05$), partnered ($r = .04$, $p = > 0.05$) and number of children ($r = -.09$, $p = .366$).

To examine the influence of personality traits and demographic factors on play interaction, three multiple regression analyses was performed, the first, to investigate whether parental attitudes towards play would be predicted by the big five traits, age, gender, number of children, household income (incomehigh = 1 for $> 100,000$, 0 for $< 40,000$; incomemed = 1 for $40,000-100,000$, 0 for $> 40,000$) and relationship status (Dummy coded to partnered = 1 vs not partnered = 0). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Results indicate no violations of assumption of multicollinearity indicating that tolerance and VIF were in an acceptable range. Tests for normality indicated non-normality for some predictors including number of children, Kolmogorov-Smirnov $Z = 2.70$, $p < .001$, Shapiro wilk = .785, $p < .001$ and conscientiousness, Kolmogorov-Smirnov = 1.18, $p < .001$, Shapiro-Wilk = .963, $p .004$ but normality, linearity, and homoscedasticity were confirmed by normal P-P Plots and scatterplots (Appendix A).

Regression analysis on Attitudes towards play

Preliminary analyses confirmed the assumptions for multiple regression. Histogram residuals indicated an approximately normal distribution, supporting normality. Scatterplots were assessed suggesting linearity. All preliminary analyses performed ensured no violation of the assumptions of normality, linearity, and homoscedasticity, Tolerance and VIF were in an acceptable range and therefore data is suitable for multiple regression analysis. The multiple regression model significantly predicted attitudes towards play, [$F(11,96) = 4.136$, $p < .001$], explaining 32.3% of the variance ($R^2 = .323$, Adjusted $R^2 = .245$, $f^2 = 0.477$), (see table 4). Significant predictors were Agreeableness ($B = 0.30$, $p = .024$), Conscientiousness

($B = 0.41$, $SE = 0.19$, $p = .028$), age ($B = -0.33$, $p < .001$) and number of children ($B = -.33$, $p = .021$).

Table 3

Multiple regression results for parental attitudes towards play

Variable	R ²	B	SE	b	t	p
Model	.25***					
Big Five						
Openness		-0.20	0.25	-.07	-.82	.413
Agreeableness		0.29*	0.13	.22	2.29	.024
Extraversion		0.10	0.08	.11	1.16	.246
Conscientiousness		0.41*	0.18	.20	2.23	.028
Neuroticism		-0.11	0.11	-.10	-0.99	.323
Age		-0.33***	0.09	-.34	-3.67	<.001
Male		1.31	1.84	.06	0.71	.479
Higher income		-0.01	0.13	-.00	-0.10	.920
Medium income		0.99	1.72	.07	0.57	.567
Partnered		-1.15	2.29	-.04	-0.50	.616
Number of children		-1.33*	0.56	-.20	-2.33	.021

Note: $p < .05$ *, $p < .01$ ** $p < .001$ *** Higher income and medium income were re-categorised from the five categories of income lower income (<20,000/year), lower-middle (20,000-40,000/year), middle (40,000-70,000/year), higher (70,000-100,000/year) to three categories lower (below 40,000/year), middle (40,000-70,000/year) and higher (over 70,000/year). With lower income as the reference group.

Regression analysis on Parent play questionnaire

Multiple regression analysis was performed to investigate whether parental personality traits, parent child play measure and demographic variables predicted parent child play frequency, digital media use and attitudes towards play (PPQ total scores). Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Tolerance and VIF were in an acceptable range therefore data is suitable for multiple regression analysis. The model was statistically significant for PPQ total scores, [$F(11,96) = 4.16, p < .001$], explaining 37.8% of the variance ($R^2 = .378$, Adjusted $R^2 = .307$, $f^2 = 0.477$, see table 4). Significant predictors were Conscientiousness ($B = 0.94, p = .015$) and age ($B = -1.05, p = < .001$). Extraversion ($B = .33, p = .057$) was positively associated with better family functioning but was marginally below the threshold for statistical significance in this model.

Table 4: *Multiple regression results for PPQ Total score*

Variable	R2	B	SE	b	t	p
Model	.38***					
Big Five						
Openness		-.30	.50	-.05	-.60	.552
Agreeableness		.39	.26	.14	1.47	.144
Extraversion		.33	.17	.18	1.92	.057
Conscientiousness		.94*	.38	.22	2.48	.015
Neuroticism		-.27	.22	-.12	-1.21	.229
Age		-1.05***	.18	-.51	-5.72	<.001
Male		2.95	3.70	.07	.80	.427
Higher income		-2.46	3.29	-.10	-.75	.457
Medium income		-.57	3.45	-.02	-.16	.871
Lower income		ref	ref	ref	ref	ref
Number of children		-.38	1.14	-.03	-.33	.744
Partnered		4.60	4.61	.09	.10	.321

Note: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$ Higher income and medium income were re-categorised from the five categories of income lower income (<20,000/year), lower-middle (20,000-40,000/year), middle (40,000-70,000/year), higher (70,000-100,000/year) to three categories lower (below 40,000/year), middle (40,000-70,000/year) and higher (over 70,000/year). With lower income as the reference group.

Regression analysis on Family Functioning

A multiple regression analysis was performed to investigate whether parental personality traits, parent-child play measures and demographic variables predicted family functioning (FAD-GF). The model was statistically significant [$F(14, 93)=3.473, p < .001$], explaining 34.1% of the variance ($R^2 = .341$, Adjusted $R^2 = .242$, $f^2 = 0.477$), see table 5. Preliminary analyses confirmed the assumptions for multiple regression. Histogram residuals indicated an approximately normal distribution, supporting normality. Scatterplots were assessed suggesting linearity. All preliminary analyses performed ensured no violation of the assumptions of normality, linearity, and homoscedasticity, tolerance and VIF were in an acceptable range, therefore data is suitable for multiple regression analysis. Higher levels of Neuroticism significantly predicted poorer family functioning ($B = -0.25, p = 0.015$). Older parental age was the strongest predictor significantly linked to poorer family functioning ($B = 0.27, p = .007$). Higher income significantly predicted better family functioning ($B = -3.05, p = .045$).

Table 5*Multiple regression model predicting Family functioning Scores (FAD-GF)*

Variable	R2	B	SE	b	t	p
Model	.24***					
Big Five						
Openness		-.028	.22	-.01	-.12	.902
Agreeableness		-.12	.12	-.10	-.95	.342
Extraversion		-.12	.08	-.16	-1.53	.128
Conscientiousness		.020	.18	.01	.11	.910
Neuroticism		.25*	.10	.27	2.47	.015
Age		.27***	.10	.31	2.80	.007
Male		-1.37	1.71	-.08	-.80	-.813
Higher income		-3.05	1.50	-.28	-2.02	.045
Medium income		.45	1.57	.037	.28	.777
Lower income		ref	ref	ref	ref	ref
Number of children		-.73	.54	-.12	-1.35	.177
Partnered		1.72	2.07	.08	.83	.408
Frequency of play		.070	.07	.11	.92	.358
Digital use		-.12	.15	-.08	-.81	.419

Attitudes towards play					
	-0.16	.11	-.18	-1.48	.141
Total score	.07	.07	.16	.92	.358

Note: $p < .05^*$, $p < .01^{**}$ $p < .001^{***}$ Higher income and medium income were re-categorised from the five categories of income lower income (<20,000/year), lower-middle (20,000-40,000/year), middle (40,000-70,000/year), higher (70,000-100,000/year) to three categories lower (below 40,000/year), middle (40,000-70,000/year) and higher (over 70,000/year) with lower income as the reference group.

Discussion

The aim of this research was to analyse parental personality traits, as described by the Big Five personality model, relate to parent and offspring play by utilising the PPQ (Ahmadzadeh et al., 2020, which assesses attitudes towards play, play frequency and digital media use. Family functioning was also examined to investigate the relationship of family cohesion and problem solving with parent child play. Additionally, specific demographic factors were investigated, these include parental age, gender, household income, number of children and partnership status. The research was guided by five exploratory questions based on previous personality, family dynamics and play literature. Significant findings indicated that higher levels of conscientiousness and agreeableness were linked with better attitudes towards play and play engagement, conversely, neuroticism was negatively associated with play interactions and family functioning. Openness had a weaker effect with play interactions than initially anticipated. Family functioning emerged as a significant predictor of play interactions, suggesting the cohesion and problem solving correlated with more positive play interactions. Most notably, parental age was significantly associated with negative attitudes towards play and total PPQ scores, with older parents having lower play interactions and attitudes towards play.

Personality and parental attitudes towards play

The first research question, “how do specific personality traits affect parental attitudes towards play?” was initially addressed through a correlations analysis where significant correlations were identified. For example, Parental Agreeableness, Conscientiousness were associated with more positive attitudes towards play, which coincides with current literature (Van Heel et al., 2020; Heaven & Ciarrocchi, 2008; Koenig, Barry & Kochanska, 2010). Agreeableness was moderately correlated with positive attitudes towards play, this was confirmed by regression analysis identifying these traits as significant predictors. This aligns

with aspects of Baumrind (1968) parenting model, particularly around an authoritative parenting approach, which suggests parental responsiveness and warmth may enhance play interactions. In contrast, higher levels of neuroticism displayed a weak negative correlation with parental attitudes towards play, as previous evidence suggests, parents higher in neuroticism may be more emotionally unstable, lower emotional control, offer lower levels of warmth, and adversely affect play quality (Prinz et al. 2009; Schulz et al., 2019; Zvara et al, 2019). This correlation suggests parents who are more dependable and organised (higher conscientiousness) tend to engage in more frequent play and have more positive attitudes towards play. This finding suggests that these personality traits may be associated with nurturing, energetic and structured play environments as literature suggests. The number of children significantly predicted more negative attitudes towards play supporting evidence by Yu & Yan, (2023) & Li, Zhang & Zhu, (2008) that suggests time constraints and stress levels impact child parent play dyads, conversely a larger family unit may provide protective influence on childhood well being (Grinde & Tambs, 2016), suggesting a complex relationship between the number of children and developmental outcomes.

Age and parent child play

The second research question proposed was aimed at investigating the correlation between age and parent child play interactions, both the correlation and regression analyses displayed significant findings. Age negatively correlated with attitudes towards play, family functioning and total PPQ scores, the regression models reinforced this finding as a strong predictor variable. This finding is contrary to limited research on the effects of age on parenting abilities, research by Zondervan-Zijnenburg (2019) found no significant associations between parental age and their offsprings emotional and behavioural challenges.

Older parents' engagement in less play and lower positive attitudes towards play could be due to a reduction in energy levels or alternative priorities as suggested by Jadva et

al (2022), although research by Dolan & Kudrna (2015) found fatigue reduced with age even when controlling for external variables such as health and sleep. Furthermore, Fingerman et al (2015) highlighted findings supporting positive associations between parental age and beneficial family environments due to emotional maturity and financial stability, suggesting ageing's impact as a complex area for further investigation. This is supported by Nesser et al. (2023), which conducted a systematic review on advanced parental age (APA) and its effects which identified several shortcomings in this area of research such as lack of empirical evidence for mother and fathers and more focus on outcomes for children, and inconsistencies in the definitions of (APA), concluding that there was evidence of increase risk for negative health outcomes of offspring. This research contradicts limited current literature suggesting a noticeable gap for future investigation.

Conscientiousness and play

The third question which aimed to investigate whether parents higher in conscientiousness are less involved in play. This was not support within the findings. A weak positive correlation was found between conscientiousness and PPQ total scores suggesting that structured, reliable parents are more involved in parent-child play, thus challenging the hypothesis of those with higher levels of conscientiousness may have negative interactions due to obsessive compulsive tendencies and lower well-being found by Carter et al (2016), although these were found in individuals with extreme levels of conscientiousness. The positive correlation between conscientiousness and play aligns with most of the current literature, for example, Heaven and Ciarrocchi (2008) noted that conscientiousness fosters stable environments related to structured routine based play, though the small effect size signifies a limited impact.

Neuroticism and play

The fourth question: does higher levels of trait neuroticism predict negative attitudes towards play?. Findings revealed that parents with elevated levels of neuroticism tend to have slightly less positive attitudes towards play, likely due to increased stress and emotional instability associated with this trait (Lahey, 2009; Widiger & Oltmanns, 2017), however, this was a weak finding. Neuroticism displayed a stronger connection to depleted family functioning, suggesting that higher levels of this trait may extend broadly throughout family interactions rather than specifically effecting parent-child play interactions, as shown by current literature. For example, research by Widiger & Oltmanns (2017) found that Neuroticism is often associated with increased negative emotion, stress and increased emotional reactivity, which may impact the family environment. The effects of parental stress and emotional difficulties may influence play interactions by negatively impacting the parent-child relationship. For example, Schulz et al. (2019) put forward the finding that emotionally reactive parents may have difficulty maintaining engagement during interactions with their offspring, suggesting a possible negative link to play attitudes. This may be due to the specific sample, a possible buffering effect of family functioning or other factors such as lower levels of socioeconomic status, parenting stress or child temperament within the current sample.

Openness and play

Additionally, the finding of non-significant correlation with Openness and parental attitudes towards play contradicts current literature, which suggest that higher openness may be related to positive parent-child play interactions (Metsapelto & Pulkkinen, 2003) although a significant gap exists in current literature. Existing evidence points to positive correlations between high parental openness and offspring language development (Kucker, Zimmerman & Chmielewski, 2021). Moreover, evidence suggests parents high in openness are more

receptive to support from their offspring, which in turn influences the quality of support they offer (Slagt et al., 2015) which may influence play, although specific focus on play interactions is absent from the overall domain.

Implications

The findings of this research, add to current literature around family systems theory with the suggestion that specific personality traits may shape family environments and play interactions. This adds to the evidence around the impact of emotions and structure have on family dynamics. Practical implications for future application of personality theory and family play interactions could consist of guided parenting programs, with the understanding of the specific associations between personality traits and behaviours guiding interventional strategies to promote overall family wellbeing. The impact of parental age on play interactions and family functioning suggests the need for further research in this area, particularly as childbearing age has significantly increased over the past three decades, with increased negative health outcomes for both mother and child, this area requires sufficient examination to assess other possible impacts play and overall development (Nawsherwan et al., 2022).

Strengths & Limitations

A primary strength of this research is the use of modern data gathered between November 2024 and January 2025 which captures current familial contexts. The addition of a wide variety of parental age, enhances generalisability across the lifespan. The use of validated instruments to assess personality traits (Big Five Inventory), family functioning (FAD-GF) and parent child play (PPQ) contribute to the psychometric integrity of the findings.

The investigation into the influence of parental personality traits, family functioning, and demographic factors on play engagement on 108 parents is subject to several notable

limitations that require consideration. These methodological constraints influence many aspects of the research such as the scope, generalisability, and interpretation.

Firstly, the use of the Family assessment device – General functioning subscale (FAD-GF) instead of a direct measure of adverse childhood experiences (ACE's). This decision was made due to concerns by the ethical boards. It was recommended an alternative measure was used, due to the concerns around participants distress and privacy violations associated with historic traumatic events. This led to the implementation of the family Assessment device – general functioning to assess family dynamics. While the FAD-GF effectively examines current family cohesion and adaptability (Epstein et al., 1983), its inability to capture historical trauma limits insights into the effects of past adversities on parenting and play engagement a factor previously linked to childhood wellbeing. Future research should explore ethically viable alternatives to address this gap and enhance understanding.

The sample exhibits a significant gender imbalance, with 89.8% of the participants being female (97 out of 108), as indicated by the demographic data. This raises concerns about generalisability, recent evidence suggests that there is distinctive play patterns and personality influences due to differing parenting approaches, socialisation and personality traits between males and females (Cox et al., 1992; Pop & Thomsen, 2017). As previous literature suggests, gender moderates parenting behaviours, with variation between male and female parents, with fathers engaging in rough and tumble, physical play and mother engaging in structured, educational based play (Flanders et al., 2009; Smith & StGeorge, 2021; Tuefl & Ahnert, 2022). To mitigate this limitation, future research should prioritise gender balanced recruitment to broaden the applicability and generalisability of the findings.

The sample mainly consisted of those who are above the poverty line, with many participants falling within the mid to high income bracket and only 14.8% falling below, this represents a limitation in socioeconomic representativeness. The over representation of an

affluent sample may not reflect the experiences of lower income families, who face challenges such as elevated stress levels, financial concerns or limited play resources, potentially impacting engagement levels and family cohesion as suggested by McLoughlin, Kenny & McCrory (2021). The resulting homogeneity could bias findings towards a more affluent cohorts' approach to parenting, reducing relevance to financially strained populations. Expanding recruitment to encompass a wide variety of socioeconomic backgrounds could improve generalisability.

Due to a technical error the last four questions of the big five inventory, which measured openness, conscientiousness and agreeableness were missing during the data collection, to amend this, the median for each participant's score on each of the related questions was assessed and used to fill in the missing data.

Recommendations for future research

This was initially intended to be an investigation of adverse childhood experiences (ACE's), due to a possible ethical risk it was replaced with the FAD-GF. Therefore, an adaption or expansion of this project to include such a topic would greatly impact and advance the knowledge base in terms of the effect of early life adversities with parenting styles. To mitigate one of the limitations of this study future research should prioritise gender balance recruitment to broaden the applicability of the findings. The addition of alternative family contexts such as same sex couples would provide additional findings to the outcome of the research. The participants were not presented with the option to declare their sexual orientation during the participation. To address this, future research should aim to capture the full spectrum of parenting experiences by incorporating same sex couples.

Conclusion

This study supports the significant relationship personality traits, family functioning and parent child play. Findings support current literature around Agreeableness, Conscientiousness and Extraversion in relation to positive play interactions, alongside the possible challenges that higher levels of neuroticism may present. The significant finding of age and lower levels of play should warrant further exploration. These findings point towards the importance of play as a developmental tool that is influenced by parental personality, family dynamics and demographic factors. The results suggest that interventions directed at the family as a cohesive unit may mitigate negative personality traits, enhancing child development.

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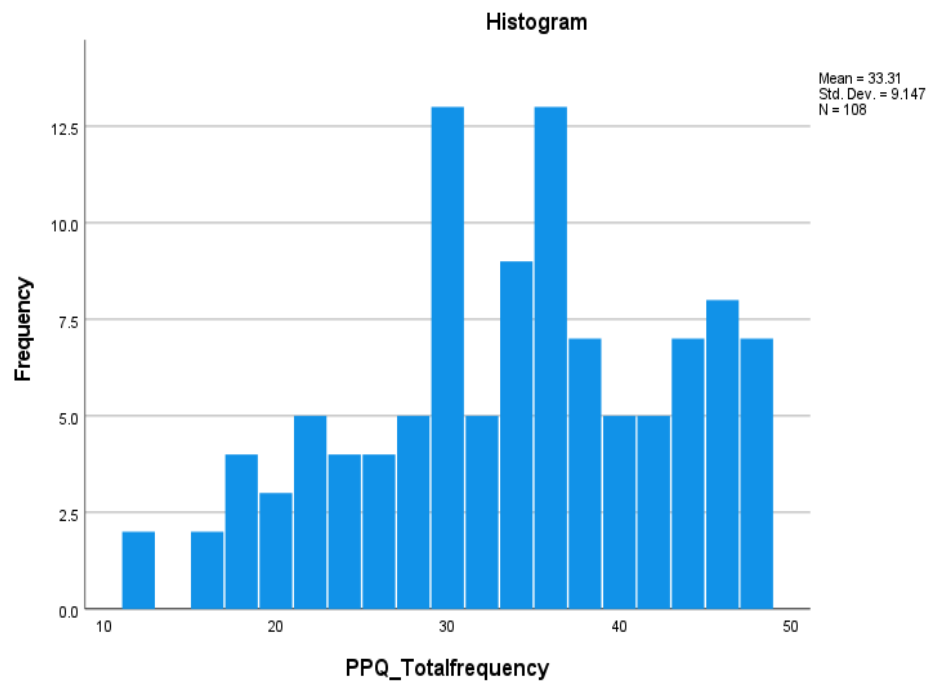
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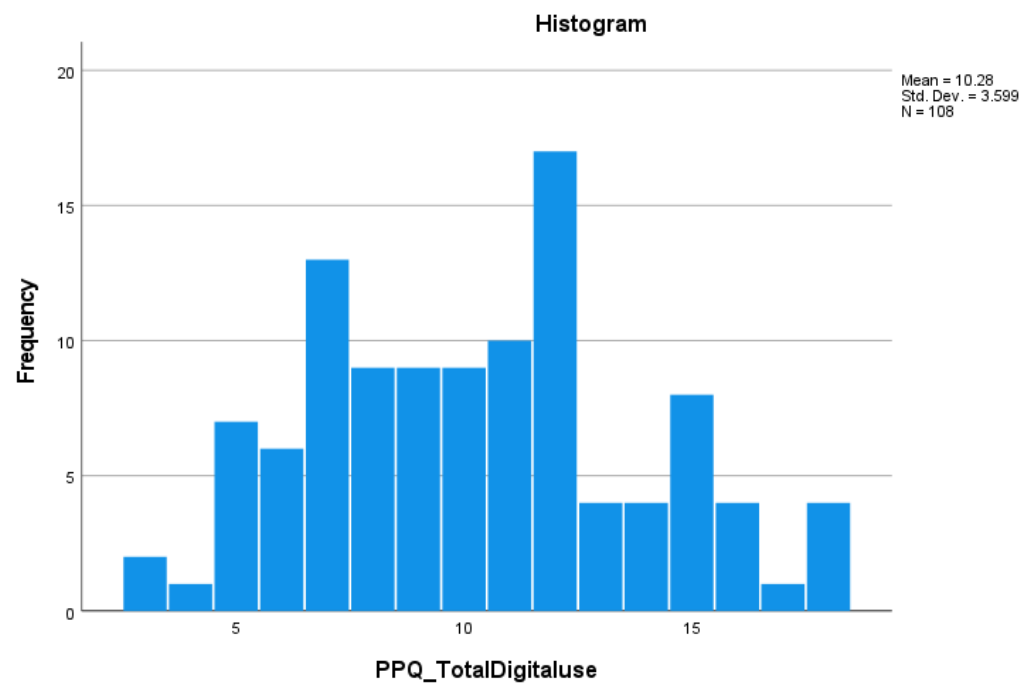
Appendices

Appendix A

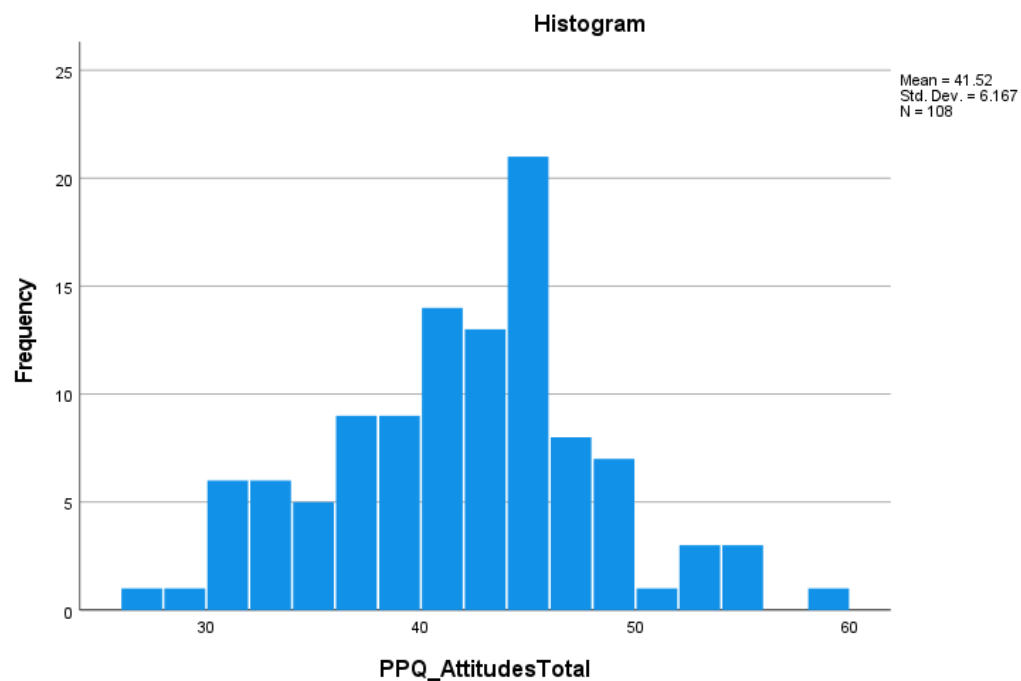
Appendix A1



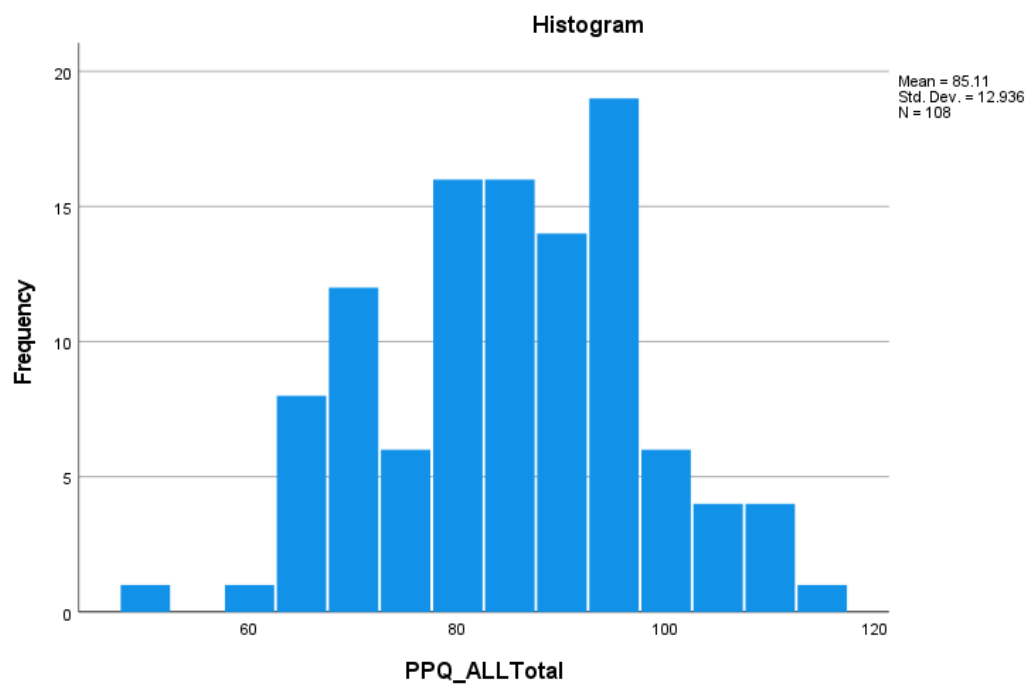
Appendix A2



Appendix A3



Appendix A4



Appendix B

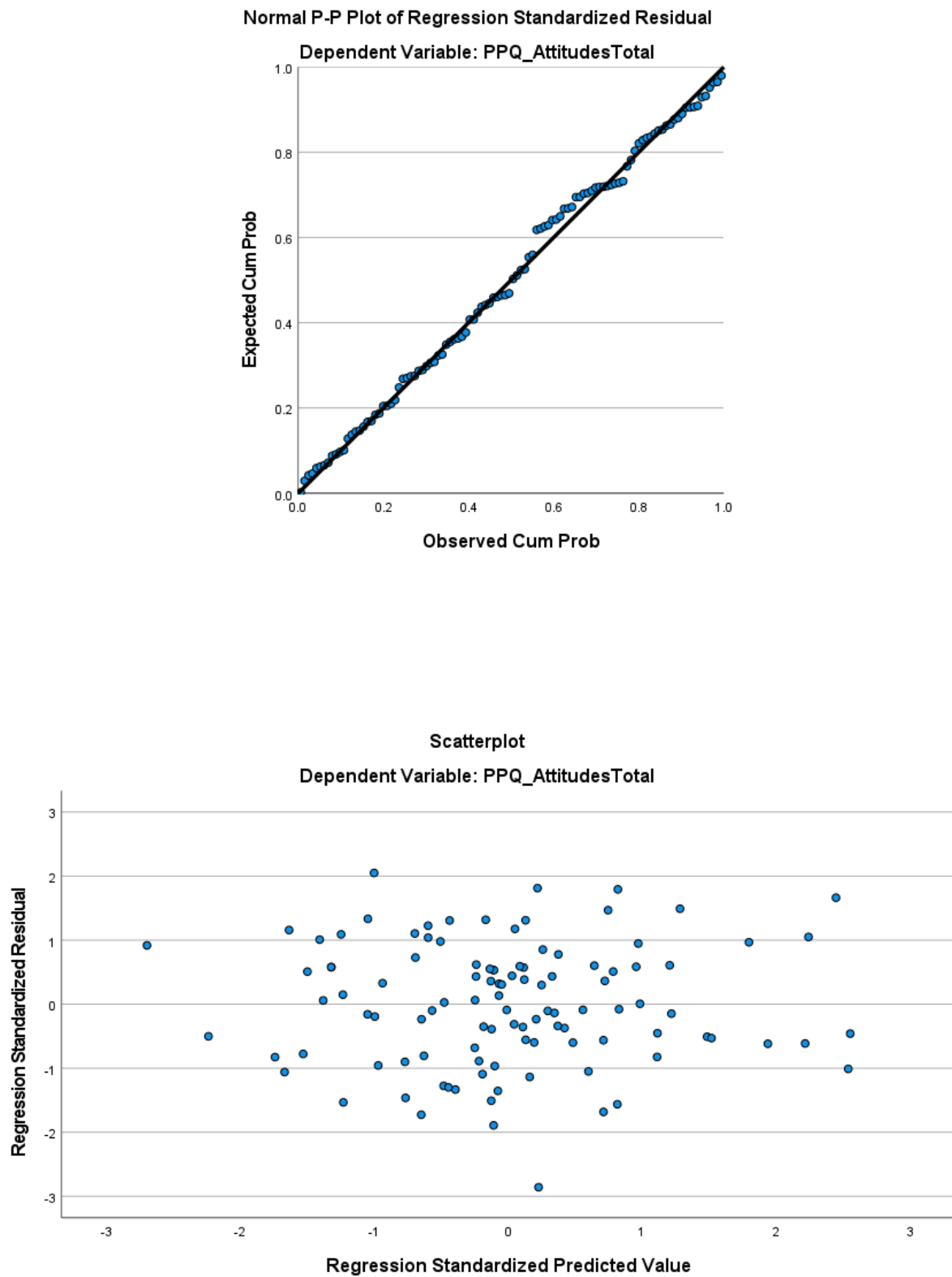
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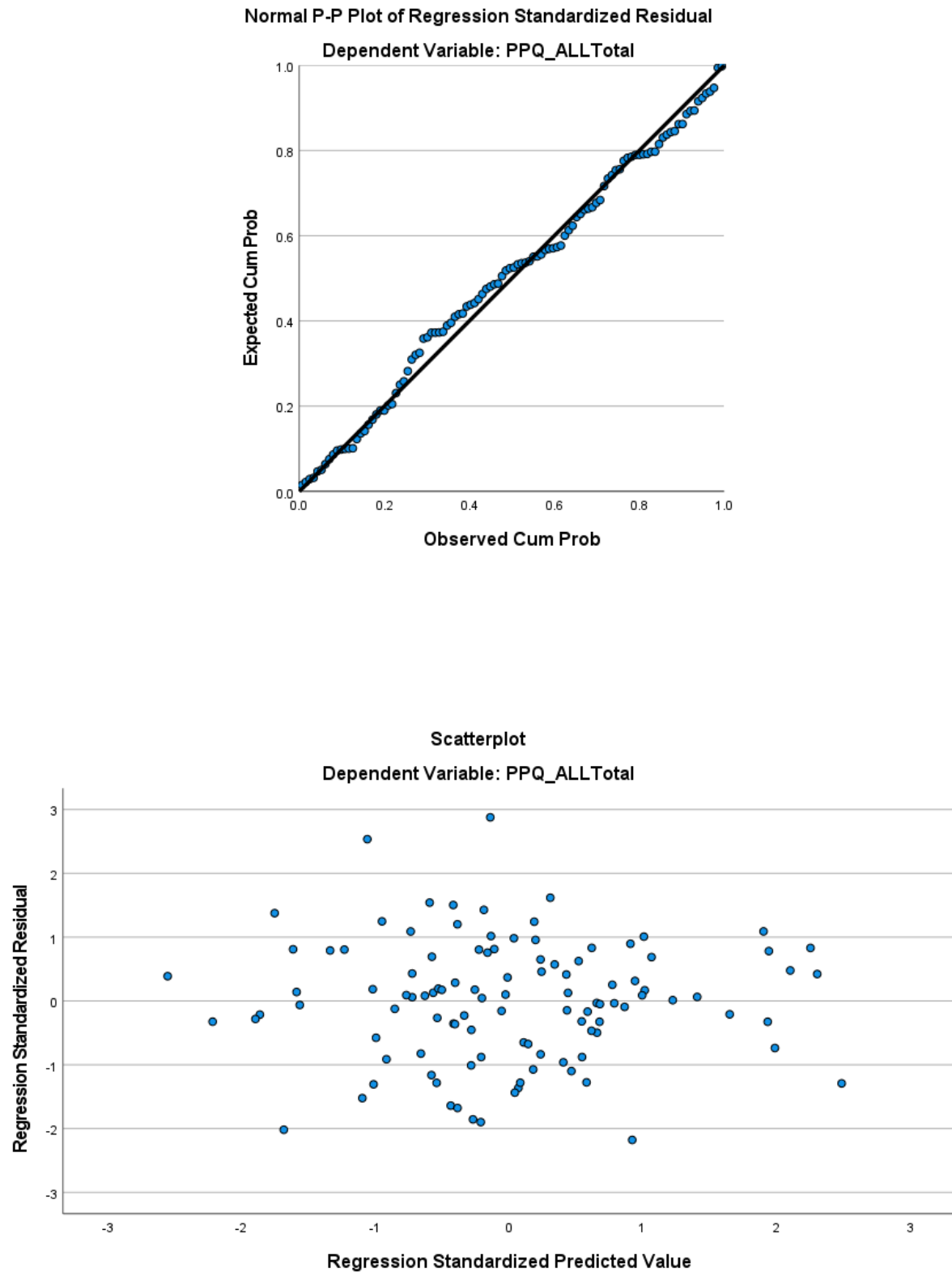
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Neuroticism	—													
2. Conscientiousness	-.20*	-												
3. Extraversion	- .49***	.19	-											
4. Agreeableness	-.31**	.24*	.16	-										
5. Openness	-.25**	-.06	.13	-.02	-									
6. FAD-GF total	.37**	-.03	- .33**	-.21*	-.06	-								
7. Play frequency	-.21*	.20*	.20*	.14	.50	- 0.19*	-							
8. Digital use	.11	-.14	.05	-.03	-.12	-.01	- 0.27**	-						
9. PPQ Attitudes	-.21*	.22*	.20*	.31**	-.11	-.24*	.56**	- .30**	-					

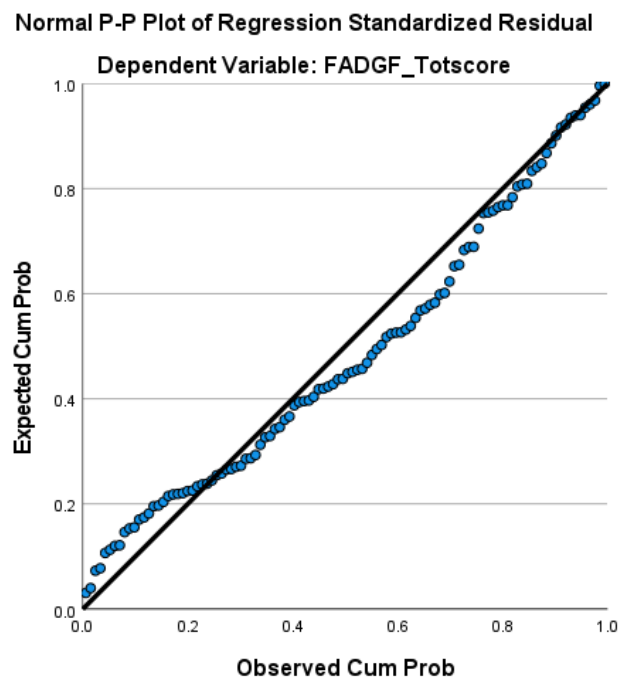
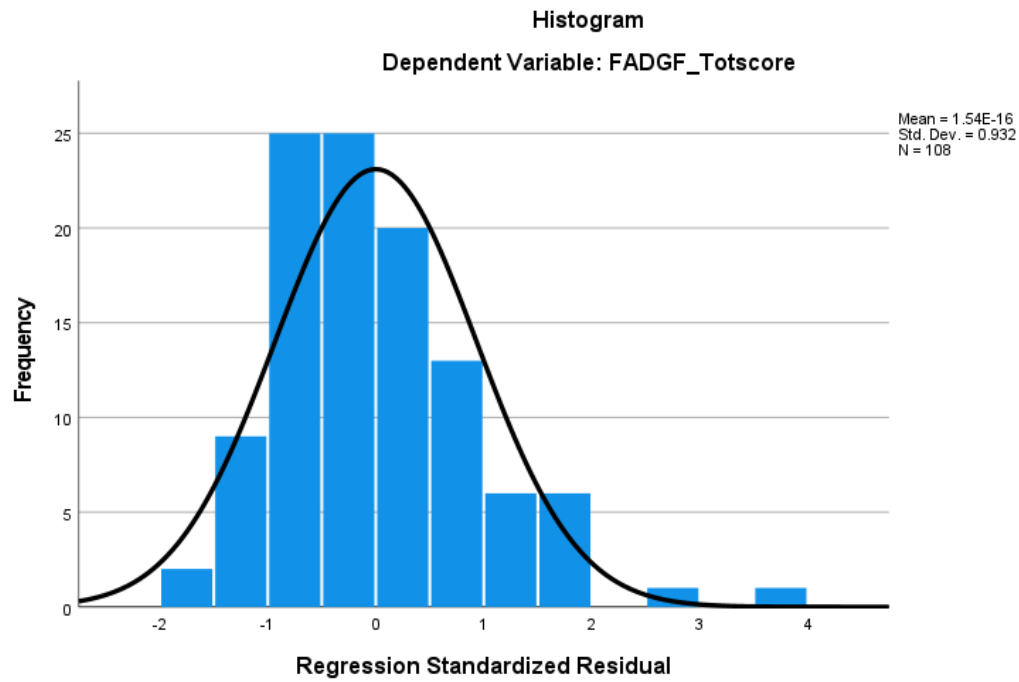
10. PPQ total scores	-.22*	.21*	.25**	.24*	-.05	- .25**	.90**	-.05	.793**	-				
11. Age	-.14	.22*	.10	.04	.07	.20*	-.44**	.09	- .267**	- .416**	-			
12. Gender	-.11	-.05	.12	-.20*	-.01	-.09	-.00	.16	.091	.087	-.036	-		
13. Partnered	-.14	.26**	.06	.24*	.09	.04	-.00	-.07	.018	-.014	.355**	- .139	-	
14. No. of children	-.005	.06	.02	-.02	.13	-.09	.07	.07	-.223*	-.037	.013	- .157	.032	-
15. Higher income	-.125	.167	.125	.065	.034	- .235*	-.064	-.094	-.087	-.113	.261**	- .137	.322*	

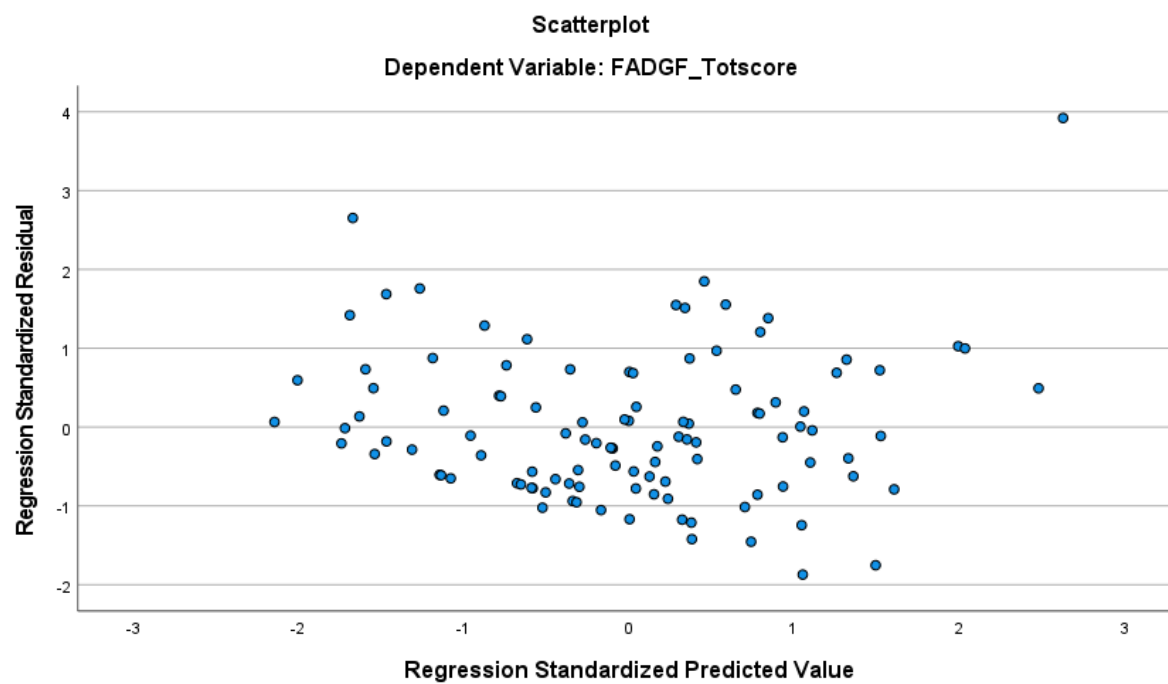
Appendix C

Appendix C1: Plots for PPQ attitudes towards play



Appendix C2: Plots for PPQ total scores

Appendix D: Plots for FAD-GF regression models



Appendix E

Appendix E1: Participant information sheet

Exploring the relationship between parental personality traits, family function and parent-child play interactions

You are being asked to take part in a research study on the relationship between parental personality traits, family functioning and parent-child play interactions. Before making any decisions to take part in this research, please ensure you take the time to thoroughly read through this document. Included in this document is information on why this research is being conducted and what your participation would involve. If there are any questions or concerns please do not hesitate to contact me directly about any of the information provided, contact details are located at the end of this sheet.

I am currently a final year student attending the BA in Psychology programme at National College of Ireland. As part of our degree, we must carry out an independent research project. For my project I am exploring the relationship between parental personality traits as described by the Big Five Inventory, these include conscientiousness, openness, agreeableness, extraversion and neuroticism, family functioning, such as communication, problem solving and conflict resolution within the family unit and parent-child play interactions by investigating areas of play such as, play quality, play styles and overall play interactions.

The project will be supervised by Dr. Barry Coughlan.

What will taking part in the study involve?

If you decide to take part in this research project, you will be asked to complete an online questionnaire which will include demographic questions such as age, gender, socio-economic status, relationship status and number of children in the household, this will then be followed by The Big Five Inventory questionnaire, which contains 44 questions for you to answer

based around personality traits, this will be followed by the McMasters Family assessment Device-General Functioning scale which involves answering 12 questions that assess general family function, the questionnaire will end with the Parent Play questionnaire, which consists of 26 questions to assess play interactions.

Who can take part?

To take part in this research you must be a parent to at least one child above the age of two and below the age of 12, due to the nature of play that is being measured. Participation requires you to be over the age of 18 and to have access to a device which can support the use of the internet. Participants must also be free of diagnosis from a doctor that involves cognitive impairment such as any form of Dementia, memory deficits or cognitive function difficulties that interfere with day-to-day life.

Do I have to take part?

Participation in this research is completely voluntary, and you have the right to refuse to participate at any stage, and you do not have to take part in this research. You can refuse to answer any of the questions and withdraw without any consequences. You do not have to answer questions which may cause discomfort or upset. You have the right to withdraw at any time during participation and may do so by simply exiting the browser. It is important to note that once the questionnaire is complete and submission of the data has occurred, the data will be unretrievable due to the anonymity process of the data collection and individual responses cannot be retrieved. This questionnaire includes items asking about your demographic information such as your socio-economic status, relationship status, age, gender and number of children in your household, the questions on personality traits contain topics such as anxiety, mood and general feelings. The questions for the family assessment device-general functioning include questions related to communication, problem solving and conflict resolution. The questions for Parent Play Questionnaire will focus on the quality and type of

play interactions between the parent and child. there is a small risk that some of these questions may cause some individuals to become upset or distressed. If you feel that these questions may cause you to experience an undue level of distress, you should not take part in this study.

What are the possible risks and benefits of taking part?

There are no direct benefits for your participation in this research, however any information gathered will contribute to research around how parental personality traits and the functioning of the family influences parent-child play interactions and further contribute to developmental psychology. There is a small risk that some of the questions may cause some minor distress or anxiety for some participants. If you do experience any distress while during participation you are free to remove yourself from the research questionnaire at any stage by simply exiting the browser without any consequences. Contact information for relevant support services are provided at the end of the questionnaire.

Will taking part be confidential and what will happen to my data?

The questionnaire is completely anonymous, it is not possible to identify participants based on their responses to the questionnaire. All data collected for this study will be utilized through google forms and will be treated with the strictest privacy and confidentiality. Only the researcher and academic supervisor will be able to access the data collected. Data will be securely stored within NCI database. your Information Sheet to notify participants. NCI will have full responsibility for the data generated by the research. All local copies of data saved on personal data password protected devices/laptops will be deleted by the student's graduation date or 3 months after the student exits the NCI psychology programme. .

Anonymised data will be stored on NCI servers in line with NCI's data retention policy. It is envisaged that anonymised data will also be uploaded to a secondary data repository to facilitate validation and replication, in line with open science best practice and conventions.

Responses to the questionnaire will be full anonymised and stored securely in a password protected/encrypted file on the researcher's computer. Data will be maintained and managed in accordance with the NCI data retention policy. Note that the anonymised data may be archived on an online data repository and may be used for secondary data analysis.

What will happen to the results of the study?

The results from this study will be presented in my final dissertation, which will be submitted to the National College of Ireland. The results of my project may be presented at conferences and/or submitted to an academic journal for publication

Who should you contact for further information?

For any questions or concerns about this research please feel free to contact the researcher, David Cullen x21197318@student.ncirl.ie or my supervisor Dr. Barry Coughlan

By clicking the box below, you are agreeing that:

- (1) you have read and understood the Participant Information Sheet,
- (2) questions about your participation in this study have been answered satisfactorily,
- (3) you are aware of the potential risks (if any), and
- (4) you are taking part in this research study voluntarily (without coercion).

☐

Appendix E2: Consent form

In agreeing to participate in this research I understand the following:

- The method proposed for this research project has been approved in principle by the Departmental Ethics Committee, which means that the Committee does not have concerns about the procedure itself as detailed by the student. It is, however, the above-named student's responsibility to adhere to ethical guidelines in their dealings with participants and the collection and handling of data.
 - If I have any concerns about participation, I understand that I may refuse to participate or withdraw at any stage by exiting my browser.
 - I understand that once my participation has ended, that I cannot withdraw my data as it will be fully anonymised.
 - I have been informed as to the general nature of the study and agree voluntarily to participate.
 - All data from the study will be treated confidentially. The data from all participants will be compiled, analysed, and submitted in a report to the Psychology Department in the School of Business.
 - I understand that my data will be retained and managed in accordance with the NCI data retention policy, and that my anonymised data may be archived on an online data repository and may be used for secondary data analysis. No participants data will be identifiable at any point.
 - At the conclusion of my participation, any questions or concerns I have will be fully addressed.
-
- ☐ Please tick this box if you have read and agree with all the above information.
 - ☐ Please tick this box to indicate that you are providing informed consent to participate in this study.

Appendix E3: Debrief Sheet

Study Title:

Exploring **the influence of adult personality traits** and family function on parent-child play interactions.

Researcher(s):

David Cullen

X21197318@student.ncirl.ie

Supervisor(s): Dr. Barry Coughlan

Thank You for Your Participation

Thank you for taking the time to participate in this study. Your responses are valuable to us, and we greatly appreciate your involvement.

Purpose of the Study

The aim of this study was to explore how adult personality traits and family function influence the type and quality of play interactions between parents and their children. By investigating these relationships, we hope to achieve a better understanding of how personality and early life experience influence parenting behaviours, particularly regarding play interactions.

Confidentiality and Use of Data

All responses you provided during the survey are anonymous and confidential. The data will be used solely for the purpose of research and will be stored securely. No identifying information will be linked to your responses. If you wish to withdraw your data this will not be possible once the survey has been submitted due to the anonymity process of the study.

Sensitive content

Some of the questions in this survey may have involved sensitive topics, if you experienced discomfort or distress due to the nature of the questions in this study, we encourage you to seek support from the following resources:

- AWARE – Phone: 1800 80 48 48 Website: <https://www.aware.ie/>
- Parentline – Phone: 01 873 3500 Website: <https://parentline.ie/>

Next Steps and Future Research

We will analyse the data to assess how parental personality traits and family functioning influence parenting play interactions such as play type and quality. The results from this study could contribute to a growing area of research aimed at developing better interventions and supports for parents and provide further information in the field of developmental psychology.

Contact Information

If you have any questions or concerns, please feel free to contact me

- **David Cullen– x21197318@student.ncirl.ie**

Once again, we sincerely thank you for your participation and contribution to this research.

Appendix F: Validated measures

Big Five Inventory

From John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five Inventory - Versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.

A 44-item version of the Big Five Inventory

Here are several characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	2	3	4	5

I see Myself as Someone Who...

- | | |
|--|--|
| ____ 1. Is talkative | ____ 23. Tends to be lazy |
| ____ 2. Tends to find fault with others | ____ 24. Is emotionally stable, not easily upset |
| ____ 3. Does a thorough job | ____ 25. Is inventive |
| ____ 4. Is depressed, blue | ____ 26. Has an assertive personality |
| ____ 5. Is original, comes up with new ideas | ____ 27. Can be cold and aloof |
| ____ 6. Is reserved | ____ 28. Perseveres until the task is finished |
| ____ 7. Is helpful and unselfish with others | ____ 29. Can be moody |
| ____ 8. Can be somewhat careless | ____ 30. Values artistic, aesthetic experiences |
| ____ 9. Is relaxed, handles stress well | ____ 31. Is sometimes shy, inhibited |

____ 10. Is curious about many different things ____ 32. Is considerate and kind to
almost

everyone

____ 11. Is full of energy ____ 33. Does things efficiently

____ 12. Starts quarrels with others ____ 34. Remains calm in tense situations

____ 13. Is a reliable worker ____ 35. Prefers work that is routine

____ 14. Can be tense ____ 36. Is outgoing, sociable

____ 15. Is ingenious, a deep thinker ____ 37. Is sometimes rude to others

____ 16. Generates a lot of enthusiasm ____ 38. Makes plans and follows through with

them

____ 17. Has a forgiving nature ____ 39. Gets nervous easily

____ 18. Tends to be disorganized ____ 40. Likes to reflect, play with ideas

____ 19. Worries a lot ____ 41. Has few artistic interests

____ 20. Has an active imagination ____ 42. Likes to cooperate with others

____ 21. Tends to be quiet ____ 43. Is easily distracted

____ 22. Is generally trusting ____ 44. Is sophisticated in art, music, or

literature

Scoring:

BFI scale scoring ("R" denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

Parent Play Questionnaire (PPQ)

PPQ item list with question text and response scales

(A) Frequency of parent–child play

“thinking back over the past two weeks please indicate how often you have played with your child in the following ways...”

Never (1), Less than once a week (2), Once or twice a week (3), Several times a week (4), Once or twice a day (5), Several times a day (6)

1. Active physical play—for example, lifting or swinging your child, rough and tumble
2. Gentle physical play—for example, tickling, moving child's limbs, playing finger games such as ‘this little piggy’
3. Play with toys—for example, grasping/holding/shaking toys, putting rings on a stack, building blocks
4. Pretend games—for example, make a toy dog bark, talk on toy telephone, move a wooden block as if it is a car
5. Turn-taking play without toys/other objects—for example, peek-a-boo, pat-a-cake, ‘where's baby's eyes?’, ‘I spy’
6. Play with books—for example, pointing to pictures in books and magazines, reading to your child
7. Noisy play—for example, banging saucepans, child instruments
8. Singing—for example, singing nursery rhymes

(B) Frequency of digital media use

“Some children spend time watching programmes or videos. We are interested in how common this is for young

children. Thinking back over the past two weeks, please indicate how often your child has...”

Never (1), Less than once a week (2), Once or twice a week (3), Several times a week (4),

Once or twice a day (5),

Several times a day (6)

1. Watched programmes or videos on a TV/computer/tablet/smart phone with you?

2. Watched programmes or videos on a TV/computer/tablet/smart phone with someone else?

3. Watched programmes or videos on a TV/computer/tablet/smart phone on their own?

(C) Attitudes towards play (indexing parent involvement, enjoyment, and structure)[†]

“Below are several statements about how some parents play with their child. Please indicate how often you

have behaved in the same way in the past two weeks...”

Never (1), Sometimes (2), Often (3), Always (4)

1. I am too busy to play with my child when he/she wants to play with me (involvement)

2. When my child wants to play with me, I encourage him/her to play with toys alone so that I can get on with other

jobs (involvement)

3. Some days go by without me having had any time to play with my child (involvement)

4. If my child wants to play with me, I stop what I’m doing right away and play with him/her (involvement)

5. I avoid playing with my child when I’ve had a long day (enjoyment)

6. Playing with my child can be a chore (enjoyment)

7. It is much more convenient when my child enjoys playing on his/her own, without needing me to join in

(enjoyment)

8. I avoid playing with my child when I have other jobs that need doing (enjoyment)

9. I take any opportunity to play with my child (enjoyment)
10. I look forward to playing with my child (enjoyment)
11. When my child loses interest in a game we are playing, I try to engage him/her in a new game (enjoyment)
12. I decide what we play with/how we play (structure)
13. I provide toys that challenge my child to develop skills (structure)
14. I schedule time to play with my child each day (structure)
15. I let my child decide what we play with/how we play (structure)

Family Assessment Device - General Functioning Scale

SA=strongly agree A=agree D=disagree SD=strongly disagree

1. Planning family activities is difficult because we misunderstand each other. __SA __A __D __SD __
2. In times of crisis we can turn to each other for support. __SA __A __D __SD __
3. We cannot talk to each other about the sadness we feel. __SA __A __D __SD __
4. Individuals are accepted for what they are. __SA __A __D __SD __
5. We avoid discussing our fears and concerns. __SA __A __D __SD __
6. We can express feelings to each other. __SA __A __D __SD __
7. There are lots of bad feelings in the family. __SA __A __D __SD __
8. We feel accepted for what we are. __SA __A __D __SD __
9. Making decisions is a problem for our family. __SA __A __D __SD __
10. We are able to make decisions about how to solve problems. __SA __A __D __SD __
11. We don't get along well together. __SA __A __D __SD __
12. We confide in each other. __SA __A __D __SD

FAD General Functioning Scoring 1. 5 - ____ = ____ 2. ____ 3. 5 - ____ = ____ 4. ____ 5. 5 - ____ = ____ 6. ____ 7. 5 - ____ = ____ 8. ____ 9. 5 - ____ = ____ 10. ____ 11. 5 - ____ = ____ 12. ____ Total ____ = ____ 12

A score of 2.00 or above indicates problematic family functioning. The higher the score, the more problematic the family member perceives the family's overall functioning.

Appendix G

ARE YOU A PARENT ?

Participate in a study on Parenting,

Personality & Play



We are looking for parents or guardians of children between the ages of 1-12 to take part in an anonymous research project exploring the relationship between parental personality traits, family function and parent-child play interactions.

Who can participate?

- Adults over 18
- Parents or guardians to at least one child between 2-12 years old
- Fluent in English and have access to the internet

What's involved?

- Complete a brief, anonymous online questionnaire
- Estimated completion time: 10-15 minutes

Any Interest in participation would be greatly appreciated!

Scan the QR code provided below

Any Questions please email me x21197318@student.ncirl.ie

Appendix H

Openness5R	Agreeableness5	Conscientiousness6R	Openness62
3	4	2	3
4	4	2	2
3	5	1	3
3	2	2	3
3	4	1	3
2	5	1	3
3	4	2	3
3	4	2	3
2	5	2	3
3	4	1	3
3	5	1	3
3	5	4	3
4	4	2	2
3	4	2	3
4	4	1	2
2	4	2	3
2	5	2	3
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4	5	2	2
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2	4	2	3
2	5	2	3
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3	4	1	3
3	4	1	3
3	5	1	3
2	4	1	4
2	5	2	4
4	4	2	2

2	5	1	3
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2	5	2	3
2	4	2	4
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3	5	1	3
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3	5	1	3

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2	5	1	3
2	4	2	4