

**The Role of Parents in the Emergence of Sex Differences in Children's Play:  
Interrelations among Parental Attitudes, Parental Toy Choices, and Children's Toy  
Preferences**



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**Summary**

Girls and boys tend to play with different toys. In general, girls prefer dolls, domestic toys, and beauty sets more than boys do, whereas boys prefer toy vehicles, construction toys, toy weapons, and sports-related toys more than girls do. Several mechanisms have been suggested to contribute to the development of these sex differences. Much research has focused on the role of parental socialisation finding that parents provide their sons and daughters with access to, and encourage them to play with, different toys. However, although studies consistently find evidence for this differential treatment of sons and daughters, it is unclear what factors might be influencing these parental behaviours. Moreover, although many scholars believe that parental gender-typed socialisation contributes to sex differences in toy preferences, few studies have examined the actual link between parents' behaviours and their children's sex-typed play. This dissertation sought to address these gaps. Specifically, it examined the role of parental attitudes in parents' choices of gender-typed toys for their children. It also explored the link between parental provision of gender-typed toys and children's sex-typed play. Lastly, it examined sex differences in children's toy and play behaviours in new cultural contexts. The research was conducted online among primary caregivers of children aged between one and three years in four countries: the United Kingdom ( $N = 721$ ; 695 mothers, 25 fathers, 1 other relative), Poland ( $N = 553$ ; 505 mothers, 45 fathers), North Macedonia ( $N = 267$ ; 250 mothers, 15 fathers, 2 other relatives), and Egypt ( $N = 196$ ; 165 mothers, 27 fathers, 4 other relatives). Results indicated that parents' egalitarian/liberal attitudes were significant negative predictors of the extent to which parents' toy choices (real-life and hypothetical) were gender-typed. However, their predictive power was rather low, especially in the case of real-life choices. Some differences between contexts were observed. Regarding child behaviour, gender-typing in parents' toy choices was positively predictive of children's sex-typed toy preferences and play behaviours. The predictive power of toy choice variables was high in the case of toy preferences and low-to-moderate in the case of play behaviours. Few differences between contexts were found. Finally, in all countries, boys and girls differed significantly in their toy and play preferences. Girls had more feminine (or less

masculine) toy preferences than boys did, and this effect was very large in all samples. Further, boys displayed more masculine (or less feminine) play behaviours than girls did, and this effect varied from large to very large. Theoretical and methodological implications of these results are discussed.

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## **LITERATURE REVIEW**

### **Key Terms**

Studies in the field of sex/gender differences, including differences in toy interests, use divergent terminology to often describe the same concepts. Therefore, in this dissertation, the key terms will be defined as follows. Any difference concerning a human characteristic (e.g., behaviour, psychological trait) that differs on average for men/boys and women/girls will be referred to as a 'sex difference' (Hines, 2004). The term 'sex' instead of 'gender' has been chosen, as most of the research discussed in this dissertation, including the study constituting its core, focus on sex differences in infants or young children. Researchers categorise infants as boys or girls based on their assigned sex, which is typically determined by the appearance of their external genitalia and not gender identity as children acquire more complex knowledge about gender and gender identity only around the age of five (e.g., Ruble et al., 2007). For the sake of consistency, the term 'sex difference' will be applied also when discussing research on adults.

Children's toys and behaviours that are stereotypically seen as more typical of or appropriate for one or the other sex will be referred to as 'gender-related', 'gender-typed', or 'gendered'. Toys and behaviours that show sex differences in empirical studies will be referred to as 'sex-related' or 'sex-typed'. However, as many of the toys that show sex differences in empirical studies are also the object of stereotyping, these terminologies might overlap and therefore both terms might be used interchangeably. Toys that are seen as typical or appropriate for the other sex will be referred to as 'cross-gender' or 'cross-typed'. Toys that are associated with boys (either socially or based on research findings) will be referred to as 'boys' toys' or 'masculine toys', while those that are associated with girls will be referred to as 'girls' toys' or 'feminine toys'.

### **Chapter Overview**

The work presented in this thesis investigates the role of parents in the emergence of sex differences in children's play. Specifically, it focuses on parents' gendered toy provision, its potential antecedent: gender-related attitudes, and its contribution to children's sex-typed toy preferences. The current chapter outlines the theoretical background behind this research objective. The first few sections summarise the state of research on sex differences in children's play and their developmental consequences as well as the main theoretical

perspectives on the mechanisms behind these differences—namely, cognitive, hormonal, and socialisation perspectives. The later sections expand on the socialisation perspective and discuss the role of parents as the main socialisation agents in the development of sex-typed toy preferences in very young children. The gaps in the existing research are identified and discussed. It is concluded that, although there is a wealth of research showing that parents treat their sons and daughters differently in the context of toy play, little is known about factors contributing to this differential treatment as well as its actual contributions to children’s sex-typed preferences. It is explained that the main aim of this doctoral research is to address these two gaps. The last section outlines the main aims and objectives of the research.

### **Sex Differences in Toy Preferences: An Introduction**

Sex differences have long been a topic of interest among behavioural scientists. Already in the beginning of the 20<sup>th</sup> century, the number of empirical investigations on the subject was high enough that it was difficult to cover it in a single review paper (Woolley, 1914). The seminal book by Maccoby and Jacklin—‘The Psychology of Sex Differences’—published in 1974, reviewed more than two thousand studies looking at sex differences in a wide range of domains. Since then, the field has continued to expand, fuelled by the attention from mass media and the general public (e.g., Hyde, 2005). On Google Scholar, a search for the terms ‘sex differences’ or ‘gender differences’ yields more than two million results.<sup>1</sup> The main lesson from these hundred plus years of research is that the majority of psychological and behavioural sex differences investigated are either negligible or non-existent (e.g., Helpern et al., 2007; Hyde, 2005; Hyde & Linn, 2006; Hyde et al., 2008). However, some moderate to large sex differences do exist, are statistically significant, and have been observed consistently over time. In adults, these include differences in mental rotation ability (Maeda & Yoon, 2012; Voyer et al., 1995), physical aggression (Archer, 2004; Card et al., 2008), and motor performance (Thomas & French, 1985). In children, a large and consistent sex difference concerns children’s play behaviour, especially toy interests and choices ( $d \geq 1.60$ ; Davis & Hines, 2020; Hines & Davis, 2018).

Numerous studies using different samples and methodologies have demonstrated that girls and boys tend to play with different toys (see Davis & Hines, 2020 for the most recent meta-analysis). Girls prefer to play with dolls, domestic toys, and beauty sets more than boys do, whereas boys prefer to play with toy vehicles, construction toys, toy weapons, and sports-

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<sup>1</sup> The search was conducted on the 7th of January 2022.

related toys more than girls do (e.g., Cherney & London, 2006; Davis & Hines, 2020; O'Brien & Huston, 1985; Serbin et al., 2001). In addition to these differences between the sexes, within-sex differences have also been observed; for example, girls favour dolls over vehicles, whereas boys favour vehicles over dolls (e.g., Davis & Hines, 2020; Jadva et al., 2010; Pasterski et al., 2005). Boys and girls have been observed to choose different toys by the time they are two years old (e.g., O'Brien & Huston, 1985; van de Beek et al., 2009), while sex differences in visual toy preferences have been observed in infants as young as 12 (Jadva et al., 2010; Serbin et al., 2001) or even six months (Alexander et al., 2009); the magnitude of these differences appear to increase linearly with age up to middle childhood (Davis & Hines, 2020).

### **The Consequences of Sex-Related Toy Interests**

All of the above seems important from the developmental point of view, as play constitutes an integral part of children's lives: they spend a significant portion of their day playing, be it on their own or with relevant others. Data from the US suggests that play occupies more time than every other child activity apart from sleeping and being at school/day care (Hoeffferth, 2009). Therefore, one could expect early play to influence many aspects of children's development, including cognitive, physical, and social abilities (e.g., Liss, 1983). As 90 percent of young children's play involves toys (e.g., Tizzard et al., 1976), the role of toy preferences seems especially relevant.

To the extent that boys and girls play with different toys, they are likely to engage in different types of play, which may promote sex-segregation and creation of outgroup vs. ingroup social dynamics (e.g., Hayden-Thomson et al., 1987; Maccoby, 1998). In addition, different toys may encourage development of different skills, which could contribute to future sex differences. For instance, boys' and girls' toys offer different opportunities for object manipulation and exploration, which appear to be linked to sex-related differences in spatial abilities (Liss, 1981). Jirout and Newcombe (2015) found that play with spatial toys correlated significantly and positively with performance on spatial tasks, and that boys engaged in such play more than girls did. Furthermore, Fagot and Littman (1976) observed that children's engagement in masculine play in preschool was a significant positive predictor of visual-spatial abilities in elementary school. As children's expertise in spatial ability lays down a foundation for the development of quantitative reasoning, which is crucial for achievement in science and mathematics (e.g., Reilly et al., 2017), early sex differences in toy preferences could be contributing to underrepresentation of women in educational courses and occupations in STEM (e.g., Wai et al., 2009).

Boys' and girls' toys can also promote different social behaviours. For instance, certain boys' toys such as guns and military toys have been associated with aggression (for a review, see Malloy & McMurray-Schwarz, 2004). Children who played with "war toys" (i.e., toy weapons and armour; Goff, 1995) or toy guns specifically (Watson & Peng, 1992) have been observed to engage in real aggression during free play with their peers more than those who played with non-violent toys. Real aggression was understood as any aggressive physical action towards a peer or a toy (e.g., hitting, kicking, grabbing a toy) or any aggressive verbal action towards a peer (e.g., shouting, taunting, threatening) that could not be interpreted as an element of play. As such, real aggression was distinguished from pretend or fantasy aggression, which occurs in a make-believe mode (e.g., acting out another role), and has been proposed by some as a useful outlet for aggressive thoughts and feelings (e.g., Singer & Singer, 1981; Sutton-Smith, 1988). No recent studies have investigated the long-term effects of play with "war toys", but if they are similar to the effects of violent video-gaming, they could include desensitization to violence, decreased empathy, and increased aggressive behaviour (e.g., Anderson et al., 2010), all of which could contribute to greater levels of delinquency and crime in men than women (e.g., Smith, 2014). On the other hand, playing with girls' toys (such as dolls) has been linked to the development of communal social skills, such as the ability to come up with comforting strategies (Li & Wong, 2016) or joint attention (Gavrilov et al., 2012), which, in turn, could be associated with a female advantage regarding similar skills later in life (e.g., Catherine & Schonert-Reichl, 2011; Kirkland et al., 2013). Communal social skills predict successful social relations and academic achievement (e.g., Eisenberg et al., 2010), though might also be important when making choices concerning one's involvement in caregiving tasks in both family (e.g., caring for children or elderly parents; Blakemore et al., 2009; Hyde, 2005) as well as professional life (e.g., choosing caring professions, such as social work or nursing; Blakemore et al., 2009; Boughn, 2001). Therefore, by playing with sex-typed toys, girls might gain an advantage in navigating social worlds, but they also might be encouraged to assume stereotypical female roles.

Finally, in a broader sense, sex-typed toys can influence the range of opportunities that boys and girls see for their future selves. For instance, as boys' toys tend to be associated with stereotypically male occupations (e.g., tools–mechanic), and girls' toys tend to be associated with stereotypically female occupations (e.g., doll styling head–beautician), play with them might encourage gender-typical occupational interests. In line with this, a longitudinal, population study found that gender-typed play in early childhood was a significant predictor of more gender stereotypical occupational interests in adolescence (Kung, 2021). Moreover, it has

been suggested that through their associations, specific sex-typed toys could make children believe that certain occupations are not for them. Sherman and Zurbriggen (2014) proposed that sexualized fashion dolls (such as classic Barbie dolls and their newer equivalents), by promoting focus on appearance and material consumption, might limit the number of possible career paths that girls see for themselves. Indeed, the researchers found that girls who were randomly assigned to play with a Barbie (as compared to girls assigned to play with a Toy Story character) believed that they had fewer future career options than boys.

Based on all of the above, sex-typed toy interests in early childhood might contribute to stereotypical gender roles and gender disparities in different areas of adult life. Knowing which factors influence sex differences in toy choices may help to mitigate these negative effects and increase equal opportunities for both sexes in various social domains. The next few sections will discuss such factors and provide a broad overview of the most influential approaches to studying sex differences in human behaviour, with focus on toy play. This will be followed by a more detailed examination of social learning theories that provide the theoretical basis for this doctoral research.

### **Cognitive Perspective on Sex Differences in Children's Toy Play**

Over the last six decades, several mechanisms contributing to the development of behavioural sex differences have been proposed. The most prominent theories can be classified into three categories: cognitive, biological, and social; and they developed within different schools of psychological thought. None of them can completely account for all the phenomena related to gender development, and, according to the current consensus, all the factors most likely combine to influence the development of behavioural sex differences (e.g., Pasterski et al., 2005; Hines, 2015). Nonetheless, for the sake of clarity, each perspective will be discussed separately.

Cognitive theories propose that gender constitutes one of the main categories that children use to understand and organise their social world and their roles in this world as social actors (e.g., Leinbach & Fagot, 1993). These theories can be seen as a response to a general shift towards constructivism within the field of developmental psychology in the 1960s, as they are in line with Piaget's emphasis on infants as active agents who construct their own worlds within the physical and social contexts they inhabit (e.g., Fisher & Hencke, 1996). According to Kohlberg (1966), who was the first to adopt the cognitive approach to gender in his Cognitive-Developmental Theory (CDT), children actively process information about gender and act upon it. However, their active role can only begin when they have a full understanding

of gender. To gain this understanding, children have to go through a series of stages (Kohlberg, 1966; Slaby & Frey, 1975): first, they develop awareness of their identity as a girl or a boy (i.e., stage of basic gender identity/labelling), then they learn that one's gender does not change over time (i.e., gender stability), to finally realise that one's gender does not depend on situational factors (i.e., gender consistency). As this process progresses, children become more responsive to gender cues in their environment and start to actively explore associations between gender and various other categories, such as toys or activities (e.g., Stangor & Ruble, 1987). These gendered associations give them information on what they might like. As a result, children develop preferences for toys associated with their gender and seek out activities that are gender-typed. Such gendered cognitions were later expanded and further explored by the group of theories known as 'Gender Schema Theories' (GSTs; e.g., Bem, 1981; Liben & Signorella, 1980; Martin & Halverson, 1981). Similarly to Kohlberg's CTD (1966), these theories suggest that gendered cognitions guide children's attention and interests in specific toys and activities, but unlike CTD, they argue that this process might begin as soon as children start identifying with a specific gender group (i.e., no advanced gender knowledge is required; Martin & Halverson, 1981). Moreover, according to GSTs, children become interested in gendered objects not only because they want to learn more about themselves as girls or boys, but also as an effect of simple gender theories about the nature of men/boys and women/girls, which they develop. For instance, children might form beliefs that all girls/women share similar traits and preferences and that all boys/men share similar traits and preferences (i.e., within-group similarity theories; Gelman et al., 1989; Martin et al., 1995).

Cognitive approaches to sex differences in toy preferences have been supported by studies on gender labelling, which show that children tend to play more with objects labelled as appropriate for individuals of their own gender (Hines et al., 2016; Masters et al., 1979; Weisgram et al., 2014) and might show better memory for such objects (e.g., Bradbard & Endsley, 1983; Bradbard et al., 1986; but see Hines et al., 2016); and that they avoid even attractive toys when these are labelled as appropriate for the other gender (Martin et al., 1995). There is also some evidence showing that children's understanding of gender might be linked to their sex-typed toy preferences. For instance, two studies (Fagot, 1985; O'Brien & Huston, 1985) found that boys who were unable to categorise others by gender categories were more likely to play with girls' toys than boys who had a good understanding of gender labels. Furthermore, Zucker et al. (1999) observed that the lack of attainment of gender consistency was associated with lower levels of gender-typed play among children referred for gender dysphoria (i.e., children displaying high levels of gender non-conforming behaviour). In

addition, early ability to use gender labels at 27 months was found to predict future sex-typed preferences at four years (Fagot & Leinbach, 1989). However, there are also studies that do not replicate these patterns of results and some that suggest that the relationship between gender understanding and gender-typed play might be more nuanced. For instance, Fagot et al. (1986) found no significant association between children's early gender labelling and their engagement in gender-typed play. Similarly, Lobel and Menashri (1993) observed no significant link between the overall level of gender constancy and children's gender-typed play. Fast and Olson (2018) investigated gender stability understanding among transgender and gender-typical young children as well as among siblings of transgender and gender non-conforming children. They observed that transgender children and siblings showed significantly lower levels of gender stability beliefs than gender-typical children, while demonstrating equally high gender-typed toy and clothing preferences, which could suggest that gender stability understanding is not necessary to the development of strong gender-typed play preferences.

In addition to these inconsistencies, it also seems unlikely that cognitive explanations could account for early sex-typed toy preferences, as before the age of two many children are still unable to use gender labels correctly or they do so inconsistently (e.g., Campbell et al., 2002). Although there is the possibility that infants have good understanding of gender but they are unable to properly verbalise it or respond to researchers' instructions, proponents of cognitive theories tend to agree that early sex-typed interests are likely to result from different types of factors such as biological or socialisation influences (e.g., Martin et al., 2002), and that gendered cognitions might play a role of an additional contributor later in life (e.g., Zosuls et al., 2009).

### **Hormonal and Genetic Influences on Sex Differences in Children's Toy Play**

The biological theories that have received most attention in recent years are rooted in experimental research involving the identification of the processes of sex determination and differentiation in non-human mammals (e.g., Arnold, 2009; Hines, 2004; McCarthy et al., 2009). This research has shown that genetic information on the sex chromosomes determines whether the primordial gonads, which are originally identical in males and females, develop as testes or ovaries (e.g., Johnson, 2018). Specifically, in the presence of the sex determining gene on the Y chromosome—Sry—the gonads develop as testes, whereas in the presence of two X chromosomes and no Sry, the gonads develop as ovaries. These differences in gonadal development, in turn, influence the sex hormone environment in which the foetus develops

(e.g., Hines, 2015). The testes begin to produce androgens prenatally, whereas the ovaries do not. Higher concentrations of androgens in male than in female fetuses have been identified as one of the explanations for sex differentiation of mammalian brain and behaviour.

Initial animal studies have shown that early androgen exposure influences the development of sex differences in reproductive behaviours (e.g., Clemens & Gladue, 1978; Hines & Goy, 1985; Paup et al., 1972; Phoenix et al., 1959). The same hormonal treatments that influence reproductive behaviours has also been observed to produce morphological changes in the brain (e.g., Gorski et al., 1978). These effects were subsequently extended to other sexually dimorphic behaviours such as rough-and-tumble play in young rodents (e.g., Beatty, 1979; Ward & Stehm, 1991) and rhesus monkeys (e.g., Goy et al., 1988; Meaney, 1988). In all these studies, early exposure to androgens has been shown to have masculinizing effects on both the brain and behaviour. Early (prenatal and neonatal) hormonal influences have been referred to as organizational influences because the hormones are thought to organize the developing brain in an enduring way that contributes to the expression of sex-related behaviours later in life (e.g., Arnold, 2009; Phoenix et al., 1959).

The organizational hypothesis has been later tested in the context of sex differences in human behaviour, including sex differences in play (e.g., Hines, 2006). As hormone levels in human participants cannot be experimentally manipulated, some research on the topic has focused on children who experienced atypical hormone exposure prenatally, for instance, due to genetic conditions or because their mothers were prescribed hormones during pregnancy. The most commonly studied group has been individuals with congenital adrenal hyperplasia (CAH). CAH is a genetic variant resulting in prenatal exposure to abnormally high levels of testosterone in female fetuses (Pang et al., 1980). Research consistently shows that girls with CAH tend to play more with boys' and less with girls' toys than their unaffected female relatives or other girls (e.g., Berenbaum & Hines, 1992; Pasterski et al., 2005); and that this behaviour is unlikely to result solely from parental socialisation (Pasterski et al., 2005; Servin et al., 2003), although parental encouragement of activities that their children show a preference for might play a role (Wong et al., 2013). Similar findings of increased male-typical and reduced female-typical toy interests were reported in studies of girls whose mothers were administered androgen-based progestins for clinical reasons during pregnancy (Ehrhardt & Money, 1967; Money & Ehrhardt, 1972). Another group that has been studied in the context of hormonal influences on sex-typed behaviours is XY individuals with complete androgen insensitivity syndrome (CAIS). Individuals with CAIS, despite having a male karyotype, lack functioning androgen receptors and therefore their external genitalia differentiate in a female-



typical direction (e.g., Oakes et al., 2008). Due to this, individuals with CAIS are assigned and reared as girls. Research shows that individuals with CAIS demonstrate female-typical toy preferences no different from those of unaffected female controls, at least as assessed retrospectively with self-report measures (Hines et al., 2003); and that they display decreased interest in masculine toys and activities when compared to typically developing boys, as per parental reports (Jürgensen et al., 2007). Finally, the link between early androgen exposure and sex-typed play has recently been explored in individuals with isolated gonadotropin-releasing-hormone deficiency (IGD). Like typically-developing men, XY individuals with IGD are exposed to a surge in testosterone beginning at approximately the eighth week of gestation. However, in their case, this surge does not persist until the 24th week, as testosterone production ceases after the first trimester, due to decreasing levels of hCG (e.g., Han & Bouloux, 2012). Therefore, XY individuals with IGD experience limited prenatal (and no postnatal) exposure to androgens. However, as androgen levels in IGD decline only after the first trimester when external genitalia have already sexually differentiated, their external genitalia are concordant with their chromosomal and gonadal sex (e.g., Balasubramanian & Crowley, 2011), and thus they are reared as boys. Research shows that men with IGD recall elevated levels of gender non-conforming childhood behaviours, including cross-gender toy and play preferences, as compared to unaffected male controls (Shirazi et al., 2022). Therefore, studies on populations exposed to atypical hormone environments suggest that androgen might play a role in masculinisation of play behaviours in children.

There is also some evidence linking early testosterone exposure to later sex-related toy preferences in typically developing children. For instance, Lamminmäki et al. (2012) found a positive relationship between testosterone in urine samples (collected from week one to month six postnatal) and subsequent male-typical play (as reported by parents) in boys. Hines et al. (2002), on the other hand, found that maternal testosterone during pregnancy was a positive predictor of male-typical play behaviour in preschool girls. No relationship was found, however, between sex-typed toy preferences of either sex and amniotic fluid testosterone (Spencer et al., 2021).

In addition to the indirect effect of the sex chromosome genes on children's toy and play preferences, research has also investigated the overall contribution of genetic influences to such early sex-related behaviours. This research has employed mostly the twin design, which compares 'identical' (i.e., monozygotic, MZ) and fraternal (i.e., dizygotic, DZ) twins. Iervolino et al. (2005) looked at sex-typed toy preferences and activities in a large sample of three- to - four-year-old MZ and DZ twin pairs. The researchers included also a small sample of pairs

consisting of one twin and their younger sibling to examine the extent to which shared environmental effects that are specific to twins influence variation in behaviour. Their results indicated moderate genetic influence for boys (34%) and substantial genetic influence for girls (57%). Bailey et al. (2000) investigated retrospective childhood gender non-conformity in a large sample of adult MZ and DZ twins. Gender non-conformity was operationalised as engagement in cross-sex games and activities and expressions of cross-gender identity. The results suggested substantial genetic influence for both boys (57%) and girls (40%). Even larger effects (70%) were found in a study that assessed gender non-conformity through parental reports in seven- to 10-year-old twins (van Beijsterveldt et al., 2006). Finally, genetic influences have also been identified as potential contributors to the development of gender dysphoria (for a review, see Heylens et al., 2012), which in children is associated with behaviours such as cross-dressing, cross-gender play, and preference for cross-gender toys and activities (e.g., Ristori & Steensma, 2016). Overall, these findings seem to suggest that genetics might have an important contribution to children's sex-typed toy and play preferences.

Nonetheless, even if most research findings are overall consistent with a role of biological factors in the development of early differences in toy preferences, they are not free of criticism. For instance, some researchers have questioned whether findings from groups exposed to atypical hormonal environments can be generalised to a wider population (e.g., Servin et al., 1999). Furthermore, the available methods used to measure the early hormone environment in typically developing children might not be sensitive enough to produce reliable and consistent results (e.g., Hines, 2013). On a different note, it is difficult to establish the extent of androgen effects on children's play, as other factors could have potentially influenced the research results. For instance, studies looking at girls with CAH have not so far investigated toy preferences in infancy, but only in later childhood when behaviour could have been already under a considerable influence of cognitive (e.g., gender identity; Hines, 2015; Hines et al., 2016) and social processes (e.g., parental encouragement; Wong et al., 2013), which could either enhance or attenuate the effects of hormones. The existing studies looking at the link between testosterone and toy preferences in typically developing populations have also not considered these potential interactions (Hines & Davis, 2018). Regarding quantitative genetic research, concerns have been raised regarding the generalisability of findings from twin to nontwin populations, or even across different twin populations (e.g., Maccoby, 2000a; Rutter, 2002). Moreover, it has been pointed out that twin studies are not informative as to the exact nature of the genetic as well as environmental factors that contribute to variability in sex-typed behaviours (e.g., Iervolino et al., 2005).

## **Social Factors and Sex Differences in Children's Toy Play**

Early theories advocating for the role of social factors in the development of sex differences originated from the behavioural school of psychological thought in the 1960s. They proposed that sex-typed behaviours can be learnt by children from relevant social agents through basic mechanisms of modelling and reinforcement (Bandura, 1969; Mischel, 1966), and that children passively absorb such information. According to these theories, children develop preferences for sex-typed toys, because boys and girls are encouraged to engage in sex-typical play and discouraged from engaging in cross-sex play; and because they model the behaviour of people of the same sex, in their immediate or wider environment.

These hypotheses have been supported by both naturalistic (e.g., Fagot, 1978; Fagot & Hagan, 1991; Fagot & Patterson, 1969; Langlois & Downs, 1980) and laboratory investigations (e.g., Pasterski et al., 2005) showing that various social agents (parents, siblings, teachers, peers) tend to respond positively to boys and girls playing with gender-appropriate toys; and that boys in particular tend to be discouraged from playing with cross-gendered toys. These positive responses can include play initiation, praise, and actions of physical comfort, whereas the negative ones can include criticism, restricting play, or even physical punishment. Moreover, research has shown that children indeed imitate the behaviours of models of their own sex. For instance, girls tend to prefer gender-neutral toys (such as plastic animals) that they have observed women choose, whereas boys tend to prefer toys that they have seen men choose (Perry & Bussey, 1979; Hines et al., 2016).

In the 1990s, these early theories were modified and transformed into the social-cognitive theory of gender development (SCT; Bussey & Bandura, 1999). Unlike its predecessors, SCT does not view children as passive in acquiring gender-related knowledge and behaviour. It suggests that children's social experiences are fundamental to the construction of their gender concepts, but once these concepts are developed, they begin to guide children's motivations and attention in their further interactions with social agents. According to SCT, there are three major sources of social influence on children's gendered behaviours: modelling and reinforcement (here 'enactive experience'), the two sources already suggested by early theorists, and direct tuition, which refers to direct communication of gender-related knowledge and expectations. The impact of these three sources of influence varies depending on one's developmental stage, i.e., some influences might be more impactful at certain periods of development than at others; and all three sources of influence might interact.

The SCT has received some criticism regarding its views on the importance of social experiences over cognitive factors in the development of early sex differences. For instance, it

has been questioned why children would differentially attend to male or female models without having an understanding of basic gender categories (e.g., Martin et al., 2004). In addition, there is little research examining the actual link between differential treatment of boys and girls and their sex-typed play, and therefore it is difficult to assess the real impact of social factors on sex differences in play behaviour. Despite this, the social influences suggested by the theory have received a lot of attention and remain one of the most commonly researched factors in the field of sex differences in children's play today. The next few sections will explore the role of parents as primary source of social influences in the context of toy preferences. The first section will outline the current state of research and identify existing gaps, while the following two will discuss these gaps in more detail.

### **The Role of Parents in Socialisation of Sex Differences in Toy Play**

Research investigating social influences in the context of children's play have looked at the role of various social agents including school peers and teachers (e.g., Lamb & Roopnarine, 1979; Langlois & Downs, 1980), siblings (Rust et al., 2000; Stoneman et al., 1986), and media and advertising (e.g., Robinson et al., 2001; Welch et al., 1979). The majority of studies, however, focused on the roles of parents, who have long been seen as the primary socialisation agents in the first few years of children's life: it is parents who children spend the most time with, and therefore whom they should be most influenced by (e.g., Caldera et al., 1989; Maccoby, 1998; Maccoby, 2000b). This research, spanning over the period of 60 years, consistently shows that, in the area of gender-typed play and activities, parents engage in differential treatment of their sons and daughters, and that this manifests in a myriad of ways, including overt as well as more subtle, or even implicit, behaviours (for a review, see Lytton & Romney, 1991). Such differential treatment on the side of parents has been seen as an important contributor to the development of sex differences in toy play.

First of all, parents choose different objects and create different environments for their sons and daughters. Studies show that parents are more likely to purchase gender-typed toys for their children than gender-neutral or cross-gender toys (e.g., Fisher-Thompson, 1993; Kim, 2002), and that they are especially unlikely to gift cross-gender toys to boys (Robinson & Morris, 1986). These gendered purchases are often made regardless of the type of toy requested by the children themselves (e.g., Etaugh & Liss, 1992). Moreover, parents seem to engage in these gendered choices before children are even able to interact with toys. Research comparing the rooms of infant boys and girls shows that parents tend to choose different toys as well as decorations for their sons and daughters. Two early studies (Rheingold & Cook, 1975;

Pomerleau et al., 1990), which looked at children as young as five months, found that parents provide boys with more vehicles, tools, sports equipment, and animal decorations, while providing girls with more dolls, domestics toys, and floral decorations. These findings have been replicated in two more recent investigations (MacPhee & Prendergast, 2019; Nelson, 2005), one of which was conducted in a highly egalitarian cultural setting, suggesting that parents' tendency to create gender-typed environments for their children seems to persist across time and contexts. Based on the above, parents might contribute to the development of sex-typed toy preferences in their sons and daughters in part because they expose them to such toys since the day they are born, and because they limit their access to other types of toys.

As mentioned briefly in the previous chapter, parents also encourage and discourage different types of play in their sons and daughter, both in direct and more subtle ways. For instance, in play situations, parents tend to direct their children's attention to gender-typed toys. Caldera and Sciaraffa (1998) found that, when given a choice between a baby doll and a stuffed clown, parents of boys were more likely to call their sons' attention to the clown, whereas parents of girls were more likely to call their daughters' attention to the doll. Furthermore, parents are likely to respond positively to their sons and daughters playing with gender-typed toys and sometimes respond negatively to them playing with cross-gender toys. For instance, Fagot (1978), who looked at interactions between parents and children during play at home, found that boys received more praise than girls and were more often joined by their parents in play when choosing building blocks, whereas the reverse was observed for play with dolls. At the same time, boys, as compared to girls, were given more criticism or even physical punishment when playing with dolls. Such negative responses were more often given by fathers than by mothers. Similar findings were reported by other studies conducted both in children's homes (see Langlois & Downs, 1980 for a meta-analysis) as well as in the lab (e.g., Pasterski et al., 2005). Although negative parental responses are overall infrequent, their incidence appears to increase in cases of high gender non-conformity in children (e.g., D'Augelli et al., 2006). Apart from such overt behaviours as praise or directing attention, parental reinforcement might assume more subtle forms. Caldera et al. (1989) looked at parental responses to surprise toy boxes offered to parent-child dyads in a free play session. The boxes contained either masculine (vehicles or building blocks), feminine (dolls or kitchen sets), or gender-neutral toys (puzzles or shape sorters). The researchers found that parents with sons showed most excitement when opening a box of masculine toys and least excitement when opening a box of feminine toys. The opposite was true for parents with daughters. Therefore, parents seem to send more positive affective signals when faced with toys that

‘match’ their child’s gender. Therefore, considering basic reinforcement principles (e.g., Bandura, 1986; Lamb et al., 1998), children could develop preferences for sex-typed toys as these are the toys they associate with positive parental responses. At the same time, since engaging in play with cross-sex toys might be met with negative emotional reactions or even punishment, children might start avoiding such toys.

Another way in which parents can engage in differential socialisation of their sons and daughters is by providing direct linguistic information regarding toy play and gender. For instance, parents might label certain toys and activities as ‘appropriate for boys’ and others as ‘appropriate for girls’, or they might offer information that would encourage children to make such gendered associations themselves (e.g., “All girls like playing with dolls”). The use of gendered language could contribute to the development of sex-typed preferences, since, as explained before, children tend to choose toys described as appropriate for their own sex (e.g., Hines et al., 2016; Masters et al., 1979). Although no research has been conducted on parents’ use of gender-related language in play situations or with regard to toys specifically, there is evidence showing that parents might choose to refer to gender when discussing different activities with their children (e.g., Endendijk et al., 2014; Gelman et al., 2004). Gelman et al. (2004) asked mothers to discuss a picture book depicting children and adults performing stereotypical and counter-stereotypical gendered activities with their child. They found that although mothers’ explicit talk about gender stereotypes was relatively rare (i.e., when referring to the target activity mothers were more often neutral than stereotype-affirming), most mothers tended to use gender labelling as well as sentences contrasting the two genders; they were also observed to produce gender-related errors when referring to counter-stereotypical pictures. Moreover, mothers rarely negated children’s gender stereotypes, and, in fact, primarily affirmed what children said. A more recent study by Endendijk et al. (2014) used a similar book-reading procedure to examine both mothers’ and fathers’ gender talk, but they also included pictures of gender-neutral individuals. The researchers found that many parents referred to gender labels and tended to reaffirm gender stereotypes in their discussions with children, even when pictures portrayed gender neutral children. In addition, some parents (especially fathers) attempted to emphasize how children should not behave, saying things like “Girls cannot play ice hockey” or “Boys don’t play with dolls”. Overall, the above findings suggest that parents are prone to using gendered language in communication with their sons and daughters. It is important to note, however, that not all parents used gendered language in these studies. Relatedly, more research needs to be conducted to establish the prevalence of such language in everyday parent-child communication.

Finally, parental influences are not restricted to differential treatment of sons and daughters but might also involve the roles and behaviours that parents choose for themselves in their family environment. For instance, it has been theorised that parents in opposite-sex couples might model different play behaviours to their sons and daughters by assuming traditional gender roles in their households (e.g., Leaper, 2002). In a traditional marriage, women used to assume the role of a homemaker and men used to assume the role of a breadwinner. Although there has been a significant shift in societal views on marriage, and most man-woman households can be characterised as dual-earner households (e.g., Betz, 2005), women continue to undertake most of the responsibility for household and childcare duties (e.g., Fetterolf & Rudman, 2014). Men's household duties tend to be limited to traditionally 'masculine' chores, such as house repairs or yard work (e.g., Cerrato & Cifre, 2018; Kroska, 2003). It has been proposed that by assuming these different roles, parents might encourage sex-related symbolic play through imitation (e.g., Kollmayer et al., 2018). Specifically, girls can model their mothers' caregiving roles by 'taking care' of their dolls, whereas boys can choose to play with tools if they see their fathers perform house repairs.

To summarise, prior research shows that parents provide their sons and daughters with access to different types of toys and that they encourage them to play with different types of toys. There is also some evidence suggesting that parents use gendered language when talking about different activities to their sons and daughters. Finally, researchers suggest that parents model different play behaviours for their sons and daughters by assuming traditional gender roles in their household. However, although much research has been conducted to examine differential treatment of sons and daughters in the context of play, there are some areas of research on parental socialisation that have been rather neglected. For instance, there is little research looking at factors that could explain why parents choose different toys for and reinforce different types of play in their sons and daughters. In addition, many statements concerning such factors in prior research have been based on generalization from research on other sex-typed behaviours, and not play specifically. Although, on average, parents promote gender-typical play and toys, and discourage cross-gender play and toys in their children, this is not true to the same degree for all parents (as evidenced by high levels of variability within the data of different studies; e.g., Kollmayer et al., 2018; MacPhee & Prendergast, 2019). Understanding the causes of such individual variability in the extent to which parents engage in gendered socialisation of play could help identify the causes of parental gendered socialisation in other domains. Another gap that should be mentioned is the fact that although many researchers perceive differential parental socialisation as a relevant contributor to the

development of sex differences in toy preferences, few studies have examined the actual link between parental socialization behaviours and children's sex-typed play. Since there are visible differences both in parental treatment of boys and girls, and in boys' and girls' play behaviour, the causal relationship between the two has often been assumed. It would be useful, however, to have more empirical investigations examining the validity of this assumption. These two important issues constitute the basis of this doctoral research and will be discussed in more depth in the next two sections.

### **Factors Behind Differential Treatment of Boys and Girls: Parental Attitudes and Other Potential Causes**

Researchers frequently propose gender-related parental attitudes<sup>2</sup> as a factor contributing to differential treatment of sons and daughters (e.g., Blakemore, 1998; Katz, 1996), including in the context of toy choices and play (e.g., MacPhee & Prendergast, 2019; Rheingold & Cook, 1975). This idea is not surprising, considering that observers generally tend to assume that the behaviour of others is representative of their attitudes and dispositions (e.g., Kashima et al., 1992), and indeed the relationship between attitudes and behaviours proves to be strong in some contexts (e.g., Ajzen & Fishbein, 1977). However, this might be also why the association itself has received little empirical attention.

There is some evidence showing that parents with more egalitarian gender role attitudes tend to divide household chores between their sons and daughter more equally than parents with more traditional views (e.g., Crouter et al., 1995). Parents with more egalitarian gender role attitudes have been also found to report more positive views regarding their children's potential engagement in cross-sex activities, as compared to non-egalitarian parents (Blakemore & Hill, 2008). When it comes to the role of attitudes in parental behaviours during play or in parental toys choices, research is similarly scarce.

Lytton and Romney (1991) conducted a meta-analytic review of all the studies published between 1952 and 1987 that examined differential socialisation of boys and girls across different behavioural domains and characteristics. Out of the 172 studies identified, 30 looked at parental encouragement of gender-typed activities, including gender-typed play. Interestingly, this was the only group of studies that demonstrated a consistent significant effect for both mothers and fathers ( $d = .43$ ). Nonetheless, almost none of the studies appeared to examine the factors behind such differential treatment of sons and daughters, despite some

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<sup>2</sup> Gender-related attitudes are understood as individuals' beliefs and feelings regarding behaviours, traits, and objects that are appropriate or desirable for men versus women, or boys versus girls, in different social domains.



assuming links between parents' behaviour and their beliefs and attitudes (e.g., Atkinson & Endsley, 1976). Upon closer investigation, only one study has been identified that empirically examined the link between parents' gender-related attitudes and their encouragement of gender-typed play. Fagot (1978) asked parents to indicate their opinions regarding gender roles in adulthood and gender appropriateness of various child behaviours. Based on their answers to these questions, parents were classified as either promoting or ambivalent towards sex equity. The researcher later compared these two groups for their reinforcement of gender-typed play in their two-year-olds. No significant differences were found, suggesting that parents' attitudes might not contribute to their differential treatment of sons and daughters during play.

A literature search of more recent studies has yielded three more relevant publications investigating the link between parents' gender-related attitudes and their behaviours during play. Wood et al. (2002), who asked parents about their opinions on gender-appropriateness of different toys, observed similar findings to the Fagot's study. Although many parents rated traditionally gender-typed toys as appropriate for both boys and girls, these opinions were not reflected in interactions with their children aged two to four. For instance, regardless of their answers on the toy rating task, when playing with sons, parents spent most time interacting with masculine toys. On the other hand, a significant relationship between parental attitudes and parental behaviour was found in the study by Bradley and Gobbart (1989), although only for fathers. The researchers observed that fathers with traditional gender-role attitudes were more likely to present their one- to three-year-old infants with gender-typed toys during play compared to fathers with non-traditional attitudes. Finally, Spivey et al. (2018) examined the relationship between gender-role attitudes and parents' responses to children's current or retrospective gender non-conforming behaviours, including cross-gender play and toy preferences. They found that parents with traditional gender-role attitudes were more likely to report discouragement of gender non-conforming behaviours in their children aged three to 13.

A few more recent studies looked at the potential role of parents' attitudes in their toy choices outside of actual play. Kollmayer et al. (2018) explored the link between parents' gender-role attitudes and their judgments about the desirability of gender-typed toys for their children. Overall, Austrian parents of three- to six-year-olds rated gender-typed toys as more desirable for their children than cross-gender toys. However, the researchers also found that more egalitarian parents were more likely to rate cross-gender toys as more desirable for their children than more traditional parents. There was no significant difference between egalitarian and traditional parents in terms of their ratings of gender-typed toys. This led the researchers to suggest that egalitarian parents might allow their children to explore a greater range of interests

and behaviours than traditional parents do; and that this takes place through increased acceptance of cross-gender interests along with gender-typed ones. Weisgram and Bruun (2018) measured two types of parental attitudes in their study: stereotypical gender beliefs about toys and essentialist (vs. environmentalist) beliefs about the causes of differences in girls' and boys' toy interests; and looked at the link between these two variables and the likelihood of purchasing gender-typed toys among mothers of children aged two to 10. The researchers found that, in general, mothers of sons were more likely to indicate they would buy masculine toys for their child than mothers of daughters, and mothers of daughters were more likely to indicate they would buy feminine toys for their child than mothers of sons. The researchers also found that endorsing traditional stereotypes about toys was a negative predictor of hypothetical feminine purchases for sons. The same relationship was not, however, found for masculine purchases for daughters. There was no significant association between essentialist beliefs about toys and mothers' hypothetical purchases. The researchers concluded that parents' gender-related attitudes concerning toys might, to some extent, guide what toys parents choose for their children. Finally, MacPhee and Prendergast (2019) looked at the link between parents' self-perceived gender stereotypicality and the contents of children's rooms. Self-perceived gender stereotypicality was operationalised as believing to have stereotypically gendered personality characteristics: instrumentality (for men) and expressivity (for women). Although personality traits are conceptually different from attitudes, stereotypically feminine traits and stereotypically masculine traits might reflect individuals' broader values and beliefs (as noted by the researchers themselves). Therefore, it seems valid to include this study in the discussion for the sake of comprehensiveness. MacPhee and Prendergast (2019) found significant gender differences in pre-schoolers' room contents: girls were provided more dolls, dress up, and jewellery, whereas boys were provided more vehicles, spatial toys, toy guns, and tools. Parents' gender stereotypicality was not, however, related to these sex differences. Therefore, parents' gendered expectations of personality traits for themselves might not be a good predictor of their gender-typing of toys.

Taken together, existing evidence does not provide a clear answer as to whether parents' attitudes play a role in their gendered toy choices and behaviours during play. Some of the studies find a link between parental attitudes and parental behaviours, whereas others do not. One of the reasons for this inconsistency in results might be the variability in the measures employed by different studies. The research discussed above assessed, *inter alia*, attitudes towards gender roles in adulthood, gender roles in childhood, gender appropriateness of toys, gender essentialism, and one's own gender stereotypicality. Although all these attitudes refer to

some aspects of gender, they could produce different results even if administered to the same participants, as individuals might hold more egalitarian views regarding some aspects of their or their children's lives, while maintaining more traditional beliefs about others (e.g., Knight & Brinton, 2017). Therefore, it is possible that some measures of parental attitudes would be better predictors of parental behaviours than others. Moreover, certain studies looked at actual parental behaviours whereas others at predicted or hypothetical ones. It might be that the latter studies are more likely to find positive results, as the link between attitudes and behavioural intentions tend to be stronger than the one between attitudes and actual behaviour (e.g., Armitage & Conner, 2001). Finally, many of the discussed studies did not use standardised or pre-tested measures. It is, therefore, possible that their negative results stem from the lack of internal validity. Overall, future studies might usefully explore the link between parental attitudes and parental behaviours using an array of different measures with good psychometric properties.

Apart from the methodological issues and discrepancies, differences in children's age could have also contributed to differences in results across studies. Some studies assessed parents of young infants whereas others assessed parents of pre-schoolers or children in primary education. Parents' attitudes might not predict parents' behaviours equally well throughout their children's lifespan. For instance, it is possible that parents' behaviour is guided by their gender-related attitudes more when their children are non-verbal and do not engage in play actively, but such attitudes become less important once children start demonstrating and communicating their own toy preferences.

Alternatively, the inconsistent evidence for the link between parents' attitudes and their differential treatment of sons and daughters might be due to the fact that parents' behaviours could be influenced by other factors. Related to the point above, parents' toy choices could be a response to the preferences observed in or directly communicated by their children (e.g., Weisgram & Bruun, 2018; Wong et al., 2013). In this scenario, sex differences in very young children's toy interests would result, in part, from biological factors and could precede some of parental gendered responses. As mentioned before, there is some evidence suggesting that children demonstrate sex differences in toy preferences as early as six months of age, before they can fully engage in play, including play with their parents (e.g., Alexander et al., 2009). In addition, once they become actively involved with toys and able to communicate their preferences, they tend to request gender-typed toys themselves. Bradbard (1985) asked parents of preschool boys and girls to keep diaries of their children's Christmas gifts requests. These diaries showed that boys were more likely to request (and receive) vehicles, whereas girls were

more likely to request (and receive) dolls and domestic toys. Also Robinson and Morris (1986) found that children have considerable input into Christmas presents they receive from their parents. Around half the toys received by 31- to 65-month-olds in the study had been requested by them. Moreover, these requested toys were more gender-typed than the other toys purchased by parents. There is also some evidence showing that pre-schoolers might be very rigid when it comes to their gender-related preferences: they might not only ask for, but even demand and argue over receiving gender-typed objects from their parents (e.g., Halim et al., 2014).

Nonetheless, considering that parents tend to show differential treatment of boys and girls also before children demonstrate and communicate gendered-toy preferences (e.g., Pomerleau et al., 1990; Rheingold & Cook, 1975), it is unlikely that their gendered behaviours are driven solely by child-related factors. Accordingly, in their study looking at parental attitudes, Weisgram and Bruun (2018) proposed an alternative parent-level factor that could guide parents' toy choices, i.e., parents' own childhood preferences. The researchers suggested that parents who played with gender-typed toys as children might have developed gendered associations (either explicit or implicit) with such toys, which could influence the toys they select for their own children. For instance, a mother who enjoyed playing with dolls as a child might think that her daughter would enjoy dolls too. The results of the study supported this suggestion: parents' retrospective toy play was a significant predictor of the likelihood of purchasing both gender-typed and cross-gender toys for their children. Specifically, parents who reported playing with gender-typed toys as children were more likely to indicate that they would buy gender-typed toys for their sons and daughters; while parents who reported playing with cross-gender toys as children were more likely to indicate that they would buy cross-gender toys for their sons and daughters. It is possible therefore that parents' retrospective recollections of play could be a factor contributing to differential treatment of sons and daughters. On the other hand, it is also possible that parents who hold more gendered beliefs might also recall more gender-typed play, regardless of their actual childhood experiences. Alternatively, there could be some biological factors that influence sex-typed preferences both in parents and their children.

To conclude, although parental attitudes are often suggested as a factor behind parental gendered toy choices or gendered reactions during play, the current empirical evidence does not provide consistent support for this link, while also suffering from methodological limitations. More research examining whether the association does exist would be useful; if the association is confirmed, research determining the predictive power of specific attitudinal variables would be desirable.

## **What are the Consequences of Differential Treatment of Boys and Girls?**

As stated previously, the association between differential treatment of sons and daughters and their sex-typed play constitutes another link that is frequently talked about, but rarely explored empirically. As children's sex-typed toy preferences found in various studies (e.g., O'Brien & Huston, 1985; Serbin et al., 2001) appear to match gender-typed purchases and gender-typed reinforcement patterns observed in research on parents (e.g., Fagot, 1978; Fisher-Thompson, 1993), the association might seem obvious despite the fact that these are two separate sets of findings. In addition, research looking at observational learning in different domains shows that children's behaviours are shaped by negative and positive reinforcement they receive (e.g., Bandura, 1986; Lamb et al., 1980); therefore, it may be logical to expect that reinforcement received from parents in the context of sex-typed play would have an effect as well. This might be why so little research has been devoted to examining the association.

A small number of studies have examined the link between parents' gendered behaviour during play and children's toy choices. Eisenberg et al. (1985) recorded interactions between parents and their one- to two-year-olds during play. Parents were asked to select toys that would be used in the study. Consistently with other research, parents of boys were more likely to select masculine toys, whereas parents of girls were more likely to select feminine toys. In addition, these parental toy choices were related to consecutive children's toy choices. For instance, children whose parents chose a greater number of masculine toys were more likely to choose such toys in the play session. The researchers concluded that parents might play a role in increasing their children's interests in sex-typed toys. However, they also considered the possibility that it was children who influenced parental behaviours in their study, i.e., parents might have selected gender-typed toys for their children because they were aware of their children's sex-typed preferences. In a more recent study, Pasterski et al. (2005) examined the association between parental reinforcement and play in typically developing children and children with CAH aged three to 10. As explained previously, CAH causes increased levels of androgens prenatally in girls. The researchers recorded children playing both with their parents and alone. They observed that parents encouraged gender-typed and discouraged cross-gender play in children with and without CAH. For instance, parents gave more negative responses to their unaffected sons than to their unaffected daughters for play with girls' toys. In addition, parents tended to give more positive responses to their daughters with CAH than to their unaffected daughters for play with girls' toys. The researchers also found that parental responses were associated with unaffected children's play. For example, positive reactions to

play with boys' toys were predictive of the time unaffected boys and girls spent playing with such toys. Moreover, among unaffected boys, parents' negative responses to play with boys' toys were negatively associated with the time boys spent playing with such toys. However, a different pattern of results was found for children with CAH. Among girls with CAH, positive maternal reactions to play with girls' toys correlated negatively with play with girls' toys; whereas among boys with CAH, positive paternal responses to play with boys' toys correlated negatively with play with boys' toys. The researchers concluded that although parents might try to promote sex-typed behaviours in their children, these attempts might not always be effective, especially if such encouragement is not consistent with children's biologically-based predispositions (as in the case of CAH girls). Specifically, it is possible that biological constraints in the form of prenatal androgen exposure restrict the degree to which parental encouragement can generate girl-typical behaviour (e.g., Udry, 2000). This would imply that, at least for some children, parental influences might play a limited role in the development of sex-typed toy preferences. However, a more recent study by Wong et al. (2013) suggested a different conclusion. In their study, which also involved children with CAH, self-reported parental encouragement of girl-typical toy play correlated positively with children's play with girls' toys in all groups of children, including girls with CAH. In addition, in this study parents reported encouraging their daughters with CAH to engage in more boy-typical play than their unaffected daughters. Such divergent results could have been the product of different methodologies employed by the two studies. Wong et al. (2013) used self-reports, whereas Pasterski et al. (2005) employed behavioural observation to measure parental gender socialisation. Self-reports might be more affected by various cognitive biases, such as social desirability bias (e.g., Paulhus, 1991), which could result in parents trying to present their behaviour towards their children as aligned with children's actual interests (i.e., being 'good' parents). On the other hand, Wong et al. argued that self-report measures of parental behaviours might be more valid, as they can assess a variety of behaviours that occur in participants' natural environment, whereas observations provide only a snapshot of a small number of behaviours taking place in an unfamiliar setting. Also, on a day-to-day basis, parents might encourage their children to engage with the toys that their children enjoy and have available, even if these are not gender-typical, as in the case of girls with CAH. However, when in a laboratory setting, where both girls' toys and boys' toys are available, parents might take the opportunity to encourage their daughters with CAH to play with girls' toys. Nonetheless, no matter which methodology one considers more adequate, the results of the two studies should be interpreted with caution. Both investigations looked at sex-typed behaviours

in school-age children (mean age between six and seven years). School-age children, in contrast to pre-schoolers, might not see parents as the most important source of information about gender; rather, they might be more responsive to information from their school peers or media (e.g., Berndt, 1979). Therefore, any effects of parental socialisation observed in these studies could have been smaller than if younger children were involved. All in all, considering the evidence available, it is clear that more research is needed to establish what the actual effect of parental reinforcement on children's sex-typed play is. At the same time, research has yet to explore the link between children's sex-typed toy preferences and parents' gendered toy provisions. It remains unknown whether children who are given more access to cross-gender toys demonstrate less sex-typed toy preferences, and if they do, what the size of this effect is. Relatedly, it is also unclear to what extent children's own toy preferences influence parental toy choices. It is possible that parents are more likely to purchase gender-typed toys for those children who already display sex-typed interests (as hypothesised by Weisgram & Bruun, 2018). Future studies might usefully investigate whether parents' toy choices relate to children's toy preferences. If the relationship is observed, further investigations could be conducted to establish both the direction and the size of the association.

Some researchers have attempted to explore the effects of parental gendered socialisation on children's sex-typed toy preference by investigating the relationship between children's toy choices and parental gender-related attitudes. Turnei and Gervai (1995) measured different types of parental attitudes, including attitudes concerning gender roles and gender bias in parenting, among Hungarian and English parents. The researchers also observed play behaviours in participants' four-year-old sons and daughters and asked about their toy preferences. There was no relationship between parental attitudes and the behaviours observed in children, but mothers' attitudes were predictive of children's toy preferences. Specifically, children of mothers with more traditional attitudes showed greater interest in masculine toys than children of mothers with more egalitarian attitudes. The researchers did not, however, report results by child gender, and therefore it is unclear whether this effect was the same for boys and girls. Nonetheless, the researchers suggested that parental gender-related attitudes might be associated with some aspects of children's sex-typed play. In contrast, Barry (1980) did not observe such a relationship. In his study, parents' gender-role attitudes were not associated with sex-related toy preferences of their children aged 32 to 64 months. Similarly, Weisner and Wilson-Mitchell (1990) found that although parents who supported more gender-egalitarian values believed that they were also encouraging less sex-typing in their children (aged 65 to 86 months) than parents with more traditional values, these differences were not

associated with children's sex-typed play. In addition, Tenenbaum and Leaper (2002) who conducted a meta-analysis of studies examining the link, which included several unpublished investigations, concluded that the association between parental attitudes and children's gender-typed interests is negligible ( $r = .05$ ). Finally, in a more recent study of Polish and English parents conducted by the author of this dissertation (Beneda, 2017), parents' attitudes concerning children's gender roles were unrelated to sex differences in infants' toy preferences. Although Polish and English parents differed in their attitudes ( $d = 2.72$ ), their infants displayed similar levels of sex-typed play. Therefore, based on the evidence, parents' gender-related attitudes do not seem to be a good predictor of children's toy preferences. In the light of what was discussed in the previous section, this poses further questions. If one were to adopt a frequently theorised causal chain where parental attitudes influence parental behaviours, which, in turn, affect children's toy preferences (e.g., Brown & Stone, 2018; Tennenbaum & Leaper 2002; Weisgram & Bruun, 2018), the above evidence would imply that parental behaviours play a minor role in the development of sex differences in children's play. On the other hand, one could interpret the above evidence as suggesting that parental attitudes are simply not a good predictor of either parental gendered socialisation or children's sex-typed interests. This further supports the notion that future research should explore the interrelations between these variables.

To conclude, although parents' gendered treatment of sons and daughters is commonly believed to contribute to the development of sex differences in children's toy preferences, the link between the two variables has received both little empirical attention and support. No studies have so far explored the effects of parents' gendered toy purchases, and the three studies investigating the effects of parental gendered reinforcement produced conflicting findings. In addition, research investigating parental influences in the form of gender-related beliefs reports mainly negative results. More research needs to be conducted to establish the extent to which parental socialisation influences children sex-typed behaviours, particularly in the context of early play.



## CURRENT RESEARCH

### Aims and Objectives

The research presented in this dissertation was designed to address the problems described in the previous two sections and contribute to the debate concerning the role of parental socialisation in the emergence of sex-typed toy preferences. This research focused on parental toy choices rather than parental reinforcement, as there is less information on the influence of parents' gendered toy provisions than on the influence of their gendered responses during play. Specifically, the first aim of this research was to examine the role of parental attitudes as a potential factor contributing to differential treatment of sons and daughters in terms of toy choices. Gender-related attitudes are possibly the most frequently proposed factor behind parents' gendered toy provision, yet there is little empirical evidence supporting the link between parents' attitudes and the toys they choose for their sons and daughters. Moreover, studies that do explore this association have only looked at parents' hypothetical toy choices or attitudes concerning such choices, and not actual behaviours. This research aims to replicate past findings (Kollmayer et al., 2018; Weisgram & Bruun), while adding measures of actual parental toy choices. Following from past findings as well as theoretical propositions, the following hypothesis was tested:

**Hypothesis 1:** *Parents' egalitarian gender-related attitudes negatively predict the extent to which parents' toy choices (both actual and hypothetical) are gender-typed.*

The second main aim of this research was to explore the link between parental behaviours in regard to providing gender-typed toys and children's sex-typed play. Although the association between parents' provision of gender-typed toys and sex differences in children's toy and play preferences is commonly assumed, there is no empirical data to support this relationship. For instance, it is unknown whether children who are provided more gender-typed toys by their parents engage in more sex-typed play or prefer more sex-typed toys. This research seeks to fill in this gap. Based on theoretical grounds, the following hypothesis was tested:

**Hypothesis 2:** *The extent to which parents' toy choices are gender-typed is a positive predictor of the extent to which children's toy preferences and play behaviours are sex-typed.*

In other words, children whose parents provide them with more cross-gender toys should have less sex-typed toy preferences.

The research was conducted among primary caregivers (predominantly parents) of children aged between one and three years. The lower limit was chosen, because, around the age of 12 months, most infants demonstrate sufficient motor abilities to be able to explore and engage with a wide array of toys (most would have begun walking; e.g., Adolph et al., 2011), and therefore are likely to receive a greater variety of items from their parents. Accordingly, any research questions concerning either parental toy choices or children's toy preferences are likely to result in a pool of diverse (and research-relevant) answers. Moreover, in the second year of life, the influence of relevant non-parental social agents (i.e., peers, media, and teachers) on infants' gender-related behaviours, including play preferences, should be rather limited. Specifically, at this age, infants' interactions with peers are scarce and uncomplicated. A large proportion of other children's attempts at socialising is either ignored by infants or responded to with visual attention only; interactions that do take place are often object-oriented, i.e., centered around the taking or keeping of a favoured toy (e.g., Brownell & Brown, 1992; Davis & Didow, 1989). In their second year of life, it is also relatively uncommon for infants to have a frequent exposure to media (e.g., Arufe-Giráldez et al., 2022; Certain & Kahn, 2002), notwithstanding that young children's access to smart devices have increased in recent years (e.g., Cristia & Seidl, 2015; Marsh et al., 2015). Finally, in their second year of life, most infants do not attend a pre-school on a regular basis, and therefore they could not have been significantly influenced by early years educators. Therefore, it might be expected that effects of parental socialisation are overall the strongest at such age. In addition, behaviour of parents of younger infants might be less affected by infants' own preferences, as such young children may be only beginning to communicate which toys they would like to receive from their parents. By investigating the effects of parental socialisation in younger and older infants, it was possible to explore whether the relationship between parent-level variables and child-level variables changes as other factors begin to play a role. For instance, the relative influence of media exposure might be expected to increase among two-year-olds; in the study by Certain and Kahn (2002), approximately 60% of two-year-olds watched three or more hours of TV per day, in contrast to only 22% of one-year-olds. On the other hand, the role of peers and teachers in gendered socialisation might be expected to increase around the age of three once most children begin attending pre-school. The upper age limit of the sample was chosen as three-year-olds, although likely influenced by other social factors, should be affected by their knowledge of gender as a social construct to a limited extent, as children do not appear to gain more complex understanding of gender before the age of five (e.g., Ruble et al., 2007).

Therefore, any age-relevant effects would be likely to stem from biological influences or alternative social factors, with self-socialisation playing a less notable role.<sup>3</sup>

The research was conducted in four different cultural contexts: the United Kingdom, Poland, North Macedonia, and Egypt. The majority of research conducted so far on the topic of parental socialisation in the context of sex-typed play has focused on parents and children in North America and North-Western Europe (e.g., Brown & Stone, 2018; although see Kim, 2002). Although parents in Western societies might hold a variety of attitudes and beliefs concerning gender roles ranging from more egalitarian to more conservative ones, these are overall likely to reflect general values of such societies, which are predominately gender egalitarian relative to many other cultural contexts (e.g., Inglehart & Norris, 2003). It is therefore possible that any effects of attitudinal or behavioural variables in research on parental socialisation conducted in these cultures might appear weak due to relatively small within-group variability. Conducting studies among parents from different cultural settings offers an opportunity to increase variability in attitudes and behaviours observed, and allows measurement of the association of such variables to children's play in a more reliable way. In addition, investigating the associations between these phenomena in different cultural contexts makes it possible to see whether any observed effects are generalisable to different populations, rather than being attributable to some culturally specific factors. Finally, research of this kind offers an opportunity to examine cross-cultural robustness of sex differences in children's toy preferences and play behaviours. Although there is a rich body of studies that have demonstrated large differences in boys' and girls' play preferences, similarly to research on parental influences, these have been limited to a specific cultural context: the Western, English-speaking, and economically wealthy world. If one is to assess the role of child's environment in the emergence of their sex-typed play, it is important to explore such behaviours in the conditions of cultural heterogeneity.

The four countries—the UK, Poland, North Macedonia, and Egypt—were selected as the social climates in these countries are likely to contribute to differing beliefs regarding gender and gender roles; at the same time, all four countries provide access to similar toys and activities for children. The UK is characterised by high levels of gender equality (Global Gender Gap Index rank: 24 out of 156; World Economic Forum, WEF, 2021), high levels of

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<sup>3</sup> Even though some children seem to achieve the first stage of gender understanding (i.e., basic gender identity) around the age of two, this does not seem to translate to their perceptions of objects or activities. For instance, Campbell et al. (2002) observed that although the majority of two-year-olds was able to use correct gender labels when describing themselves, only a very small number of children was able to link gender categories to objects or activities.

individualism (Hofstede, 2001), and low levels of religiosity (only 11% of adults in the UK classified as ‘highly religious’; Evans & Baronavski, 2018). All these variables are likely to contribute to a social climate that supports more egalitarian gender roles and expectations regarding children’s behaviours. For instance, higher gender equality scores relate to greater access to education among women and gender parity in politics (WEF, 2021), whereas lower religiosity is associated with lower levels of benevolent sexism and patriarchal values within society (Glick et al., 2002, 2016; Hellmer et al., 2018). At the same time, cultural individualism has been observed to relate to support for gender equality in different life domains (e.g., Davis & Williamson, 2019; Gibbons et al., 1991). Both Poland and North Macedonia are characterised by medium levels of gender equality (Global Gender Gap Index rank: 75 and 73, WEF, 2021) and relatively high religiosity (e.g., Crabtree, 2010; Pew Research Center, 2018). However, there are also some relevant differences between the two countries. Poland is an individualistic society whereas North Macedonia is a collectivist one (Hofstede, 2001). Poland is also characterised by a lower gender gap in economic as well as educational participation than North Macedonia, while North Macedonia has higher rates of women’s participation in politics (WEF, 2021). In addition, although women in Poland are seen predominantly as mothers and homemakers (e.g., Mikołajczak & Pietrzak, 2015), they are also often required to work and contribute financially to the household (in 2017, 74.2% of Polish mothers aged 24-35 were in full-time employment; Główny Urząd Statystyczny, 2017). In North Macedonia, on the other hand, women are expected to engage in childcare as their primary role (the overall employment rate of women in North Macedonia is 34.6%; Westminster Foundation for Democracy, 2020). Therefore, although both Polish and Macedonian parents are likely to demonstrate comparatively traditional views on gender and gender roles, their perceptions concerning the role of women in the household might differ, which could influence their parenting practices. Finally, Egypt is a collectivist society with low levels of gender equality (Global Gender Gap Index rank: 129; WEF, 2021) and very high levels of religiosity (Crabtree, 2010; Pew Research Center, 2018). It is also characterised by low levels of female economic and educational participation (WEF, 2021) as well as binary perceptions of male and female social responsibilities. A recent study conducted under the UN Women Regional Programme in Middle East and North Africa (El Feki et al., 2017) showed that 86.8 percent of men and 76.7 percent of women in Egypt believe that a woman’s most basic role is to take care of the home and cook for the family, while 90.3 percent of men and 58.5 percent of women indicated that the man should have the final decision in his home. Therefore, Egyptian parents might be expected to have very traditional beliefs and attitudes

concerning gender and gender roles. In conclusion, parents in the four countries selected for this study were expected to represent a wide range of gender-related attitudes and behaviours, which allowed for a robust test of the relationships of interest in this study. It was predicted that parents in the UK would demonstrate the most egalitarian/liberal attitudes on gender and gender-roles, whereas parents in Egypt would demonstrate the least egalitarian/liberal attitudes. Both Polish and Macedonian parents were expected to display moderate levels of gender egalitarianism/liberalism, but to differ in the extent they exhibit some specific gender-related beliefs. Building on the socialisation perspective, it was also expected that children in Egypt would show the most sex-typed toy preferences and behaviours, whereas children in the UK would show the least sex-typed toy preferences and behaviours. Children in Poland and Macedonia were expected to show moderate level of sex-typed preferences and behaviours.

In order to be able to recruit a large sample of parents in each of these cultural contexts and because the project was taking place during the COVID-19 pandemic, it was decided that all research would be conducted online, mainly with the use of social media to aid recruitment.

### **Pilot 1: Gender Ratings of Toys**

Before conducting the main study, a pilot study was designed to create a list of toys perceived as gender-typed and gender-neutral in each country. The list was created to allow selection of stimuli for a measure of gendered toy choices that would be included in the main study (see *Hypothetical Toy Choices*).

Although several studies examined people's perceptions of toys and created lists of gendered and neutral items (e.g., Blakemore & Centers, 2005; Miller, 1987; Zucker, 1977), these are likely to be outdated considering the whole host of societal changes that have occurred over the last two decades throughout Europe. To give some examples regarding the UK, there has been a shift in the gendered division of domestic labour; although women still shoulder most of it, men have been observed to spend increasingly more time on household chores and caring for young children (Office for National Statistics, ONS, 2016a, 2016c). In addition, the number of stay-at-home fathers has grown in the last decade (ONS, 2016b), with a peak increase during the COVID-19 pandemic (ONS, 2020a), similarly to women's participation in the labour market (ONS, 2020b). Female representation in male-dominated domains has also increased, with more women studying and being employed in STEM fields (STEM Women, 2019), and more women in senior leadership roles (FTSE Women Leaders, 2021). All the above might have had an impact on how the society perceives specific toys. For instance, as childcare and domestic labour are no longer limited to women, people might see

some of the traditional girls' toys related to these domains (e.g., kitchen sets, baby dolls, domestic appliances) as less feminine. Similarly, as the number of female scientists and construction workers increases, people might view traditionally masculine construction and science toys as more gender neutral. Therefore, a more up to date study exploring peoples' gendered perceptions of toys would be helpful. Moreover, even if one disregards the impact of such societal changes, the previous research was conducted solely in North America, and therefore its results might not be applicable to other national samples. In the case of this research, although children in the UK, Poland, North Macedonia, and Egypt are likely to play with similar toys to children in North America, people's views on their gender-appropriateness might differ in line with the differences in gender roles in these countries. For instance, people in Egypt might have more traditional views regarding boys' and girls' toys than participants in the US. Therefore, one could conclude that there is a need not only for a more up-to-date study, but also for a more culturally diverse one.

## **Method**

### ***Participants and Recruitment***

Adults living in the UK, Poland, North Macedonia, and Egypt who were fluent in an appropriate native language were recruited for the pilot. The study was advertised through a variety of social media channels (e.g., Facebook, community forums, Instagram). In North Macedonia and Egypt, participant recruitment was conducted with the help of local collaborators fluent in Macedonian/Egyptian Arabic. In Poland and in the UK, participant recruitment was conducted by the author. In addition, participants were encouraged to forward the link to the study to their family members, friends, and work colleagues.

In the UK, 101 adults (77% women, 22% men, 1% other) aged between 18 and 88 years ( $M = 30.03$ ,  $SD = 14.22$ ) participated in the study. In Poland, 100 adults (83% women, 17% men) aged between 19 and 63 years ( $M = 36.06$ ,  $SD = 12.00$ ) took part. The Macedonian sample consisted of 100 adults (60% women, 40% men) aged between 19 and 61 years ( $M = 35.39$ ,  $SD = 11.41$ ). Finally, 100 adults (37% women, 62% men, 1% other) aged between 19 and 68 years ( $M = 38.54$ ,  $SD = 12.35$ ) participated in the study in Egypt.

### ***Procedure***

The procedures of the pilot study were granted approval by the Psychology Research Ethics Committee of the University of Cambridge.

The study had a form of an online questionnaire. In the beginning of the questionnaire, participants were presented with information about the study (see Appendix A) and asked to complete a consent form (see Appendix B). Afterwards, they were shown a series of pictures of toys and were asked to rate the toys in terms of them being masculine or feminine. Finally, participants were asked questions about their demographic background (e.g., age, gender).

### ***Materials and Measures***

**Toy Stimuli.** The toys were selected using the list of boys' and girls' toys from the study by Blakemore and Centers (2005), which so far constitutes the most comprehensive and recent classification of children's toys. The toys from the 'strongly masculine', 'strongly feminine', and 'neutral' categories were included in Pilot 1 with a few changes. As the study by Blakemore and Centers (2005) was conducted in the US, certain toys on the list are specific to the US context and therefore would not be familiar to participants in this study. Such items were replaced with similar-looking toys that are popular in the countries of interest. For instance, a plastic baseball player was replaced with a plastic football player, and a WWF wrestler figure was replaced with a Hulk figure. Moreover, a few more modern exemplars of certain toy types were included in the pilot. For example, in addition to having a classic Barbie doll, the study included an O.M.G. fashion doll. Overall, 95 toys were included in the pilot. Pictures of these toys were selected using a basic Google image search: the first image of a toy that was of a good quality and had an empty background was downloaded. The pictures were then made black-and-white to avoid any potential confounding effects of colour on gender-related toy perceptions.

**Toy Gender Ratings.** Participants were asked to indicate how they would describe each of the 96 toys in terms of it being masculine or feminine. They gave their answers on a 11-point slider scale ranging from 0 (*Masculine*) to 100 (*Feminine*),<sup>4</sup> with 50 signifying *Neutral*. For an example of a question, see Appendix C. The toys were displayed in a randomised order.

### **Results**

The mean ratings of the 95 toys for each of the four samples can be seen in Table 1. The toys are ordered based on the masculinity/femininity ratings of participants in the UK. Toys at the top of the table were rated as more masculine whereas toys at the bottom of the table as

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<sup>4</sup> A sliding scale was chosen, because the study had a high number of items, and sliders have been suggested to be more fun and engaging than point-selection scales (e.g., DeCastellarnau, 2018). An 11-point scale (as opposed to a 10-point scale starting with 10 or 1) was chosen so it would be easier for participants to understand the mid-point (participants tend to assume that the half the top endpoint is a scale's midpoint and therefore 10-point scales can cause confusion; Zigerell, 2011).

more feminine. The table also indicates which 20 toys were seen as most masculine and most feminine in each of the national samples (see the superscripts above means for specific ranks). Although the ratings in each sample differed as to the extent to which toys were seen as gendered (e.g., the most masculine toy in the UK had a mean rating of 23.47, whereas in Egypt the most masculine toy had a mean rating of 11.58), there was an overlap with regard to the toys that received the highest and lowest scores in each country. Specifically, 16 out of the 20 most masculine toys and 18 out of the 20 most feminine toys were the same across the samples. Strong significant correlations between the mean ratings in each sample provided further evidence for the similarity in the patterns of responses. The correlation coefficients for all sample pairs ranged between  $r = .97$  and  $r = .99$ .

Due to these similarities and consistencies between the samples, it was decided that the sample means for all toys would be combined in order to create a final list of 20 most feminine toys and 20 most masculine toys, which would later be used when creating the measure of gendered toy choices in the main study. The list is presented in Table 2.

**Table 1**

*Mean Gender Ratings of the Toys in the UK, Poland, North Macedonia, and Egypt*

Toy	UK (N = 101)		Poland (N = 100)		North Macedonia (N = 100)		Egypt (N = 100)	
	M	SD	M	SD	M	SD	M	SD
<b>G.I. Joe</b>	23.47 <sup>1M</sup>	15.78	17.80 <sup>1M</sup>	17.03	16.53 <sup>1M</sup>	17.59	11.58 <sup>1M</sup>	15.11
<b>Action Man</b>	26.20 <sup>2M</sup>	15.23	24.90 <sup>6M</sup>	18.72	22.42 <sup>5M</sup>	19.44	18.32 <sup>5M</sup>	19.05
<b>Toy soldiers</b>	26.44 <sup>3M</sup>	15.85	18.08 <sup>2M</sup>	17.82	20.10 <sup>3M</sup>	19.15	16.56 <sup>4M</sup>	17.76
<b>Sports cards</b>	26.73 <sup>4M</sup>	15.11	23.40 <sup>4M</sup>	19.60	19.09 <sup>2M</sup>	17.56	16.35 <sup>3M</sup>	17.36
<b>Hulk</b>	27.33 <sup>5M</sup>	15.87	22.30 <sup>3M</sup>	19.38	22.22 <sup>4M</sup>	17.93	14.00 <sup>2M</sup>	17.35
<b>Transformer</b>	30.30 <sup>6M</sup>	15.01	24.00 <sup>5M</sup>	16.94	24.30 <sup>6M</sup>	18.27	18.54 <sup>7M</sup>	18.41
<b>Guns</b>	30.80 <sup>7M</sup>	16.56	28.08 <sup>10M</sup>	19.31	26.16 <sup>8M</sup>	19.52	20.71 <sup>9M</sup>	18.68
<b>Spiderman</b>	33.17 <sup>8M</sup>	13.63	27.70 <sup>8M</sup>	18.69	27.20 <sup>11M</sup>	18.15	18.53 <sup>6M</sup>	19.07
<b>Power Ranger</b>	33.47 <sup>9M</sup>	14.45	27.70 <sup>9M</sup>	19.43	27.14 <sup>10M</sup>	18.16	21.98 <sup>11M</sup>	19.82
<b>Dragon Ball Z figure</b>	33.80 <sup>10M</sup>	14.76	29.60 <sup>14M</sup>	19.28	27.40 <sup>13M</sup>	17.96	19.39 <sup>8M</sup>	22.00
<b>Boxing gloves</b>	34.06 <sup>11M</sup>	15.37	30.10 <sup>15M</sup>	17.56	28.37 <sup>15M</sup>	20.74	22.47 <sup>13M</sup>	20.21
<b>Sword</b>	35.54 <sup>12M</sup>	13.75	29.20 <sup>12M</sup>	20.43	25.86 <sup>7M</sup>	20.10	23.61 <sup>14M</sup>	20.68
<b>Matchbox cars</b>	35.90 <sup>13M</sup>	13.19	29.09 <sup>11M</sup>	19.95	27.35 <sup>12M</sup>	17.56	27.60 <sup>17M</sup>	18.74
<b>Tonka truck</b>	36.14 <sup>14M</sup>	13.26	30.20 <sup>16M</sup>	17.50	28.00 <sup>14M</sup>	17.92	24.49 <sup>15M</sup>	20.31
<b>Car racetrack</b>	36.63 <sup>15M</sup>	13.51	30.80 <sup>20M</sup>	19.32	31.30	17.96	38.60	15.70
<b>Firefighter gear</b>	37.03 <sup>16M</sup>	12.93	26.30 <sup>7M</sup>	18.02	26.33 <sup>9M</sup>	18.63	22.32 <sup>12M</sup>	20.65
<b>Remote-control car</b>	37.43 <sup>17M</sup>	13.16	29.20 <sup>13M</sup>	18.02	28.79 <sup>17M</sup>	17.74	28.99 <sup>19M</sup>	19.09
<b>Star Wars</b>	38.00 <sup>18M</sup>	13.10	33.03	17.29	35.10	17.66	30.51	19.86



<b>characters</b>								
<b>Plastic football player</b>	38.12 <sup>19 M</sup>	12.47	33.70	17.73	28.79 <sup>16M</sup>	19.81	26.60 <sup>16M</sup>	20.90
<b>Tool bench</b>	39.11 <sup>20M</sup>	14.57	34.40	21.10	31.52 <sup>20M</sup>	18.97	42.78	28.75
<b>Cowboy costume</b>	40.00	13.78	30.30 <sup>17M</sup>	19.62	31.82	20.37	36.60	25.93
<b>Tool kit</b>	40.59	11.47	30.70 <sup>18M</sup>	19.35	30.10 <sup>18M</sup>	18.88	30.20 <sup>20M</sup>	18.50
<b>Superhero costumes</b>	40.79	12.62	30.70 <sup>19M</sup>	19.35	31.10 <sup>19M</sup>	19.06	21.50 <sup>10M</sup>	19.71
<b>Football</b>	41.49	10.99	39.00	16.79	35.45	17.45	28.88 <sup>18M</sup>	19.04
<b>Barbie jeep</b>	41.68	12.50	36.70	18.91	37.96	16.31	31.94	20.79
<b>Construction set</b>	42.18	11.71	39.40	15.16	38.40	16.68	38.20	17.31
<b>Grass hockey set</b>	42.48	11.52	35.76	16.85	31.63	18.43	36.87	17.71
<b>Helicopter</b>	42.87	10.03	33.30	17.70	36.22	16.02	36.57	18.25
<b>Gardening tools</b>	43.76	10.08	42.90	13.28	35.45	17.80	29.69	20.65
<b>Bus</b>	45.05	8.56	38.40	15.68	38.70	17.62	41.22	15.81
<b>Toy Story characters</b>	45.64	9.63	43.20	12.05	40.30	15.87	39.18	16.63
<b>Wagon</b>	46.73	7.09	45.90	10.74	41.41	16.48	35.30	20.12
<b>Harry Potter</b>	46.93	9.97	47.17	9.26	41.80	15.66	31.96	21.59
<b>Mr. Potato Head</b>	47.13	8.64	47.17	10.60	45.10	13.60	39.80	17.11
<b>Legos</b>	47.20	6.97	47.10	9.77	48.40	6.92	49.40	3.43
<b>Scooby Doo</b>	47.23	6.80	47.70	8.97	47.60	8.89	43.70	15.74
<b>Sponge Bob</b>	47.40	8.24	48.60	7.11	48.79	10.23	51.40	11.46
<b>Square Pants</b>	47.43	7.70	47.20	10.74	48.69	9.00	49.79	12.50
<b>Slime</b>	47.43	7.70	47.20	10.74	48.69	9.00	49.79	12.50
<b>Paw Patrol soft toy</b>	47.92	8.98	46.70	10.64	47.20	11.47	46.36	14.53
<b>Drum</b>	47.92	6.53	47.30	10.04	42.32	14.56	46.50	10.77
<b>Kaleidoscope</b>	48.32	5.67	49.19	5.83	48.69	5.83	48.99	3.64
<b>Wooden building blocks</b>	48.32	5.49	48.80	8.08	47.70	10.62	46.43	11.15
<b>Snakes and Ladders</b>	49.30	5.17	47.68	10.18	48.06	6.53	49.60	3.46
<b>Zoo animals</b>	49.40	6.17	48.50	7.83	48.67	5.86	47.00	10.78
<b>Tricycle</b>	49.40	6.00	48.20	10.19	49.60	8.75	49.49	3.88
<b>Microscope</b>	49.41	5.80	50.30	11.59	50.80	10.70	55.66	17.27
<b>Time teacher clock</b>	49.41	3.69	49.50	3.86	49.49	3.62	50.00	4.29
<b>Math flash cards</b>	49.50	4.58	48.60	7.52	48.79	7.04	49.90	5.98
<b>Kids tablet</b>	49.51	4.56	50.50	11.40	50.61	8.43	49.80	8.41
<b>Tree house</b>	49.51	4.33	48.70	7.20	48.47	6.15	48.69	6.80
<b>Mosaic game</b>	49.60	5.46	49.50	9.03	49.90	7.45	54.75	15.07
<b>Foam board puzzle</b>	49.60	5.46	48.90	7.51	49.30	4.55	50.91	7.84
<b>Xylophone</b>	49.60	3.44	49.90	6.31	49.70	6.74	52.73	9.24
<b>Elmo</b>	49.80	4.89	49.00	6.74	50.82	8.08	52.30	12.21
<b>Swing set</b>	49.90	3.32	49.20	6.92	49.39	3.45	50.10	4.60
<b>Slinky</b>	49.90	3.32	49.60	7.94	50.50	6.72	50.30	9.20

<b>Scooter</b>	49.90	6.40	49.60	7.77	50.40	8.32	48.50	6.72
<b>Memory</b>	50.00	4.26	49.60	7.24	49.08	6.75	50.41	6.08
<b>Trampoline</b>	50.00	3.74	48.30	8.05	48.79	5.20	50.10	5.95
<b>Crayons</b>	50.00	3.46	50.10	7.18	49.90	3.37	50.61	4.91
<b>Play-Doh</b>	50.10	3.60	49.10	6.21	49.20	3.94	50.10	7.98
<b>Chemistry lab</b>	50.20	7.07	49.40	5.83	51.80	11.67	52.70	11.45
<b>Teddy bear</b>	50.69	5.15	50.30	8.39	52.22	11.39	55.82	13.84
<b>Winnie-the-Pooh</b>	50.79	6.27	49.80	7.24	52.53	10.34	55.66	12.30
<b>Etch-a-Sketch</b>	50.90	5.70	50.40	6.80	51.94	9.60	51.92	7.10
<b>AmericanGirl doll (male)</b>	51.29	16.04	57.20	20.35	50.51	20.38	33.13	24.56
<b>Cash till</b>	51.58	6.28	51.80	9.57	52.73	11.50	49.60	7.77
<b>Beads</b>	51.58	9.97	54.00	12.95	52.96	13.18	57.24	17.51
<b>Cell phone</b>	51.72	6.71	49.80	7.52	52.40	9.65	52.50	7.96
<b>Doctor kit</b>	53.17	8.59	50.60	11.62	54.95	14.17	51.34	9.42
<b>Little people</b>	53.47	8.99	55.70	12.97	55.15	13.80	57.90	16.35
<b>Microphone</b>	54.06	8.96	55.50	12.18	53.33	10.69	53.00	10.87
<b>Ice skates</b>	60.20	14.35	59.49	18.15	62.83	17.67	64.14	19.22
<b>Oven</b>	62.80	15.44	62.40	18.76	71.82 <sup>20F</sup>	20.77	76.70 <sup>20F</sup>	20.05
<b>Tea set</b>	63.47	13.52	67.60	19.08	68.59	18.24	79.50 <sup>18F</sup>	19.14
<b>Iron and ironing board</b>	64.06	15.44	67.80 <sup>20F</sup>	18.78	75.56 <sup>17F</sup>	20.21	69.70	20.48
<b>Sewing machine</b>	65.00 <sup>20F</sup>	13.89	68.20 <sup>19F</sup>	20.47	72.02 <sup>19F</sup>	19.38	77.10 <sup>19F</sup>	19.76
<b>Barbie bicycle</b>	65.40 <sup>19F</sup>	16.60	67.20	19.07	64.44	21.15	60.30	18.38
<b>Dollhouse</b>	65.64 <sup>18F</sup>	14.59	72.30 <sup>18F</sup>	17.28	68.98	19.29	70.71	19.65
<b>Baby doll accessory pack</b>	68.32 <sup>17F</sup>	16.13	73.10 <sup>17F</sup>	19.58	75.66 <sup>16F</sup>	20.46	86.16 <sup>14F</sup>	17.01
<b>Baby doll</b>	68.71 <sup>16F</sup>	16.35	74.10 <sup>16F</sup>	18.97	73.23 <sup>18F</sup>	18.89	79.70 <sup>17F</sup>	21.55
<b>Jewellery</b>	70.59 <sup>15F</sup>	16.42	79.30 <sup>13F</sup>	19.86	80.00 <sup>12F</sup>	18.09	88.50 <sup>13F</sup>	17.25
<b>My Little Pony</b>	71.30 <sup>14F</sup>	14.75	79.80 <sup>12F</sup>	17.05	79.00 <sup>13F</sup>	17.38	85.20 <sup>15F</sup>	17.61
<b>AmericanGirl doll (female)</b>	71.88 <sup>13F</sup>	16.72	78.40 <sup>15F</sup>	19.37	76.46 <sup>15F</sup>	20.02	88.89 <sup>12M</sup>	15.51
<b>Baby doll pram</b>	73.00 <sup>12F</sup>	17.72	78.79 <sup>14F</sup>	17.69	77.98 <sup>14F</sup>	18.35	83.94 <sup>16F</sup>	19.00
<b>O.M.G. doll</b>	74.75 <sup>11F</sup>	16.83	82.40 <sup>10F</sup>	17.53	81.31 <sup>11F</sup>	18.27	92.70 <sup>10F</sup>	12.38
<b>Barbie clothes</b>	75.20 <sup>10F</sup>	16.24	82.20 <sup>11F</sup>	17.38	84.90 <sup>6F</sup>	17.09	92.70 <sup>11F</sup>	12.78
<b>Vanity set</b>	75.74 <sup>9F</sup>	16.33	85.20 <sup>7F</sup>	16.60	83.23 <sup>10F</sup>	16.83	92.93 <sup>6F</sup>	13.80
<b>Polly Pocket figures</b>	75.84 <sup>8F</sup>	16.45	83.90 <sup>8F</sup>	16.57	84.00 <sup>9F</sup>	17.75	93.60 <sup>4F</sup>	11.15
<b>Barbie doll</b>	77.43 <sup>7F</sup>	16.35	86.50 <sup>5F</sup>	15.27	84.85 <sup>7F</sup>	16.80	92.70 <sup>9F</sup>	12.94
<b>Play makeup</b>	78.32 <sup>6F</sup>	16.68	87.68 <sup>4F</sup>	14.97	86.77 <sup>5F</sup>	16.59	94.50 <sup>3F</sup>	12.09
<b>Large styling head</b>	78.71 <sup>5F</sup>	16.89	82.70 <sup>9F</sup>	18.58	84.34 <sup>8F</sup>	19.07	93.10 <sup>5F</sup>	13.68
<b>Bratz doll</b>	79.60 <sup>4F</sup>	15.55	85.90 <sup>6F</sup>	15.64	86.87 <sup>4F</sup>	15.09	92.83 <sup>8F</sup>	12.78
<b>Toy dress-up shoes</b>	79.70 <sup>3F</sup>	17.11	89.19 <sup>3F</sup>	15.16	90.92 <sup>2F</sup>	13.78	94.65 <sup>1F</sup>	14.09
<b>Princess costume</b>	80.40 <sup>2F</sup>	16.24	89.80 <sup>2F</sup>	15.12	90.00 <sup>3F</sup>	14.84	92.93 <sup>7F</sup>	16.68
<b>Ballerina costume</b>	81.49 <sup>1F</sup>	17.05	90.00 <sup>1F</sup>	16.39	91.52 <sup>1F</sup>	12.89	94.50 <sup>2F</sup>	14.24

*Note.* The superscripts above means are ascribed to 20 toys rated as most masculine and 20 toys rated as most feminine in each sample. The superscripts in the *NF* format denote a specific

rank among the most feminine toys (e.g., 1F = the most feminine toy). The superscripts in the NM format denote a specific rank among the most masculine toys (e.g., 1M = the most masculine toy).

**Table 2**

*Twenty Most Masculine and Twenty Most Feminine Toys–Their Mean Gender Ratings and Standard Deviations*

<b>Masculine toys (N = 401)</b>	<b>M</b>	<b>SD</b>	<b>Feminine toys (N = 401)</b>	<b>M</b>	<b>SD</b>
<b>G.I. Joe</b>	17.44	16.89	<b>Dollhouse</b>	69.40	17.90
<b>Toy soldiers</b>	20.35	18.01	<b>Tea set</b>	69.78	18.55
<b>Sports cards</b>	21.46	17.83	<b>Sewing machine</b>	70.58	19.03
<b>Hulk</b>	21.57	18.24	<b>Baby dolls</b>	73.91	19.34
<b>Action Man</b>	23.02	18.35	<b>Baby doll accessory pack</b>	75.76	19.44
<b>Transformer</b>	24.34	17.63	<b>Baby doll pram</b>	78.41	18.54
<b>Guns</b>	26.46	18.84	<b>My Little Pony</b>	78.82	17.40
<b>Spiderman</b>	26.77	18.19	<b>AmericanGirl doll (female)</b>	78.87	18.98
<b>Dragon Ball Z</b>	27.59	19.31	<b>Jewellery</b>	79.58	18.98
<b>Power Ranger</b>	27.65	18.45	<b>O.M.G. doll</b>	82.78	17.57
<b>Firefighter gear</b>	28.10	18.50	<b>Barbie clothes</b>	83.75	17.11
<b>Sword</b>	28.61	19.39	<b>Vanity set</b>	84.24	17.02
<b>Boxing gloves</b>	28.81	18.96	<b>Polly Pocket figures</b>	84.31	16.86
<b>Tonka truck</b>	29.75	17.86	<b>Large styling head</b>	84.70	17.91
<b>Matchbox cars</b>	30.03	17.81	<b>Barbie doll</b>	85.35	16.30
<b>Superhero costumes</b>	31.05	19.12	<b>Bratz doll</b>	86.27	15.49
<b>Remote-control car</b>	31.13	17.46	<b>Play makeup</b>	86.79	16.20
<b>Plastic football player</b>	31.83	18.49	<b>Princess dress</b>	88.25	16.38
<b>Tool kit</b>	32.93	17.84	<b>Toy dress-up shoes</b>	88.56	16.04
<b>Star Wars characters</b>	34.18	17.29	<b>Ballerina dress</b>	89.35	15.94

## Discussion

The aim of Pilot 1 was to produce a list of toys perceived to be masculine, feminine or gender neutral in the UK, Poland, North Macedonia, and Egypt, which would later be used when selecting stimuli for the measure of gendered toy choices in the main study. The study showed that there was a significant overlap between the toys that were seen as most masculine and most feminine in all four countries. The masculine toys that appeared at the top of the list in all the samples included G.I. Joe, toy soldiers, sports cards, and Hulk, whereas the most feminine toys included toy dress-up shoes and ballerina costume. In addition, the mean toy ratings in each sample were highly correlated with one another, further confirming correspondence in the patterns of responses. Because of these similarities between the samples,

participants' ratings across the four countries were averaged to produce a final list of 20 most feminine toys and 20 most masculine toys overall. The toys from that final list were used in the main study.

Apart from allowing to make informed decisions when designing measures in the main study, Pilot 1 offered an opportunity to produce an updated list of gendered and neutral toys that could be used by other researchers and would be generalizable to different cultural contexts. As mentioned before, the most recent study that examined people's gendered perceptions of toys (i.e., Blakemore & Centers, 2005) was conducted more than 15 years ago, and therefore its results could be outdated. In addition, previous research (Blakemore & Centers, 2005; Miller, 1987; Zucker, 1977) was confined to North America and so its findings might not have been applicable to other cultural contexts, which seems to be confirmed by the current study. Although Pilot 1 shows that people in different countries might perceive similar toys as comparatively more masculine or more feminine, the results also suggest that the degree to which they see such toys as gendered might differ. For instance, in more socially conservative cultural contexts (e.g., Egypt, North Macedonia) people seem to assign more extreme masculinity and femininity ratings to specific toys than people in more socially liberal contexts (e.g., the UK). In addition, in the latter contexts, the pool of toys evaluated as gendered appears to be smaller. To give an example, in Egypt toys such as gardening tools and tool kit were seen as somewhat masculine (ratings of 29.69 and 30.20, respectively), whereas in the UK participants rated them closer to neutral (ratings of 43.76 and 40.59, respectively).

Pilot 1 was conducted using a demographically diverse, multi-national sample and looked at a relatively wide array of toys. Nonetheless, it is not free of limitations, the most important one being the fact that, with a small number of exceptions, the study focused mainly on toys included in the past research (i.e., Blakemore & Centres, 2005). Therefore, some toys that are popular currently were not represented in the study. This especially applies to electronic toys, such as gaming consoles or robots, that have become increasingly popular over the last two decades (e.g., Kneebone, 2020; Pilot 1 included solely a toy tablet). Moreover, some more traditional toys come in more modern shapes, e.g., in the recent years Mattel have begun producing Barbie 'career dolls', which aim at promoting occupations that are often seen as traditionally male (e.g., astronaut, pilot); these dolls differ significantly from fashion dolls included in this study. Accordingly, in the future, a new list of gendered toys including some of the most recent toy inventions might also be useful.

## **Main Study**

### **Method**

#### ***Recruitment***

Primary caregivers of children at the age 1-3 years were recruited mainly through various online means in all four countries. In each country, a thorough search has been conducted on Facebook in order to identify groups where parents of young infants could be found. Words such as “parents”, “mothers”, “fathers”, “babies” have been used in the search. All suitable groups that seemed relevant (e.g., were not used solely for advertisement) and had moderate to high activity were contacted. The study was posted after receiving an explicit permission from a group admin in order to avoid having the post deleted or being blocked. Overall, over 200 groups were contacted. A standard post consisted of a short summary of the study and an instruction on how to participate, i.e., parents were either asked to follow a link or to comment under the post/send a private message if interested in taking part; the latter method proved much more effective attracting two to three times more participants and therefore became the one primarily used.

In the UK, information about the study was posted in around 100 Facebook groups for parents and community groups, both national and regional. Participants were also recruited via email among parents who had shared their details with the Parent Database run by the Gender Development Research Centre at the University of Cambridge. Finally, the study was advertised in several kindergartens. The recruitment was conducted by the author with help of two undergraduate students from the Cambridge Department of Psychology, Juliet Merelie and Ellen Watts. In Poland, the study was advertised in 30 Facebook groups targeting parents from different parts of Poland as well as in children’s social clubs and kindergartens. Participants were also recruited among members of a popular national research panel ‘Ariadna’, which comprises of 300,000 verified users aged 15-65 years. The recruitment was conducted by the author with help of Dr Aleksandra Gocławska. In addition, information about the study was disseminated by word of mouth among author’s colleagues (mainly primary school teachers and psychologists). In North Macedonia, the study was advertised in 30 groups for parents: 25 of these groups were targeted towards ethnic Macedonians and five towards ethnic Albanians.<sup>5</sup>

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<sup>5</sup> According to the last official census conducted in North Macedonia in 2002 (Republic of Macedonia State Statistical Office, MAKSTAT, 2002), ethnic Macedonians constitute approximately 65% of the population, while 25% is ethnically Albanian. Based on other sources of data, such as ethnicity of the newborn children (e.g., MAKSTAT, 2021), it seems likely that the proportion of ethnic Albanians has increased since 2002, but due to the

The study was also advertised in social clubs and kindergartens. Several collaborators helped with the recruitment in North Macedonia: Jovana Gjorgjiovska (psychometrician), Matej Trojacanec (MSc student at the School of Psychology and Neuroscience at St Andrews), Atanas Dimitrov (international development professional), and Nadire Latifi Selimi (monitoring and result measurement specialist). In Egypt, information about the study was posted in 15 Facebook groups for mothers (no groups for fathers were found). Several parents also volunteered to advertise the study on WhatsApp groups for parents that they were members of. In addition, the link to the study was posted on personal Facebook pages of family and friends of the collaborator, Salma Elnagar (PhD student at Max Planck Institute for Human Cognitive and Brain Sciences), who was assisting with participant recruitment in Egypt.

### ***Sample Size Determination***

A series of a priori power analyses was conducted using G\*Power v.3.1.9.7 (Faul et al., 2007) to determine the sample size needed for each country to perform meaningful statistical tests of the research hypotheses. All these analyses were performed with a significance criterion of  $\alpha = .05$  and power = .90 (although .80 is the value traditionally used, some theorists suggest that it might be too low; e.g., Brysbaert, 2019). As more complex analytical models tend to require greater sample sizes, the sample size was determined based on the two most complex models that would be tested in the main study.

The first one was the multiple linear regression model with five main predictors and one control variable, designed to test the predictive relationship of parental attitudes and parental behaviour in three of the four countries (see *Parental Attitudes as Predictors of Parental Toy Choices*). As the effects found in previous research looking at this relationship ranged between  $f^2 = .03$  and  $f^2 = .30$  (Kollmayer et al., 2018; Weisgram & Bruun, 2018), it was decided that the effect size used in the power analysis would be set to an in-between value of  $f^2 = .13$  (i.e., below moderate effect). Considering the other criteria, the minimum sample size needed to detect such an effect in the multiple regression model described was found to be  $N = 133$ .

The second model of interest was the two-by-four factorial ANOVA examining between-sex (boy vs. girl) and between-country (the UK vs. Poland vs. North Macedonia vs. Egypt) differences in children's toy preferences and play behaviours (see *Sex Differences in Children's Toy Preferences in Play Behaviours across Countries*). Previous research looking at sex differences in children's play found a mean effect size of  $f = .80$  (as per meta-analysis by

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lack of new census data any current estimates are likely to be inaccurate. Nonetheless, it is apparent that ethnic Albanians constitute a significant proportion of the Macedonian society.

Davis & Hines, 2020), which is considered a very large effect. Nonetheless, as it was expected that any potential between-country as well as interaction effects would be considerably smaller (e.g., in one study comparing British and Polish infants, the largest observed effect was  $f = .18$ ; Beneda, 2017), it was decided that the effect size used in the power analysis would be set to a small effect of  $f = .15$ . Considering the other criteria, the minimum total sample size needed to detect such an effect in the factorial ANOVA described was found to be  $N = 634$ , which amounts to approximately 159 participants per country.

Therefore, the results of the a priori power analyses indicated that a minimum of 159 participants should be recruited in each national context. However, as online data collection tends to be associated with relatively high attrition rates as well as careless responding (e.g., Liu & Wronski, 2018; Ward et al., 2017), it was decided that this number would be increased to 200 to account for likely exclusions and data cleaning. As apparent below, all the obtained samples were more than adequate to test the study hypotheses.

### ***Participants***

In the UK, 801 primary caregivers of children at the age 1-3 years participated in the study. However, 64 participants were excluded from the dataset because they did not complete all sections of the questionnaire, and a further 16 were excluded as their children were either too young (less than 12 months) or too old (more than 47 months). Therefore, the final sample consisted of 721 primary caregivers. The vast majority of participants were mothers (695, 96.4%), 25 participants (3.5%) were fathers, and one participant was a grandfather. Of all participants, 396 (54.9%) were primary caregivers of boys and 325 (45.1%) were primary caregivers of girls. The average age of children was 27.65 months ( $SD = 9.48$ ). There was no significant difference between boys ( $M = 27.50$ ;  $SD = 9.28$ ) and girls ( $M = 27.84$ ,  $SD = 9.74$ ) in terms of mean age,  $t(719) = .47$ ,  $p > .05$ .

In Poland, 647 primary caregivers of children aged 1-3 years participated in the study. Out of them, 72 were excluded from the dataset as they did not answer all sections of the questionnaire and 23 were excluded because they reported on children outside of the designated age range. The resulting sample consisted of 553 primary caregivers. The majority of participants—505 (91.9%)—were mothers and 45 participants (8.1%) were fathers. Of all participants, 285 (51.5%) were parents of boys and 268 (48.5%) were parents of girls. The average age of children was 25.62 months ( $SD = 9.37$ ). There was no significant difference between boys ( $M = 26.07$ ,  $SD = 9.40$ ) and girls ( $M = 25.13$ ,  $SD = 9.33$ ) regarding their age,  $t(548) = 1.19$ ,  $p < .05$ .

In North Macedonia, 325 primary caregivers of children aged 1-3 years participated in the study. However, 38 participants were excluded from the dataset because they did not complete all sections of the questionnaire and further 20 were excluded as they reported on children outside of the designated age range. Therefore, the final sample consisted of 267 primary caregivers. As in the two previous samples, the majority of participants were mothers (250, 93.6%); 15 participants (5.6%) were fathers, one participant (0.3%) was a sister, and one participant was an aunt (0.3%). Of all participants, 146 (54.7%) were primary caregivers of boys and 121 (45.3%) were primary caregivers of girls. The average age of children was 26.73 months ( $SD = 9.77$ ). There was no statistically significant difference between boys ( $M = 27.32$ ,  $SD = 10.24$ ) and girls ( $M = 26.02$ ,  $SD = 9.17$ ) in terms of their average age,  $t(265) = 1.08$ ,  $p < .05$ .

In Egypt, 239 primary caregivers of children aged 1-3 years participated in the study. Out of them, 37 were excluded from the dataset as they did not answer all sections of the questionnaire and six were excluded because they reported on children outside of the designated age range. The resulting sample consisted of 196 primary caregivers. The majority of participants—165 (84.2%)—were mothers, 27 participants (13.8%) were fathers, three (1.5%) were aunts, and one person (0.5%) was a grandmother. Of all participants, 103 (52.6%) were parents of boys and 93 (47.4%) were parents of girls. The average age of children was 26.42 months ( $SD = 9.99$ ). There was no significant difference between boys ( $M = 25.78$ ,  $SD = 10.24$ ) and girls ( $M = 27.13$ ,  $SD = 9.71$ ) regarding their age,  $t(194) = 0.95$ ,  $p < .05$ .

Table 3 shows demographic information for each sample of primary caregivers as well as their partners, with the exception of ethnic distribution (the question regarding ethnicity differed considerably between samples).

Regarding ethnicity, in the UK sample, 596 participants (82.7%) were White British (mainly English, 89.3%), 69 participants (9.6%) were of other White background, 21 (2.1%) were of Asian background, 20 (2.8%) were of a mixed background, three (0.4%) were Black British, and 13 (1.7%) indicated 'other ethnic background'. In the case of participants' partners, 552 (82.4%) were White British (mainly English, 88%), 63 (9.4%) were of other White background, 21 (3.1%) were of Asian background, 13 (1.9%) were of a mixed background, six (0.9%) were Black British, and 15 (2.2%) were of 'other ethnic background'. In the Polish sample, all participants, apart from two (0.4%), were of Polish origin. When it comes to their partners, 508 (96%) were of Polish and 21 (4%) of other origin (mainly Western European). In the Macedonian sample, the majority of participants were of Macedonian (212, 79.7%) or Albanian (42, 15.7%) ethnicity; the remaining participants were Turkish (3, 1.1%),



Vlach (2, 0.7%), Roma (3, 1.1%), Serbian (3, 1.1%), and Bosnian (1, 0.4%). One person did not provide information regarding their ethnicity. Among the partners, most were of Macedonian (200, 76.6%) or Albanian (37, 14.2%) ethnicity; the remaining ones were Turkish (4, 1.5%), Vlach (2, 0.8%), Roma (2, 0.8%), Serbian (7, 2.7%), Bosnian (1, 0.4%), and of ‘other ethnicity’ (7, 2.7%). Finally, in the Egyptian sample, the majority of participants—179 (91.3%)—were Egyptian, mainly from the Cairo area (146, 74.5%); 10 participants (5.1%) were of other origin (e.g., Saudi, Jordanian, Lebanese). When it comes to the partners, 178 (94.7%) were Egyptian, mostly from the Cairo area (140, 74.5%); five (2.7%) were of other origin (e.g., Jordanian, Moroccan) and in case of five (2.7%) no information regarding nationality was provided.

**Table 3**

*Demographic Characteristics of Participants in the Main Study and Their Partners by Country*

	<b>UK (N = 721)</b>	<b>Poland (N = 553)</b>	<b>North Macedonia (N = 267)</b>	<b>Egypt (N = 196)</b>
Participants’ age (years)				
<i>M (SD)</i>	34.71 (4.76)	31.80 (5.35)	32.62 (4.49)	31.15 (5.01)
Partners’ age (years)				
<i>M (SD)</i>	36.82 (5.76)	33.82 (5.55)	35.26 (4.85)	33.36 (5.10)
Marital status				
· <i>Married or civil partnered</i>	555 (72.4%)	397 (71.8%)	252 (94.4%)	188 (95.9%)
· <i>Unmarried, in a relationship</i>	148 (20.5%)	132 (23.9%)	9 (3.4%)	--
· <i>Single</i>	30 (4.2 %)	16 (2.9%)	--	1 (0.5%)
· <i>Divorced</i>	21 (2.7%)	7 (1.3%)	6 (2.2%)	7 (3.5%)
· <i>Widowed</i>	--	1 (0.2%)	--	--
Gender composition of the couples				
· <i>Opposite-gender</i>	557 (83.1%)	516 (97.5%)	261 (100%)	188 (100%)
· <i>Same-gender</i>	113 (16.9%)	13 (2.5%)	--	--
Participants’ education status				
· <i>Postgraduate degree</i>	279 (38.7%)	273 (49.4%)	58 (21.7%)	39 (19.9%)
· <i>Undergraduate degree</i>	237 (32.9%)	101 (18.3%)	117 (43.8%)	134 (68.4%)
· <i>Professional qualification</i>	79 (11%)	--	16 (6%)	13 (6.6%)
· <i>Vocational training</i>	27 (3.7%)	24 (4.3%)	42 (15.7%)	--
· <i>Advanced secondary education</i>	59 (8.2%)	92 (16.6%)	31 (11.6%)	3 (1.5%)
· <i>Required secondary education or less</i>	33 (4.6%)	53 (9.6%)	--	--

· <i>'Other'</i>	7 (1%)	10 (1.8%)	--	7 (3.6%)
· <i>Lack of information</i>	--	--	3 (1.1%)	--
Partners' education status				
· <i>Postgraduate degree</i>	187 (27.9%)	183 (34.6%)	38 (14.6%)	42 (22.3%)
· <i>Undergraduate degree</i>	197 (29.4%)	78 (14.7%)	89 (34.1%)	129 (68.6%)
· <i>Professional qualification</i>	79 (11.8%)	--	13 (5%)	10 (5.3%)
· <i>Vocational training</i>	70 (10.4%)	64 (12.1%)	85 (32.6%)	--
· <i>Advanced secondary education</i>	54 (8.1%)	116 (21.9%)	31 (11.9%)	2 (1.1%)
· <i>Required secondary education or less</i>	81 (12.2%)	79 (14.9%)	2 (0.8%)	--
· <i>'Other'</i>	1 (0.1%)	9 (1.7%)	--	5 (2.7%)
· <i>Lack of information</i>	--	--	3 (1.1%)	--
Participants' occupation status				
· <i>Working full-time</i>	246 (34.1%)	338 (61.1%)	178 (66.7%)	66 (33.7%)
· <i>Working part-time</i>	326 (45.2%)	42 (7.6%)	20 (7.5%)	21 (10.7%)
· <i>Not working</i>	130 (18%)	156 (28.2%)	63 (23.6%)	99 (50.2%)
· <i>Student</i>	16 (2.2%)	11 (2%)	3 (1.1%)	5 (2.6%)
· <i>Lack of information</i>	3 (0.4%)	6 (1.1%)	3 (1.1%)	5 (2.6%)
Partners' occupation status				
· <i>Working full-time</i>	599 (89.4%)	485 (91.7%)	242 (92.7%)	153 (81.4%)
· <i>Working part-time</i>	46 (6.9%)	6 (1.1%)	6 (2.3%)	10 (5.3%)
· <i>Not working</i>	19 (2.8%)	34 (6.4%)	10 (3.8%)	18 (9.6%)
· <i>Student</i>	5 (0.7%)	--	2 (0.8%)	1 (0.5%)
· <i>Lack of information</i>	1 (0.1%)	4 (0.8%)	1 (0.4%)	6 (3.2%)

## ***Procedure***

The study procedures were approved by the Psychology Research Ethics Committee of the University of Cambridge.

The study had a form of an online questionnaire created using Qualtrics™ survey software. At the beginning of the questionnaire, participants were presented with information about the study and data processing (see Appendix D). Participants were informed what kind of topics would be raised in different sections of the questionnaire, but information about the gender-related hypotheses was withheld as directing parents' attention to this aspect of the study could have affected their responses (e.g., parents might have tried portraying their children as more or less gender-typical). After reading the information, participants were asked to complete a consent form (see Appendix E). Only those participants who agreed with all the statements on the form were able to progress to the next page of the questionnaire where the actual study would commence.

In the beginning of the study, participants were asked how many children at the age of 1-3 years are in their household. If there was more than one child, the survey would randomly select the child with regard to whom participants would be asked to answer all the questions in the study. Participants then provided the child's name, date of birth, sex, and their relationship to the child.

The study consisted of three main sections which were displayed to participants in random order. One section measured participants' attitudes regarding social issues, gender roles in adulthood, and gender-related behaviours in children. Another section focused on the toys that participants choose for their children in real life as well as on some hypothetical toy choices. The final section included questions about children's play behaviours and toy preferences. To avoid order effects on the results of this study, the order of the sections, of the measures within sections, and of the items within those measures were randomised. It was believed that presenting certain measures or items in a specific order could have influenced participants' responses (e.g., participants who were asked about their attitudes towards gender roles could be more likely to consider gender stereotypes when answering questions about toy choices); study-wide randomisation should have eliminated (or at least reduced) such effects.

After answering questions in the three main sections, participants were asked to provide information about their and their family's demographic background. They were then debriefed about the aims and hypotheses of the study and offered a chance to enter a prize draw for a voucher to an online store for children. Those participants who were interested in receiving a summary of research findings after completion of the project were asked to provide their email address. The whole study took approximately 20 minutes to complete for participants in the UK, Poland, and North Macedonia, and approximately 17 minutes in Egypt (the questionnaire in Egypt did not include one of the measures, see *Attitudes towards Social Issues*).

### ***Translation and Piloting of Measures (Pilot 2)***

Almost all measures included in the study were originally devised in English.<sup>6</sup> Therefore, the questionnaire for the study was initially created in English. In order to be able to use the questionnaire to study participants in Poland, North Macedonia, and Egypt, it had to undergo an appropriate translation process for each country. The measures were translated into Polish

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<sup>6</sup> One measure was originally devised in German (see *Attitudes Regarding Gender and Gender Roles*). That measure was first translated into English using the same procedure as in the case of other languages. From English, it was later translated into other sample-specific languages. Translating the measure directly from German would be costly and time-consuming, as it would be difficult to find appropriate experienced translators.

(for the Polish sample), Macedonian and Albanian<sup>7</sup> (for the sample in North Macedonia), and Egyptian Arabic (for the Egyptian sample). Translation quality and the comparability of results in different cultural groups constitute a common issue in cross-cultural research (e.g., Harkness & Schoua-Glusberg, 1998; Sperber, 2003). In order to minimise such problems in this study, the back-translation method was employed (e.g., Harkness, 2003). To elaborate, the questionnaire was translated into the target language by one translator and then translated back into the source language by another independent translator who was masked to the original version. The translators would then meet, compare the two versions of the questionnaire in the source language, and address any obvious inconsistencies and conceptual errors. They would then discuss potential problems and questions that emerged during the translation process and agree on the final version of the target translation together. This last step was an element of the so-called committee translation procedure (i.e., consensus/revision meeting; e.g., Harkness & Schoua-Glusberg, 1998), which was intended to overcome some drawbacks of a simple back-translation approach (for a discussion of such issues, see Behr, 2017). In each country, both translators were researchers who were native speakers of the target language and highly fluent in English. It was underlined to the translators that they should avoid literal translations, and instead try to adapt the questionnaire so it would be culturally relevant and comprehensible, while maintaining the intent and meaning of the original items (as recommended, for instance, by Harkness & Schoua-Glusberg, 1998). In a few instances, more serious changes had to be introduced to make certain items more culturally relevant. In such cases, the original version of the measure was adjusted to make all versions of the questionnaire comparable (all such changes are outlined in *Measures and Coding*).

In order to assess the quality of the translation and to evaluate whether the translated measures would perform equally well in terms of their statistical properties a pilot was conducted (Pilot 2). Pilot 2 was also designed to help with the selection of measures for the final version of the questionnaire, as in the case of several variables two different measures, characterised by different advantages and disadvantages, were included.

A total of 22 caregivers (19 mothers, three fathers) of children aged 1-3 participated in Pilot 2 in the UK; 20 caregivers (18 mothers, two fathers) participated in Poland, 40 caregivers (28 mothers, 12 fathers) participated in North Macedonia (20 filled in the questionnaire in

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<sup>7</sup> The measures in North Macedonia were translated both into Macedonian and Albanian in order to make the questionnaire more inclusive. As explained in Footnote 4, although most of the population in North Macedonia can be described as ethnic Macedonians, ethnic Albanians constitute a substantial minority (25% of the population or more). Although many Albanians understand Macedonian, their level of proficiency might vary. Therefore, it was decided that participants in North Macedonia would be able to choose the language in which they wanted to respond to the questionnaire, so that both ethnic groups could be represented in the study.

Macedonian and 20 filled it in in Albanian)<sup>8</sup>, and 20 caregivers (18 mothers, two fathers) participated in Egypt. Table 4 shows demographic characteristics of each sample with the exception of ethnic distribution (each sample consists of different ethnic/national groups). When it comes to ethnicity, in the UK sample, 16 participants (72.7%) were White British, four (18.2%) were White non-British, one (4.5%) was of Asian background, and one (4.5%) was of 'other background'. In Poland, all participants were of Polish origin. In North Macedonia, 20 participants (50%) were of Albanian ethnicity, 18 (45%) were of Macedonian ethnicity, whereas two (10%) were of 'other ethnicity'. In Egypt, all participants identified as Egyptian and the majority (15; 75%) was from the Cairo region.

Participants were recruited through various online methods (mainly Facebook), similarly to the main sample. They were presented with the first draft of the questionnaire (outlined in *Measures and Coding*) and asked to complete it, while reading all the instructions and questions carefully. They were encouraged to note down potential problems with comprehension, language, and cultural relevance of any of the items, and send their feedback (accompanied by suggestions) either via email or on Facebook. In addition, a small sub-group of participants (2-3) was randomly selected in each national sample and asked to discuss the questionnaire in one-to-one conversation with the researcher or one of the collaborators. The feedback was subsequently analysed and discussed with the translators; and if needed, appropriate adjustments were made to the questionnaires. Next, data collected in Pilot 2 was analysed in terms of some basic statistical properties. For multi-item scales, the analyses focused mainly on measuring internal reliability<sup>9</sup>; it was aimed at checking whether translation would affect the meaning of any particular items (resulting in responses inconsistent with the overall questionnaire) as well as whether each measure would prove equally reliable in all the cultural contexts (low internal reliability could suggest that some items might not be effective in measuring the intended construct in a specific context). For open-ended items, the analyses looked at non-response rates, which have been flagged as a common issue in this kind of questions (e.g., Millar & Dillman, 2012; Reja et al., 2003). Other analyses included correlational analyses and investigation of descriptive data. All the feedback given by the participants as well as any statistical analysis conducted for each of the measures included in

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<sup>8</sup> In Pilot 2, the questionnaires in Albanian and Macedonian were evaluated separately as the main goal of the pilot was to validate the quality of the translation. In the main study, the data from the two language versions of the questionnaire were merged and evaluated together, as the aim was to assess the views and behaviours of the North Macedonian sample as a whole.

<sup>9</sup> Cronbach's alpha was used, as it is the most common measure of scale reliability. As in other psychological research, coefficients of .70 and above were considered to indicate acceptable internal reliability (e.g., Kaplan & Saccuzzo, 1997; Ponterotto, 1996), except in the case of very short scales (less than six items) where coefficients above .60 were deemed acceptable (after Ponterotto & Ruckdeschel, 2007).

the pilot are outlined in appropriate sections of *Measures and Coding*. To aid clarity, an overview of all the measures selected for the final version of the questionnaire is provided in Table 5 at the end of *Measures and Coding*.

**Table 4**

*Demographic Characteristics of Participants in Pilot 2 by Country*

	<b>UK (N = 22)</b>	<b>Poland (N = 20)</b>	<b>North Macedonia: Macedonian (N = 20)</b>	<b>North Macedonia: Albanian (N = 20)</b>	<b>Egypt (N = 20)</b>
Age (years)					
<i>M (SD)</i>	35.77 (4.08)	32.63 (4.95)	32.69 (3.05)	31.11 (4.43)	28.45 (2.95)
Marital status					
· <i>Married or civil partnered</i>	19 (86.4%)	14 (70%)	20 (100%)	19 (95%)	20 (100%)
· <i>Unmarried, in a relationship</i>	3 (13.6%)	5 (25%)	--	--	--
· <i>Single</i>	--	1 (5%)	--	--	--
· <i>Widowed</i>	--	--	--	1 (5%)	--
Education status					
· <i>Postgraduate degree</i>	9 (40.9%)	12 (60%)	10 (50%)	5 (30%)	3 (15%)
· <i>Undergraduate degree</i>	9 (40.9%)	3 (15%)	5 (25%)	11 (55%)	16 (80%)
· <i>Professional qualification</i>	2 (9.1%)	--	3 (15%)	2 (10%)	--
· <i>Advanced secondary education</i>	2 (9.1%)	4 (20%)	1 (5%)	--	1 (5%)
· <i>Required secondary education or less</i>	--	1 (5%)	--	1 (5%)	--
Occupation status					
· <i>Working full-time</i>	12 (54.5%)	10 (50%)	18 (90%)	11 (55%)	6 (30%)
· <i>Working part-time</i>	8 (36.4%)	4 (20%)	--	1 (5%)	3 (15%)
· <i>Not working</i>	2 (9.1%)	5 (25%)	2 (10%)	7 (35%)	11 (55%)
· <i>Student</i>	--	1 (5%)	--	1 (5%)	--
Children's sex					
· <i>Boys</i>	15 (68.2%)	13 (65%)	14 (70%)	11 (55%)	10 (50%)
· <i>Girls</i>	7 (31.8%)	7 (35%)	6 (30%)	9 (45%)	10 (50%)
Children's age (months)					
<i>M (SD)</i>	23.86 (10.42)	27.50 (10.35)	28.55 (12.74)	26.55 (13.20)	28.65 (12.13)

## *Measures and Coding*

**Parental Attitudes.** The attitude section of the questionnaire included measures of three different types of attitudes: attitudes towards social issues, attitudes towards child's gender-related behaviours, and attitudes regarding gender and gender-roles in adulthood. It was important to measure a variety of attitudes in the study, as currently there is no consensus regarding the type of parental attitudes that might be the best predictor of parental gender socialisation or of children's sex-related behaviours. As mentioned before, (relatively scarce) research looking at the associations between parental attitudes and parental toy choices as well as children's sex-typed toy preferences has been inconsistent in terms of measures employed. Studies assessed, inter alia, parental beliefs about gender roles in children (e.g., Freeman, 2007), gender roles in adulthood (e.g., Kollmayer et al., 2018), gender essentialism (e.g., Weisgram & Bruun, 2018), self-perceived gender-stereotypicality (e.g., MacPhee & Prendergast, 2019) and other constructs, often obtaining divergent results. In addition, including different measures of attitudes seems important, as individuals might have egalitarian attitudes regarding certain aspects of their or their children's lives, while maintaining more traditional beliefs about others (e.g., Knight & Brinton, 2017; MacPhee & Prendergast, 2019). Therefore, focusing on one type of parental attitudes could produce results that are incomplete, if not misleading.

It was decided that this study would focus on attitudes towards gender roles in adults and towards gender-related behaviours in children, as these two types of attitudes seem to appear most often in previous research on parental socialisation in the context of toy play (e.g., Fagot, 1978; Kollmayer et al., 2018). Moreover, it was believed that attitudes concerning gender-related behaviours in children might constitute the strongest predictor of parental toy choices based on the principle of measurement correspondence in attitude-behaviour research. The principle proposes that behavioural antecedents, such as attitudes, need to be measured at the same level of specificity as the behaviour in interest in order to effectively predict such behaviour (e.g., Ajzen & Fishbein, 1977; Fishbein & Ajzen, 1975). In other words, measures of attitude and behaviour should match one another in terms of action and context. Apart from the above measures, a measure of more general social attitudes was also included in the study; it was believed that it would be less susceptible to various biases than measures explicitly associated with gender. Although many parents report egalitarian attitudes regarding gender and gender roles, observational data show that such attitudes do not always seem to be reflected in their behaviour (e.g., Fagot, 1978), suggesting that parents' answers on questionnaires might not be reflective of their actual beliefs. It is likely that as society becomes

more egalitarian in their gender attitudes, people might want to appear more egalitarian themselves (e.g., Axinn et al., 2011). In addition, when it comes to attitudes regarding children's gender-related behaviours, people might want to present themselves as 'good' parents who do not restrict choices of their sons and daughters (e.g., Desmond et al., 1985). General social attitudes are likely to be less susceptible to such biases: as the society continues to be politically polarised (and right-wing governments remain supported), general conservative views might be less likely to be socially disapproved.

***Attitudes Towards Social Issues (Social Attitudes).*** The first version of the questionnaire included two measures of attitudes towards social issues. Although the last decade has seen a surge in research investigating relationships between social conservatism/liberalism and various psychological outcomes, there is not one measure of this construct that could be considered widely accepted, validated, and up to date (e.g., Everett, 2013). Moreover, many measures that seem to have good psychometric properties in some national contexts might not perform well in others, as conservative/liberal beliefs are highly context-dependant (e.g., Malka et al., 2014). Therefore, in this study, two measures, each carrying different advantages and disadvantages, were piloted in order to examine which one would perform best in the national contexts of this study. However, these measures were only tested in three of the four national samples; after multiple discussions with the Egyptian Arabic translator as well as a consultation with several political activists in Egypt, it was decided that questions regarding social issues would be excluded from the Egyptian version of the questionnaire, as they could have led to a high drop-out rate among Egyptian participants. The current political situation in Egypt is characterised by frequent human rights violations including imprisonment and detention of peaceful government critics (or those perceived as such; Human Rights Watch, 2021); therefore, any questions concerning political issues, especially those associated with governmental policies, could have evoked fear and distrust among potential participants, and as a result, discourage them from participation.

The first measure was an adaptation of the Social Attitudes Questionnaire (SAQ) used by Bell et al. (2018), which is a modified and modernised version of the Conservatism Scale devised by Wilson and Patterson (1968). Unlike the measure of Wilson and Patterson, however, which has evidence of high reliability and validity, the modified version has not been empirically validated as a scale. Despite this psychometric limitation, a decision was made to include this measure as it seemed most appropriate for the national samples of interest; the SAQ assesses attitudes towards a broad spectrum of social issues relevant to European audiences, in contrast to many other measures that have been tailored to the American context



(e.g., Eidelman et al., 2012.; Zell & Bernstein, 2014). In addition, the SAQ seems to focus on issues that are ‘fresh’ (e.g., abortion, refugees, LGBTQ+ rights) and constitute a part of a public debate in many European countries (including the UK, Poland, and North Macedonia), as compared to some other, perhaps more psychometrically sound but potentially outdated, questionnaires (e.g., Henningham, 1996; Wilson & Patterson, 1968).

In the questionnaire, participants were asked to indicate their feelings towards 21 social and political issues using a 5-point matrix scale ranging from ‘Very negative’ to ‘Very positive’. Examples of the items included ‘Censorship of public opinion’, ‘Women in the army’, and ‘Homosexual marriage’. As the SAQ was originally intended for a German sample, a few changes were made so the measure would be suitable for the populations of interest. For instance, in the item ‘Preference for a German job seeker’, the word ‘German’ was replaced with an appropriate nationality in each country, and the item ‘Acceptance of asylum seekers’ was replaced with ‘Acceptance of refugees’, as the term ‘asylum seeker’ is rarely used in Poland and North Macedonia. In addition, some minor changes were introduced to the original items as the published version of the measure included small errors and unusual/problematic phrasings. For instance, the item ‘Handicapped people in working life’ was changed to ‘Disabled people in the workplace’. The adopted version of the scale in English can be seen in Appendix F. An average score for each participant was calculated after reverse-coding appropriate items, with higher values indicating more liberal attitudes.

The second measure of attitudes towards social issues that was piloted was the Social and Economic Conservatism Scale (SECS) by Everett (2013). In comparison to the scale by Bell et al. (2018), this measure had been adequately tested in terms of validity; it is also shorter and quicker to administer, and assesses attitudes towards both social and economic issues related to conservatism/liberalism (the SAQ focuses solely on social issues). Despite these advantages, there was a concern that this scale would not perform well in the three national samples of interest as it was designed and tested in the context of the US value system. Especially the economic part of the scale was expected to pose problems due to differences between conservatism in the US and in the three European countries. For instance, American conservatives are generally more likely to push for the limited role of the government than conservatives in Western Europe (including the UK), who believe, at least to some extent, that the state should ensure that nobody is in need (e.g., Pew Research Center, 2011). At the same time, conservatives in Eastern Europe have even more favourable attitudes towards economic redistribution than their Western-European counterparts (e.g., Barni et al., 2016).

In the SECS scale, participants were asked to indicate the extent to which they feel positive or negative towards 12 concepts related to social and economic policies. Examples of the social concepts include ‘Abortion’ and ‘Traditional marriage’, and of the economic concepts ‘Limited government’ and ‘Welfare benefits’. Participants indicated their answers on a 11-point slider scale ranging from 0 (*Very negative feelings*) to 100 (*Very positive feelings*). Three mean scores were calculated for each participant after reverse-coding appropriate items: the overall SECS score, and individual scores for the social and economic subscales.

In the pilot stage, the SAQ measure showed good internal consistency (Cronbach’s alpha between .80 and .87) in the Polish, British, and Macedonian versions of the questionnaire. Internal consistency was questionable (.61) in the Albanian version of the questionnaire. It turned out that two of the items—‘Alternative medicine’ ( $r = -.40$ ) and ‘Meritocracy’ ( $r = -.54$ )—were negatively associated with the rest of the scale. After closer investigation, a similar issue with the first item was spotted in the Polish ( $r = -.21$ ) and Macedonian ( $r = -.30$ ) questionnaires. To clarify, in Bell et al. (2018), positive feelings towards ‘Alternative medicine’ were associated with liberalism, whereas in these three samples they were associated with conservatism. This could be related to an increase in science-related conspiracy beliefs and anti-vaccination sentiments among conservative individuals in the recent years, and specifically over the course of the COVID-19 pandemic. Although most studies on this topic have looked at conservatives in the US (e.g., Baumgaertner et al., 2018; Fridman et al., 2021), a few studies conducted in Europe show similar patterns (e.g., Bilewicz & Soral, 2021; Kerr et al., 2021). Scepticism towards medical experts and their recommendations might be further associated with endorsement of substances and treatments that are part of alternative medicine (e.g., Soveri et al., 2021), which could explain the correlations observed in the pilot. However, due to the small sample size, it was possible that this effect was simply a result of chance. Therefore, it was decided that this item would be investigated further in the main study and potentially be either deleted or recoded. Regarding the second problematic item—‘Meritocracy’—a similar negative item-total correlation was found also in the questionnaire in Macedonian ( $r = -.26$ ). In Bell et al. (2018), positive feelings towards ‘Meritocracy’ were associated with conservatism, whereas in these two samples it was associated with liberalism. One potential explanation for this could be high levels of corruption and nepotism present in North Macedonia as well as one of the highest brain drain rates globally (e.g., Transparency International, 2021), which are likely to lead to low perceived meritocracy (i.e., feelings that people are not rewarded for their efforts/skills), especially among those who do not reap benefits of the current political climate (e.g., young educated liberals without connections to

the right-wing government). Individuals affected by such circumstances might be more likely to show a strong preference towards meritocracy (e.g., Duru-Bellat & Tenret, 2012). It was decided that this item would be observed further in the main study, and if such discrepancies between the samples persisted, it would be deleted. Those participants who were asked to give feedback in the pilot did not identify any problems regarding the SAQ measure; they understood all the concepts presented to them and thought that the instructions were clear. Therefore, apart from the two above-mentioned issues, the performance of this instrument was satisfactory.

More issues emerged in the case of the SECS measure. The overall SESC scale showed good internal consistency (Cronbach's alpha between .77 and .79) in all the samples apart from the group answering in Albanian (.56). However, the economic subscale performed poorly, with internal consistency ranging between .10 and .29. In each sample, there were at least two items that correlated negatively with the overall scale score, and these items were not consistent across the samples. The scale had also a high incidence of missing data: between 20-25% of participants in each sample left at least one item unanswered. Many of the participants who provided feedback expressed that some of the economic items were not entirely clear to them; for instance, they were uncertain about the exact application of the 'limited government' concept, which is likely related to the fact that this idea is much less popular in Europe than in the US (as mentioned previously). In contrast to the economic subscale, the social subscale did not demonstrate any issues. It had good internal consistency (between .72 and .86) and all the items performed as expected. Nonetheless, due to the issues with the economic subscale that would be difficult to resolve, it was decided that the SECS measure would be excluded from the main study; attitudes towards social issues would be measured with the SAQ instrument that, despite a few minor issues, performed well across the samples. An option of progressing solely with the social subscale of the SECS was considered, but as there was a considerable overlap between its items and the SAQ measure, it was believed that it would be better to progress with the more comprehensive instrument.

In the main study, the SAQ showed good internal consistency in all the samples (between .73 and .80). Nonetheless, the two items that had shown negative item-total correlations in the pilot stage, produced similar issues in the main study. In the case of the 'Alternative medicine' item, a small negative association was found in the British ( $r = -.11$ ) and Macedonian samples ( $r = -.12$ ), while in the Polish sample this item showed a small positive relationship with the overall score ( $r = .08$ ). As the item turned out not to correlate with the scale at an acceptable level (i.e., all coefficients were below .15-.20; Clark & Watson, 1995), it was decided that it

would be deleted. When it comes to the ‘Meritocracy’ item, small negative item-total correlations were found in all the samples (UK:  $r = -.04$ ; Poland:  $r = -.12$ ; North Macedonia:  $r = -.25$ ). Although the direction of the relationship was consistent, coefficients in two samples were too small for the item to have any discriminatory power in the scale. It would also be difficult to justify reverse-coding the item on any theoretical grounds (i.e., the positive association between liberalism and meritocracy could be expected in the social context of North Macedonia, but not in Poland or the UK). Therefore, a decision was made to delete the ‘Meritocracy’ item from the scale. There were no issues with any other items in any of the samples. The final version of the SAQ measure included in the analysis had consequently 19 items. The internal consistency of that measure ranged between .78 and .82.

***Attitudes Towards Gender-Related Behaviours in Children.*** In order to measure participants’ attitudes towards gender-related behaviours in children, a set of adapted subscales from the Child Gender Socialization Scale (CGS; Blakemore & Hill, 2008) was included in the study. The CGS Scale is one of the few instruments available that focus on adults’ attitudes concerning specifically gender roles in childhood. It was designed to measure parents’ attitudes towards their children’s behaviours and has been used to differentiate between traditional and feminist parents (Blakemore & Hill, 2008). The measure was chosen as it is relatively up to date and has good statistical properties (it demonstrates divergent validity, test-retest validity, and convergent validity; however, see Smiler & Epstein, 2010 for criticism). The only contemporary alternative, The Child Rearing Sex Role Attitude Scale (Freeman, 2007), which is a loose adaption of the measure by Burge (1981), has never been validated. The CGS Scale consists of five different sub-scales, but it was decided that only the following three would be included in the study: Toys and Activities Stereotyped for Boys (seven items), Toys and Activities Stereotyped for Girls (eight items), and Disapproval of Other Gender Characteristics (two items). The other two sub-scales—Helping at Home and Education for Marriage—were found to show validity problems in the original studies; one of them was found unsuccessful at differentiating between traditional and feminist parents, and both did not seem to measure gender-related constructs (i.e., parents were found to be positive about both sons and daughters engaging in house chores and wanted both sons and daughters prepared for family life; Blakemore & Hill, 2008).

In the first part of the instrument, parents had to indicate, on a 7-point scale ranging from ‘Very negative’ to ‘Very positive’, how they would feel if their child engaged in play with certain toys (e.g., playing with toy cars, playing with toy jewellery). In the second part of the instrument, parents had to indicate, on a 7-point scale ranging from ‘Agree strongly’ to

‘Disagree strongly’, the extent to which they agreed with statements concerning their child’s engagement in cross-gender behaviours (e.g., ‘I would discourage my daughter from playing with boys’ toys or games’). As the original measure was constructed in the US, some of the items had to be changed so they would be appropriate for/understood by participants in the four national samples of interest. For instance, ‘G.I. Joe’ was replaced with its European equivalent, ‘Action Man’. In addition, in the UK, American words (e.g., garbage) were changed to their British equivalents (i.e., rubbish). The measure can be seen in Appendix G. It had two versions: one for parents with sons and one for parents with daughters, which differed in terms of pronouns. It consisted of 17 items. An average score for each of the three sub-scales was calculated for each participant. The scores for Toys and Activities Stereotyped for Boys and Toys and Activities Stereotyped for Girls were later used to create two variables that could be used to analyse the data for the entirety of each sample (instead of conducting separate analyses for parents of boys and girls): ‘attitudes concerning gender-typed play’ and ‘attitudes concerning cross-gender play’. The former consisted of the Toys and Activities Stereotyped for Boys values for parents of boys and of the Toys and Activities Stereotyped for Girls values for parents of girls; in the latter the inverse pattern was used.

In the pilot stage, the ‘Toys and Activities Stereotyped for Girls’ subscale showed good internal consistency (Cronbach’s alpha ranging between .70 and .93) in all the samples. The ‘Toys and Activities Stereotyped for Boys’ subscale showed good internal consistency (between .70 and .82) in all the samples apart from the Egyptian one (.58). After closer investigation, it turned out that one of the items—‘Playing with military toys’—was negatively associated with the rest of the scale ( $r = -.18$ ) in the Egyptian sample. This could have been explained by general prejudice towards or fear of security services and the military due to their frequent abuse of power (e.g., Wittes, 2020). Due to the small sample size of the pilot, however, it was decided that this item would be retained and investigated further in the main study. The final subscale—‘Disapproval of Other Gender Characteristics’—showed good internal consistency (between .61 and .87) in all the sample apart from the British one (.40). However, this subscale consisted of only two items and scales with small number of items might often demonstrate lower alpha levels, especially in very small samples (e.g., Cortina, 1993). As lower internal consistency may be deemed acceptable in such cases (e.g., Pontekotto & Ruckdeschel, 2007), it was decided that the subscale would be maintained and investigated further in the main study. Those participants who were asked to give feedback regarding the questionnaire did not voice any issues regarding this instrument; they confirmed that the instructions were clear and that all the items were easy to understand.

In the main study, two of the three subscales showed good internal consistency in all the samples. For the ‘Toys and Activities Stereotyped for Girls’ subscale, Cronbach’s alpha ranged between .81 and .88, and for the ‘Toys and Activities Stereotyped for Boys’ subscale between .76 and .80. The ‘Disapproval of Other Gender Characteristics’ subscale demonstrated good internal consistency in the UK (.73) and in Egypt (.65), but not in Poland (.42) and North Macedonia (.43). In the latter two countries, there was a relatively high proportion of parents who stated that they would not discourage their child from playing with cross-sex toys (i.e., disagreed strongly or somewhat with the statement) but were either ambivalent or negative about their children acting like the other sex (i.e., either agreed slightly, somewhat, or strongly with the statement, or chose the option ‘neither agree nor disagree’); in Poland it was 17% and in North Macedonia 20% of participants. This might be related to the fact that the two countries, despite becoming more gender-egalitarian, are also characterised by high levels of transphobia and homophobia in some parts of the society (e.g., Górska, 2020; ILGA-Europe, 2021); and while playing with cross-sex toys might be seen as harmless, behaving in a gender-atypical way could be viewed as more problematic (due to both parents’ own prejudice as well as fear of their children being stigmatised by the society). Taking all of this into consideration, it was decided that the measure would be kept in its original form as it was believed that it would still allow to differentiate between parents who are fully accepting of cross-sex behaviours and those who might not be.

***Attitudes Regarding Gender and Gender Roles (Gender-Role Attitudes).*** The pilot version of the questionnaire included two measures of attitudes regarding gender and gender roles. Many individual-differences measures of gender and gender-role attitudes currently exist. Some of the most widely-used (e.g., SRES by Beere et al., 1984; AWS by Spence & Helmrich, 1972) have been extensively validated in different contexts and show good statistical properties; they are, however, likely to be outdated. Specifically, they tend to reflect attitudes that might have been popular within Western societies in the 1970s or 1980s, but as the levels of overt sexism have decreased over the last few decades (e.g., Crawley, 2014; Bolzendahl & Myers, 2004; Twenge, 1997), now they might be considered somewhat extreme and socially unacceptable (especially in more socially liberal societies such as the UK). Therefore, the use of such measures is likely to lead to ceiling effects (e.g., Spence & Hahn, 1997), and might potentially evoke negative emotions in some research participants. On the other hand, while newer measures of gender and gender-role attitudes are less susceptible to such issues, they are not as widely used, and there is not as much evidence for their reliability and validity in different cultural contexts. To strike balance between the advantages and disadvantages of

employing more up-to-date (but less validated) and older (but more statistically-sound) measures, it was decided that in the pilot stage two different measures would be compared; if the more up-to-date alternative performed better than (or as well as) the older measure, it would be included in the main study.

The first measure was the Ambivalent Sexism Inventory (ASI) by Glick and Fiske (1996). The ASI is a widely used measure of attitudes towards women and stereotypical gender roles. It encompasses two constructs: Hostile Sexism, which is characterised by a negative view of women as seeking to gain control over men by challenging traditional gender roles; and Benevolent Sexism, which can be described as idealisation of women in traditional female roles. The measure consists of 11 statements expressing hostile attitudes (e.g., 'Most women interpret innocent remarks or acts as being sexist') and 11 statements expressing benevolent attitudes towards women (e.g., 'Women should be cherished and protected by men'). Participants were asked to indicate, on a 6-point scale ranging from 'Disagree strongly' to 'Agree strongly', the extent to which they agreed with each of the statements. Afterwards, the appropriate items were reverse-coded and an average score was calculated for each participant, with higher values reflecting more sexist attitudes.

The ASI shows good reliability and validity, and has been used in many different national contexts (e.g., Glick & Fiske, 2001). However, as it has been developed over two decades ago, some of its items might appear anachronistic (e.g., 'Many women have a quality of purity that few men possess'). At the same time, due to its popularity and good statistical properties, it constituted a good point of comparison for the second less validated, but more modern, measure.

The second measure was an English adaptation of the Questionnaire on Normative Gender Role Attitudes (NGRO; Athenstaedt, 2000). The NGRO was chosen as it focuses on issues regarding gender roles that continue to be relevant in the society (e.g., the underrepresentation of men as childcare workers, men seen as the main earners etc.), and although sexist in nature, they would be unlikely to be perceived as anachronistic or extreme by participants. In addition, the statements that the measure consists of are concise and easy to understand. Finally, the NGRO was used in one of the few studies that looked at the relationship between parental attitudes and parental toy choices (Kollmayer et al., 2018), and including it in this research would make it possible to draw comparisons between the two. However, as the use of the measure has been rather limited (most likely due to the fact that it is originally in German), it was decided that it would be tested against the AIS measure in the pilot; if the NGRO correlated highly with the AIS scores and demonstrated good internal consistency across all the

samples, it would be maintained in the main version of the questionnaire (while the ASI would be excluded).

The NGRO was originally developed and validated in Austria, and therefore had to be translated into English for the purpose of this study. The translation was conducted using the back-translation procedure (for more information, see *Translation and Piloting of Measures* and *Footnote 6*). The NGRO consists of 29 descriptive and prescriptive statements referring to men's and women's suitability for different tasks, roles, and responsibilities. Examples of the items include: 'Boys and girls should take on the same household duties', 'A higher education is more important for men than women, because men are more likely to be placed in high positions', 'Men are better suited for some professions than women are' (for the full list of statements, see Appendix H). Participants were presented with the statements and were asked to indicate the extent to which they agreed with each of them using a 7-point scale ranging from 'Strongly disagree' to 'Strongly agree'. The appropriate items were reverse-coded, and an average score was calculated for each participant, with higher values indicating more egalitarian gender-role attitudes.

In the pilot stage, the ASI measure showed good internal consistency in all the samples (Cronbach's alpha between .71 and .95). However, in the British, Albanian, and Egyptian questionnaires there were items that correlated negatively with the rest of the scale. In the UK it was 'People are often truly happy in life without being romantically involved with a member of the other sex' (reversed item;  $r = -.30$ ), in Albania it was 'Feminists are not seeking for women to have more power than men' (reversed item;  $r = -.49$ ), whereas in Egypt it was 'There are actually very few women who get a kick out of teasing men by seeming interested and then rejecting them' (reversed item;  $r = -.13$ ). In all these cases, agreement with the item was associated with higher ambivalent sexism scores, which would be difficult to explain on theoretical grounds. In terms of other problems, several participants from different samples reported that they found the phrasing of some of the ASI items quite odd, while statements themselves were seen as old-fashioned.

The NGRO measure also showed consistently good reliability across the four samples (Cronbach's alpha between .83 and .94). In addition, there were no items that correlated negatively with the rest of the scale in any of the samples. There was also no negative feedback regarding this measure apart from two participants in Poland who found the translation of the term 'house husband' unnatural (it was corrected in the main study).

The ASI scores and NGRO scores correlated highly in all the groups (Pearson's  $r$  between  $-.58$  and  $-.82$ ,  $p < .01$ ). Therefore, both instruments appeared to measure a very similar



construct. Consequently, as the NGRO measure seemed to perform better in all the groups than the ASI questionnaire, it was decided that the NGRO would be included in the main version of the questionnaire.

In the main study, the NGRO measure showed good internal consistency in all the samples; Cronbach's alpha ranged between .84 and .87.

**Parental Toy Choices.** As mentioned in the previous chapter, past research looking at the relationship between parental attitudes and parental toy choices did not assess actual parental behaviours, but rather parents' willingness or likelihood of purchasing specific toys for their children (e.g., Kollmayer et al., 2018; Weisgram & Bruun, 2018). Although social psychology research suggests that one's intention to behave in a certain way is a good predictor of one's actual behaviour (e.g., Sheppard et al., 1988), it is also clear that intentions do not always translate into action (e.g., Davies et al., 2002; McEachan et al., 2011; Sheeran & Webb, 2016). Therefore, based on the previous studies, it remains unclear whether parental attitudes could predict parents' actual toy choices. In order to address this limitation, while being able to draw comparisons between the results of the current and past research, it was decided that this study would include both a measure of real-life toy choices and a measure of intended toy choices (i.e., hypothetical toy choices). Both measures would focus on the extent to which parents' choices are gender-typed.

**Hypothetical Toy Choices.** In order to measure participants' intentions to purchase gender-typed and cross-gender toys for their children, a measure similar to the one used by Weisgram and Bruun (2018) was included in the study. Participants were presented with pictures of masculine, feminine, and neutral toys and asked to indicate how likely they would be to buy a toy of each kind for their child now or in the future. They responded using a 6-point scale ranging from 'Very unlikely' to 'Very likely'. The toys that participants were presented with were selected based on Pilot 1. The masculine and feminine toys were chosen from the list of 20 most masculine and 20 most feminine toys (see Table 2). As there were many toys of a similar type within each of the gendered toy groups, it was decided that certain toys would be presented together. To give an example, G.I. Joe and Action Man (both action figures) were presented in a single picture as were Barbie doll, Bratz doll, and O.M.G. doll (all fashion dolls). The final selection consisted of eight pictures of feminine toys and eight pictures of masculine toys. The feminine toys included fashion dolls, fancy dress, make-up accessories, styling head, dolls' clothes and accessories, baby doll and accessories, pram, and My Little Pony. The masculine toys included action figures, superhero figures, toy soldiers, sport cards, transformers, firefighter's gear, toy weapons, and cars. Eight pictures of neutral toys were

added as fillers, so it would be less obvious to participants that the measure focuses on gendered purchases. The neutral toys were also chosen based on the ratings in Pilot 1 (see Table 1) and included arts and crafts, slinky, musical instruments, board games, tablet, children's bikes, outdoor toys, and soft toys. All the pictures presented to participants can be seen in Appendix I. Subscales for 'masculine purchases' and 'feminine purchases' were created by averaging responses across the eight sets of items in each gender category. Higher scores indicated greater likelihood of purchasing such toys. These subscales were later used to create scores for 'hypothetical gender-typed purchases', which consisted of the 'masculine purchases' values for parents of boys and of the 'feminine purchases' values for parents of girls; and for 'hypothetical cross-gender purchases', which consisted of the 'feminine purchases' values for parents of boys and of the 'masculine purchases' values for parents of girls.

In the pilot stage, the 'feminine purchases' subscale showed good internal consistency in all the samples (Cronbach's alpha between .81 and .93). The 'masculine purchases' subscale showed good internal consistency in all the samples (between .70 and .85), apart from the British one (.62). In the British sample, the likelihood of purchasing firefighter's gear and cars showed a small negative correlation with the rest of the scale ( $r = -.10$  and  $r = -.07$ , respectively), meaning that those participants who reported being likely to buy other masculine toys would be less likely to buy these two. However, as this issue was present only in one sample and could have been a result of chance, it was decided that all the items in the 'masculine purchases' subscale would be preserved and investigated further in the main study. Finally, those participants who were asked to give feedback regarding this measure did not report any problems.

In the main study, the 'feminine purchases' subscale retained good internal consistency in all the samples (Cronbach's alpha between .81 and .97). The 'masculine purchases' subscale showed good internal consistency in Poland, North Macedonia, and Egypt (between .75 and .90). In the UK sample, the subscale's internal consistency could be considered questionable (.65). Nonetheless, as all the items were found to correlate positively ( $r > .20$ ) with the scale, it was decided that the subscale would be maintained unmodified.

***Real-Life Toy Choices.*** In order to assess the actual toy choices of participants and the extent to which these choices are gender-typed, five open questions were included in the study. The questions asked participants to think about certain real-life situations and remember what kind of toys they chose then for their children. The real-life situations included the most recent play session with the child, purchasing toys for the child's last birthday, for the most recent

gift-giving holiday, and when there was no occasion; participants were also asked which toy gifted to their child by others is, according to them, the best (for the exact phrasing of the questions see Appendix J). When answering the questions, participants were able to choose the option ‘not applicable’, and were asked to elaborate on the reasons behind choosing this answer.

When it comes to this specific measure, the aim of the pilot study was to check whether participants would be willing to answer so many open-ended questions (as research suggests that open-ended questions have higher item nonresponse rates than other types of questions, e.g., Millar & Dillman, 2012; Reja et al., 2003), whether their answers would be sufficiently detailed (e.g., answering ‘Barbie doll’ instead of just ‘doll’), and whether all the situations included in the measure would be applicable to the majority of parents (i.e., none of the questions would yield a high number of ‘non-applicable’ responses). The pilot did not identify any problems. Participants in all four groups answered all the questions and provided sufficient detail when describing toys chosen for their children. In addition, there was no item that would yield more than two ‘non-applicable’ responses in all of the samples. Finally, those participants who were asked to give feedback regarding this measure did not report any problems—all the items were easy to understand.

In the main study, participants’ answers were coded to reflect the extent to which each specific toy was gender-typed. The coding was performed based on a small independent study (‘Toy Study’), which was analogous to the one conducted by Spencer et al. (2021) for a similar measure. In the main study, participants generated a combined total of approximately 1,500 unique toys and activities<sup>10</sup> across the four samples. In Toy Study, these toys and activities were grouped into 65 categories based on similarities between them. The groupings were performed in order to reduce the number of objects that would be evaluated in the study. Examples of the categories include: Action and Superhero Figures, Soft Toys, Dinosaurs and Dragons (for a full list of categories and examples of toys in each category see Appendix K). In the Toy Study, a group of 50 adults<sup>11</sup> from each country, who were masked to the hypotheses, were asked to rate the extent to which they perceived each of the categories as masculine or feminine. The answers were given using a 7-point scale ranging from ‘Very masculine’ to

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<sup>10</sup> These include the toys and activities listed by parents in the children’s toy preferences questions (see *Children’s Toy Preferences*).

<sup>11</sup> In the UK, 31 women and 19 men aged between 18 and 73 years ( $M = 35.56$ ,  $SD = 15.49$ ) participated in the study. In Poland, 44 women and six men aged between 21 and 64 years ( $M = 41.98$ ,  $SD = 12.36$ ) took part. The Macedonian sample consisted of 36 women and 14 men aged between 26 and 68 years ( $M = 44.35$ ,  $SD = 12.57$ ). Finally, 47 women and three men aged between 22 and 61 years ( $M = 35.34$ ,  $SD = 7.44$ ) participated in the study in Egypt.

‘Very feminine’, with the middle point signifying ‘Neutral’. Participants’ responses were used to compute mean gender ratings for each of the 65 categories (see Appendix K). These ratings were then employed to score the answers in the real-life toy choices questionnaire, i.e., they were assigned to the individual toys and activities that had formed the categories. Therefore, each of the five toys/activities listed by participants in the main study was assigned a score of between 1.00 and 7.00. These scores were subsequently averaged and used to create a ‘gender-typing of real-life toy choices’ variable: it consisted of the original values for parents of girls and of reversed values for parents of boys. Therefore, higher values on this variable indicated more gender-typed toy choices of parents. For those participants who indicated the option ‘non-applicable’ in one or two of the questions, the score was computed using the available responses; for those with more responses of this kind, the score was not calculated (in order not to give too much weight to single responses).

**Children’s Gender-Typed Behaviour and Toy Preferences.** Many studies looking at gender-typed play and toy preferences in children have used behavioural observation as a method of assessment (e.g., Lamminmäki et al., 2012; Servin et al., 1999; Spencer et al., 2021). However, due to the online nature of the current study, the implementation of observational measures was not possible. Another reliable way of assessing children’s gender-typed play involves standardised questionnaires focusing on different gender-typed preferences and activities (e.g., Coyne et al., 2016; Golombok et al., 2003; Hines et al., 2002; Hoeffler, 1981). This study included potentially the most popular of such questionnaires, the Preschool Activities Inventory (PSAI; Golombok & Rust, 1993), which has been repeatedly observed to produce similar results to those obtained through observation of play (e.g., Lamminmäki et al., 2012; Spencer et al., 2021). Nonetheless, despite their advantages (e.g., good statistical properties), standardised measures of gender-typed play might not always withstand the trial of time, as societal views on who boys/men and girls/women can be and what they can do tend to transform over years (e.g., Bhatia & Bhatia, 2021; Lopez-Zafra & Garcia-Retamero, 2012). In addition, such measures might not perform well in all cultural contexts, as certain activities seen as gender-typical in some cultures might not be seen as such in others (e.g., Wood & Eagly, 2002). Due to this, it was decided that the other measure included in the study, which focused specifically on toy preferences, would have a form of open-ended questions; this would make it less susceptible to the issues described above.

**Children’s Gender-Typed Play Behaviour.** Participants were asked to evaluate their children’s gender-typed play behaviour using the PSAI. The PSAI is the only relatively recent measure of gender-related play behaviour in young children that has been standardised and

validated. The PSAI was designed to assess gender-typed behaviour in children aged two to six years, but it has also been successfully applied in research looking at younger children (e.g., 14 months; Lamminmäki et al., 2012). It consists of 24 items addressing three aspects of children's behaviour: play with gender-typed toys (e.g., guns, dolls, tea sets), engagement in gender-typed play activities (e.g., playing house, climbing), and display of gender-typed characteristics (e.g., enjoying rough and tumble play, enjoying exploring new surroundings). Half of the items refer to female-typical and the other half to male-typical toys, activities, and characteristics. Participants were asked to indicate how often their child engages in each of the behaviours using a 5-point scale ranging from 'Never' to 'Very often'. When answering, they were instructed to think about their child's behaviour in the past month. The total score was calculated using the formula specified by Golombok and Rust (1993). The sum of the female-typical items was subtracted from the sum of the male-typical items; the result of this subtraction was then transformed into a pseudo-T scale through multiplying it by 1.1 and adding 48.25. Higher standardised scores indicated more male-typical behaviour. A 'gender-typed play behaviour' variable was created by reversing the standardised scores for girls, so that higher values would indicate more gender-typical play behaviours for children of both sexes.

In the pilot stage, the feminine items showed good internal consistency in the UK, Macedonian and Egyptian versions of the questionnaire (Cronbach's alpha between .87 and .93). However, in the Polish and Albanian versions of the questionnaire, internal consistency of this sub-scale was questionable (.56 and .64, respectively). In these two samples, some items showed low correlations or correlated negatively with the rest of the scale. In Poland, such items included 'Dolls, doll's clothes or doll's carriage' ( $r = -.05$ ), 'Avoids taking risks' ( $r = .07$ ), and 'Dressing up in girlish clothes' ( $r = .03$ ); in the Albanian sample it was one item: 'Playing with girls' ( $r = .04$ ). The masculine items showed good internal consistency in the UK and Macedonian versions of the questionnaire (.76 and .70, respectively). In the Polish, Egyptian, and Albanian versions of the questionnaire, internal consistency of this sub-scale was questionable (between .42 and .64). In these samples, some items showed low correlations or correlated negatively with the rest of the scale. In Poland, such items included 'Tool set' ( $r = -.11$ ), 'Likes to explore new surroundings' ( $r = -.07$ ), and 'Shows interest in snakes, spiders or insects' ( $r = .04$ ); in the Albanian questionnaire they included 'Likes to explore new surroundings' ( $r = .02$ ) and 'Shows interest in snakes, spiders or insects' ( $r = .04$ ); in the Egyptian sample they included 'Likes to explore new surroundings' ( $r = -.23$ ) and 'Showing interest in real cars, trains and airplanes' ( $r = -.03$ ). These results could be indicative of the

issues mentioned above; i.e., it is possible that some PSAI items are susceptible to socio-cultural influences, which could result in low item-scale correlations. For instance, in the case of the current study, the item ‘shows interest in snakes, spiders or insects’ might not be appropriate as an indicator of ‘masculine’ behaviour in Poland, as attending exhibitions devoted to the lives of insects and spiders is often a part of class curricula in Polish schools, which might promote such interests in both boys and girls. In addition, in more egalitarian societies girls might be becoming as interested in spiders and snakes as boys, as widely-assumed fear of such animals in girls have been linked to women’s traditional gender roles (e.g., Dillon et al., 1985; Tucker & Bond, 1997). On the other hand, the item ‘likes to explore new surroundings’ might not be as good of an indicator of ‘masculine’ behaviour in cultural contexts where children are encouraged to explore their local environments as compared to countries where children’s independent mobility is discouraged and seen as dangerous. For instance, in the UK, where parents tend to be concerned regarding children’s outdoor exploration (e.g., Shaw et al., 2015), girls are given less freedom than boys to independently explore their surroundings (e.g., Brown et al., 2008). In contrast, in Poland, where children’s independent mobility is more commonly accepted, similar numbers of boys and girls appear to engage in activities outside (e.g., Caroli et al., 2011; Janik, 2021). Nonetheless, even if some of the issues with the internal consistency of the PSAI found in the pilot could be explained by potential between-culture differences, there was also a possibility that they were a result of chance due to small sample size; or that they stemmed from certain characteristics of the sample (e.g., Polish participants in the pilot seemed highly liberal as compared to the general population). Therefore, it was decided that the measure would be preserved in its original form and any further decision would be taken after collecting data in the main study.

In the main study, the feminine items showed good internal consistency in all the samples (Cronbach’s alpha between .70 and .84). The masculine items showed good internal consistency in the UK, North Macedonia, and Egypt (between .72 and .77). In the Polish sample, however, the subscale’s internal consistency could be considered questionable (.65). Nonetheless, as all the items showed positive item-total correlations ( $r > .20$ ), it was decided that no scale modifications would be needed.

***Children’s Toy Preferences.*** Children’s toy preferences were assessed with two questions. Parents were asked to list their child’s three favourite toys; they were also asked to think about the last time they had observed their child playing with toys and provide names of up to three toys that they remembered the child playing with. The first question was previously used in the study by Spencer et al. (2021) and appeared to be a valid measure of children’s toy preferences.

It is possible, however, that parents' estimates of what could be their child's favourite toy might be affected by their own preferences and beliefs concerning their child's play (e.g., a parent could list the toys that they think their child should favour). Therefore, the second question was included in the study as it was believed that asking parents about an actual event that happened might produce more objective answers.

As in the case of Real-Life Toy Choices, the aim of the pilot was to check whether these two open-ended questions would not yield high non-response rates and whether participants would provide sufficiently specific answers to these questions. The pilot did not identify any problems. In all the groups, all participants listed three toys when answering both questions and provided enough detail when describing these toys. Those participants who were asked to give feedback, did not report any issues concerning this measure.

In the main study, participants' responses were coded to reflect the extent to which each toy is gender-typed. The coding was performed using the same procedure and the same scores described for Real-Life Toy Choices. To shortly summarise, the toys and activities listed by participants were assigned gender ratings based on the categories they belonged to. These gender ratings ranged between 1.00 (*Very masculine*) and 7.00 (*Very feminine*). An average gender score was calculated for the three toys listed as the child's favourite as well as for the three toys that the child was observed playing with (with higher scores indicating more feminine/less masculine toy preferences). The association between the two scores was very high in all the samples and ranged between  $r = .63$  and  $.75$ . Therefore, it was decided that the mean of the two scores would be used in subsequent analyses. A 'gender-typed toy preferences' variable was created by reversing the mean score for boys, so that higher values would indicate more gender-typical toy preferences for children of both sexes.

**Demographic Questionnaire.** At the end of the study, participants were asked questions about demographic characteristics of their family. The demographic questionnaire included questions about: parents' ages, marital status, occupational status, level of education, ethnic background, gender composition of parenting couples, family structure (e.g., whether the child lives with both parents or only one), and other caregivers.

**Table 5**

*Overview of all the Measures Included in the Final Version of the Questionnaire in the Main Study*

Variable	Instrument	Source	Items	Scale/Coding	Scoring system	Range/Interpretation
<b><i>Social attitudes</i></b>	The Social Attitudes Questionnaire (SAQ)	Bell et al. (2018)	21 social and political issues	Participants asked to indicate their feelings towards each issue on a 5-point scale ranging from 'Very negative' to 'Very positive'	Averaging the score for all items after reverse-coding appropriate items	1 = Conservative attitudes 5 = Liberal attitudes
<b>Attitudes concerning gender-typed play &amp; Attitudes concerning cross-gender play</b>	Two subscales of the Child Gender Socialization Scale (CGS): Toys and Activities Stereotyped for Boys, Toys and Activities Stereotyped for Girls	Blakemore and Hill (2008)	15 toys and activities	Participants asked to indicate their feelings towards their child engaging with each toy/activity on a 7-point scale ranging from 'Very negative' to 'Very positive'	Averaging the scores for the two sub-scales; the first variable consisted of the Toys and Activities Stereotyped for Boys score for parents of boys and of the Toys and Activities Stereotyped for Girls score for parents of girls; in the latter, the inverse pattern was used	1 = Very negative attitudes 7 = Very positive attitudes
<b>Disapproval of other gender characteristics</b>	A subscale of the Child Gender Socialization Scale (CGS): Disapproval of Other Gender Characteristics	Blakemore and Hill (2008)	2 statements concerning child's engagement in cross-gender behaviours	Participants asked to indicate their agreement with each statement on a 7-point scale ranging from 'Agree strongly' to 'Disagree strongly'	Averaging the score for the two items	1 = Lack of disapproval 7 = Very strong disapproval



Variable	Instrument	Source	Items	Scale/Coding	Scoring system	Interpretation
<b>Gender-role attitudes</b>	The Questionnaire on Normative Gender Role Attitudes (NGRO)	Athenstaedt (2000)	29 descriptive and prescriptive statements referring to men's and women's suitability for different tasks, roles, and responsibilities	Participants asked to indicate their agreements with each statement on a 7-point scale ranging from 'Strongly disagree' to 'Strongly agree'	Averaging the score for all items after reverse-coding appropriate items	1 = Egalitarian gender-role attitudes 7 = Non-egalitarian gender-role attitudes
<b>Hypothetical gender-typed purchases &amp; Hypothetical cross-gender purchases</b>	Measure created for the purpose of this research	<i>Pilot 1: Gender Ratings of Toys</i>	8 pictures of feminine toys, 8 pictures of masculine toys, 8 pictures of neutral toys (added as fillers)	Participants asked to indicate how likely they would be to buy each toy on a 6-point scale ranging from 'Very unlikely' to 'Very likely'	Averaging the scores for the two gender categories; the first variable consisted of the 'masculine purchases' score for parents of boys and of 'feminine purchases' score for parents of girls; in the latter, the inverse pattern was used	1 = Low likelihood of purchases 6 = High likelihood of purchases
<b>Gender-typing of real-life toy choices</b>	Measure created for the purpose of this research	Coding based on <i>Toy Study</i>	5 open questions concerning participants' past toy purchases in different real-life situations	Each of the five toys listed by participants was assigned a score of between 1.00 ('Very masculine') and 7.00 ('Very feminine')	Averaging the scores for all five toys; the final score consisted of the original values for parents of girls and of reversed values for parents of boys	≈ 1 = Low levels of gender-typing in real-life toy choices ≈ 7 = High levels of gender-typing in real-life toy choices*

Variable	Instrument	Source	Items	Scale/Coding	Scoring system	Interpretation
<b>Children's gender-typed play behaviour</b>	The Pre-School Activities Inventory (PSAI)	Golombok and Rust (1993)	24 items describing 3 aspects of children's behaviour: play with gender-typed toys, engagement in gender-typed play activities, and display of gender-typed behavioural characteristics	Participants asked to indicate how often their child engages in each behaviour using a 5-point scale ranging from 'Never' to 'Very often'	Calculating the total standardised score using the formula specified by Golombok and Rust (1993), with higher values indicating more male-typical behaviour; reversing the standardised scores for girls	Pseudo-t scale: $\approx 50$ = An average level of gender-typed behaviour $>60$ = High levels of gender-typed behaviour $<40$ = Low levels of gender-typed behaviour
<b>Children's gender-typed toy preferences</b>	Measure created for the purpose of this research	One question adopted from Spencer et al. (2021); coding based on <i>Toy Study</i>	2 open questions asking participants about their child's 3 favourite toys and 3 toys that they remembered their child playing with recently	Each of the five toys listed by participants was assigned a score of between 1.00 ('Very masculine') and 7.00 ('Very feminine')	Averaging the scores for all toys listed; the final score consisted of the original values for girls and of reversed values for boys	$\approx 1$ = Low levels of gender-typed toy preferences $\approx 7$ = High levels of gender-typed toy preferences*

*Note.* \* The scores used for coding were based on ratings given to specific toy categories in an independent study; although these scores could have ranged between 1 and 7, the lowest average rating equalled 1.73 and the highest average rating equalled 6.57, hence the use of the approximation symbol.

## Results

### Preliminary Analysis: Differences in Attitudes of Parents from the Four National Samples

Data from the study were analysed using IBM SPSS Statistics 28. Before testing the main hypotheses, differences in attitudes of parents from the four national samples were examined in order to check whether these would confirm the assumptions made regarding the social climate in each country. A one-way ANOVA with national background as an independent variable with four levels (the UK vs. Poland vs. North Macedonia vs. Egypt) was conducted for four of the five attitude measures included in the study: gender-role attitudes and the three facets of attitudes towards gender-related behaviours in children (attitudes concerning gender-typed play, attitudes concerning cross-gender play, disapproval of other gender characteristics). For social attitudes, a one-way ANOVA with three levels was conducted (the UK vs. Poland vs. North Macedonia), as the measure was not included in the Egyptian part of the study. In these and all the following analyses, all tests were two-tailed, and alpha was set at .05. For any significant between-group differences, effect sizes ( $d$ ; Cohen, 1988) are reported. As in other behavioural studies,  $d$  values of 0.8 or greater are considered large, those of about 0.5 are considered moderate, those of about 0.2 are considered small and those below 0.2 are considered negligible (Cohen, 1988). After Sawilowsky (2009), however, this study will also distinguish between large and very large effects ( $d$  values of 1.2 and above).

The analysis revealed a significant effect of cultural background on all the dependant variables. The results are presented in Table 6.

**Table 6**

*Means, Standard Deviations, and One-Way Analyses of Variance for all the Attitude Measures Included in the Study*

	UK ( <i>N</i> = 721)	Poland ( <i>N</i> = 553)	North Macedonia ( <i>N</i> = 267)	Egypt ( <i>N</i> = 196)		
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>F</i>	<i>df</i>
Social attitudes	3.77 <sub>a</sub> (.40)	3.56 <sub>b</sub> (.43)	3.38 <sub>c</sub> (.43)	N/A	94.53***	1513
Gender-role attitudes	5.85 <sub>a</sub> (.62)	5.05 <sub>b</sub> (.75)	5.27 <sub>c</sub> (.75)	4.55 <sub>d</sub> (.82)	236.61***	1727

Attitudes concerning gender-typed play	5.64 <sub>a</sub> (.99)	5.81 <sub>b</sub> (.84)	5.77 <sub>ab</sub> (.92)	6.00 <sub>b</sub> (1.15)	8.55***	1719
Attitudes concerning cross-gender play	5.70 <sub>a</sub> (.97)	5.30 <sub>b</sub> (1.04)	4.94 <sub>c</sub> (1.20)	4.91 <sub>c</sub> (1.33)	48.30***	1714
Disapproval of other gender characteristics	1.89 <sub>a</sub> (1.20)	3.04 <sub>b</sub> (1.52)	3.56 <sub>c</sub> (1.74)	4.74 <sub>d</sub> (1.52)	245.88***	1725

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*Note.* \*\*\*  $p < .001$ ; Means that do not share the same subscript letter differed significantly at the  $p < .001$  level.

When it comes to social attitudes, the Bonferroni post hoc test revealed that parents in the UK held more liberal views regarding social issues than parents in Poland ( $d = 0.48$ ) and North Macedonia ( $d = 0.95$ ), and that parents in Poland held more liberal views than parents in North Macedonia ( $d = 0.40$ ). As to gender-role attitudes, parents in the UK reported more egalitarian beliefs than parents in the other three countries: Poland ( $d = 1.16$ ), North Macedonia ( $d = 0.86$ ), and Egypt ( $d = 1.79$ ). Further, parents in North Macedonia reported more egalitarian beliefs than parents in Poland ( $d = 0.28$ ) and Egypt ( $d = 0.90$ ), while parents in Poland reported more egalitarian beliefs than parents in Egypt ( $d = 0.64$ ). The Bonferroni post hoc test conducted for attitudes concerning gender-typed play showed that parents in the UK had less positive attitudes concerning such play than parents in Poland ( $d = 0.19$ ) and Egypt ( $d = 0.34$ ), but not in North Macedonia ( $d = 0.14$ ). Parents in the remaining three countries did not differ significantly regarding their attitudes concerning gender-typed play ( $p > .05$ ). Regarding attitudes concerning cross-gender play, it was found that parents in the UK held more positive attitudes towards such play than parents in the other three countries: Poland ( $d = 0.40$ ), North Macedonia ( $d = 0.70$ ), and Egypt ( $d = 0.68$ ). Parents in Poland held more positive attitudes towards cross-gender play than parents in North Macedonia ( $d = 0.32$ ) and Egypt ( $d = 0.33$ ), whereas parents in North Macedonia and Egypt did not differ significantly ( $d = 0.02$ ). Finally, the Bonferroni post hoc test conducted for disapproval of other gender characteristics showed that parents in the UK were more positive towards children displaying other gender characteristics than parents in all the other samples: Poland ( $d = 0.84$ ), North Macedonia ( $d = 1.12$ ), and Egypt ( $d = 2.09$ ). Parents in Poland were more positive towards children displaying other gender characteristics than parents in North Macedonia ( $d = 0.32$ ) and Egypt ( $d = 1.13$ ), whereas parents in North Macedonia were more positive towards children displaying other gender characteristics than parents in Egypt ( $d = 0.72$ ).

## **Parental Attitudes as Predictors of Parental Toy Choices**

A series of multiple regression analyses were conducted to examine whether parental attitudes were significant predictors of both hypothetical and real-life toy choices in the four national samples. In all the samples, separate analyses were conducted for the three behavioural outcome variables, i.e., hypothetical gender-typed toy choices, hypothetical cross-gender toy choices, and gender-typing of real-life toy choices. Each of these analyses tested a model with all the attitudinal measures presented to participants, i.e., attitudes towards gender roles in adults, attitudes towards gender-related behaviours in children (consisting of three subscales: attitudes concerning gender-typed play, attitudes concerning cross-gender play, disapproval of other gender characteristics), and social attitudes (from all the samples apart from the Egyptian one). Therefore, for the UK, Polish, and Macedonian samples, the models tested included five predictors, and for the Egyptian sample, they included four predictors. It was decided that all attitudinal variables would be tested together in order to examine the relative contribution of each one of them. In addition, since it has been suggested that toy choices of parents with older children might be impacted by their children's own gender-typed preferences (which could potentially reduce the effect of attitudinal variables), and because toys designed for older children tend to be more gender-typed (which could increase gender-typing in parental toy choices), it was decided that all the regression models would involve an additional step where the child's age would be included as an independent predictor to test for any confounding effects. All the analyses were preceded with tests of regression assumptions (linearity, homoscedasticity, independent and normally distributed errors, no perfect multicollinearity; Berry, 1993); if met, these were not discussed. In these and all of the following regression analyses, the effect sizes for each model in the form of  $R^2$  are reported. As in other behavioural studies,  $R^2$  values of 0.26 or greater are considered substantial, values between 0.13 to 0.25 are considered moderate, those between 0.02 and 0.12 are considered low, and those below 0.02 are considered negligible (Cohen, 1988).

### **UK**

Correlations for all the study measures in the British sample are presented in Table 7. The regression analysis conducted for hypothetical gender-typed toy choices of British parents found two attitude measures to be significant predictors of such toy choices: attitudes concerning gender-typed play and attitudes concerning cross-gender play (see Table 11). Specifically, parents with more positive attitudes concerning gender-typed play were more

likely to indicate that they would buy gender-typed toys for their children. In contrast, parents with more positive attitudes concerning cross-gender play were less likely to indicate that they would buy gender-typed toys. However, the explanatory power of the model was low. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical gender-typed toy choices.

The regression analysis conducted for hypothetical cross-gender toy choices found three attitude measures to be significant predictors of such choices: social attitudes, attitudes concerning children's cross-gender play, and disapproval of other gender characteristics (see Table 11). More liberal parents and parents with more positive attitudes concerning cross-gender play were more likely to indicate that they would buy cross-gender toys for their children. On the other hand, parents who disapproved of children having other gender characteristics were less likely to indicate that they would buy cross-gender toys. The explanatory power of the overall model was low. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical cross-gender toy choices.

When it comes to gender-typing of real-life toy choices, the analysis found one attitude measure to be a significant predictor: attitudes concerning gender-typed play (see Table 11). Parents with more positive attitudes towards gender-typed play were more likely to engage in gender-typing when choosing toys for their children in various real-life situations. Nonetheless, the explanatory power of the model was low-to-negligible. The pattern of results was not affected by including child's age as a predictor in the analysis, but child's age was found to be a significant predictor of real-life toy choices. Parents with older children were more likely to engage in gender-typing when choosing toys.

**Table 7**

*Correlation Coefficients for the Measures of Parental Attitudes and Toy Choices in the UK*

	2.	3.	4.	5.	6.	7.	8.
1. Social attitudes	.59***	-.09*	.10**	-.24***	-.15***	.20***	-.10**
2. Gender-role attitudes		-.13***	.06	-.26***	-.15***	.19***	-.10**
3. Attitudes concerning gender-typed play			.24***	-.10*	.21***	-.05	.10**

4. Attitudes concerning cross-gender play	-.10**	-.11**	.09*	-.02
5. Disapproval of other gender characteristics		.03	-.20***	.09*
6. Hypothetical gender-typed toy choices			.22***	.01
7. Hypothetical cross-gender toy choices				-.16***
8. Gender-typing of real-life toy choices				

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*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### ***Poland***

Correlations for all the study measures in the Polish sample are presented in Table 8. The regression analysis conducted for hypothetical gender-typed toy choices of Polish parents found three of the attitude measures to be significant predictors of such choices: social attitudes, attitudes concerning children's gender-typed play, and attitudes concerning children's cross-gender play (see Table 11). Specifically, more liberal parents and parents with more positive attitudes concerning cross-gender play were less likely to indicate that they would buy gender-typed toys for their children. In contrast, positive attitudes concerning gender-typed play were a positive predictor of hypothetical gender-typed purchases. The explanatory power of the model was substantial. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical gender-typed toy choices.

The regression analysis conducted for hypothetical cross-gender toy choices found two of the attitude measures to be significant predictors of such choices: gender-role attitudes and attitudes concerning children's cross-gender play (see Table 11). Parents with more egalitarian gender-role attitudes and parents with more positive attitudes concerning cross-gender play were more likely to indicate that they would buy cross-gender toys for their children. As previously, the explanatory power of the model was substantial. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical cross-gender toy choices.

When it comes to gender-typing of real-life toy choices, the analysis found one attitude measure to be a significant predictor: gender-role attitudes (see Table 11). Parents with more egalitarian gender-role attitudes were less likely to engage in gender-typing when choosing toys for their children in various real-life situations. The explanatory power of this model was, however, low. The pattern of results was not affected by including child's age as a predictor in the analysis, but child's age was found to be a significant predictor of real-life toy choices. Parents with older children were more likely to engage in gender-typing when choosing toys.

**Table 8**

*Correlation Coefficients for the Measures of Parental Attitudes and Toy Choices in Poland*

	2.	3.	4.	5.	6.	7.	8.
1. Social attitudes	.66***	.03	.42***	-.21***	-.25***	.40***	-.19***
2. Gender-role attitudes		.00	.43***	-.19***	-.24***	.44***	-.23***
3. Attitudes concerning gender-typed play			.35***	-.02	.49***	.20***	-.01
4. Attitudes concerning cross-gender play				-.09*	-.06	.56***	-.11**
5. Disapproval of other gender characteristics					.02	-.14**	.06
6. Hypothetical gender-typed toy choices						.12**	.01
7. Hypothetical cross-gender toy choices							-.29***
8. Gender-typing of real-life toy choices							

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$



## ***North Macedonia***

Correlations for all the study measures in the Macedonian sample are presented in Table 9. The regression analysis conducted for hypothetical gender-typed toy choices of Macedonian parents found one attitude measure—attitudes concerning gender-typed play—to be a significant predictor of such toy choices (see Table 12). Specifically, parents with more positive attitudes concerning gender-typed play were more likely to indicate that they would buy gender-typed toys for their children. The explanatory power of this model was, however, low. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical gender-typed toy choices.

The regression analysis conducted for hypothetical cross-gender toy choices found two attitude measures to be significant predictors of such choices: attitudes concerning children's cross-gender play and disapproval of other gender characteristics (see Table 12). Parents with more positive attitudes concerning cross-gender play were more likely to indicate that they would buy cross-gender toys for their children. In contrast, parents who disapproved of children having other gender characteristics were less likely to indicate that they would buy cross-gender toys. The explanatory power of this model was substantial. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical cross-gender toy choices.

When it comes to gender-typing of real-life toy choices, the analysis found one attitude measure to be a significant predictor: disapproval of other gender characteristics (see Table 11). Parents who were more negative towards children displaying other gender characteristics were more likely to engage in gender-typing when choosing toys for their children in various real-life situations. However, the explanatory power of this model was low. The pattern of results was not affected by including child's age as a predictor in the analysis, but child's age was found to be a significant predictor of real-life toy choices. Parents with older children were more likely to engage in gender-typing when choosing toys.

**Table 9**

*Correlation Coefficients for the Measures of Parental Attitudes and Toy Choices in North Macedonia*

	2.	3.	4.	5.	6.	7.	8.
1. Social attitudes	.62***	-.12*	.29***	-.30***	-.06	.31***	-.21***
2. Gender-role attitudes		-.01	.41***	-.27***	-.05	.33***	-.21***
3. Attitudes concerning gender-typed play			.36***	-.08	.28***	.07	.06
4. Attitudes concerning cross-gender play				-.30***	-.08	.51***	-.16**
5. Disapproval of other gender characteristics					-.05	-.35***	.20***
6. Hypothetical gender-typed toy choices						.12	.04
7. Hypothetical cross-gender toy choices							-.36***
8. Gender-typing of real-life toy choices							

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### ***Egypt***

Correlations for all the study measures in the Egyptian sample are presented in Table 10. The regression analysis conducted for hypothetical gender-typed toy choices of Egyptian found that none of the attitude measures were significant predictors of such choices (see Table 11). This pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical gender-typed toy choices.

The regression analysis conducted for hypothetical cross-gender toy choices found one attitude measure—disapproval of other gender characteristics—to be a significant predictor of such toy choices (see Table 11). Parents who disapproved of children having other gender

characteristics were less likely to indicate that they would buy cross-gender toys for their children. The explanatory power of this model was moderate. The pattern of results was not affected by including child's age as a predictor in the analysis and age was a non-significant predictor of hypothetical cross-gender toy choices.

When it comes to gender-typing of real-life toy choices, the analysis found one attitude measure to be a significant predictor: disapproval of other gender characteristics (see Table 11). Parents who were more negative towards children displaying other gender characteristics were more likely to engage in gender-typing when choosing toys for their children in various real-life situations. The explanatory power of this model was, however, low. The pattern of results was not affected by including child's age as a predictor in the analysis, but child's age was found to be a significant predictor of real-life toy choices. Parents with older children were more likely to engage in gender-typing when choosing toys.

**Table 10**

*Correlation Coefficients for the Measures of Parental Attitudes and Toy Choices in Egypt*

	2.	3.	4.	5.	6.	7.
1. Gender-role attitudes	-.20**	.13	-.48***	-.10	.15*	-.10
2. Attitudes concerning gender-typed play		.47***	.05	.10	.09	.12
3. Attitudes concerning cross-gender play			-.28***	-.01	.27***	-.07
4. Disapproval of other gender characteristics				.07	-.44***	.22**
5. Hypothetical gender-typed toy choices					.16*	.07
6. Hypothetical cross-gender toy choices						-.08
7. Gender-typing of real-life toy choices						

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 11***Multiple Regressions for Attitude Measures and Age Predicting Parental Toy Choices in the UK, Poland, North Macedonia, and Egypt*

		UK			Poland			North Macedonia			Egypt		
		<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
<b>Hypothetical gender-typed toy choices</b>		$R^2 = .09$			$R^2 = .33$			$R^2 = .09$			$R^2 = .02$		
<i>Step 1</i>	Constant	4.27	.47		3.24	.43		2.51	.56		3.84	.51	
	Social attitudes	-0.15	.10	-0.07	-0.39	.12	-0.16***	0.05	.14	0.03			
	Gender-role attitudes	-0.10	.07	-0.07	-0.11	.07	-0.08	-0.10	.08	-0.10	-0.04	.07	-0.06
	Attitudes concerning gender-typed play	0.22	.04	0.24***	0.67	.05	0.54***	0.21	.05	0.28***	0.06	.05	0.12
	Attitudes concerning cross-gender play	-0.14	.04	-0.15***	-0.14	.04	-0.14**	0.03	.05	0.05	-0.03	.04	-0.06
	Disapproval of other gender characteristics	0.01	.03	0.01	-0.02	.03	-0.03	0.00	.03	0.00	0.00	.04	0.00
		$R^2 = .09$			$R^2 = .33$			$R^2 = .10$			$R^2 = .02$		
<i>Step 2</i>	Constant	4.37	.48		3.33	.44		2.31	.57		3.75	.53	
	Social attitudes	-0.15	.10	-0.07	-0.39	.12	-0.16***	0.08	.14	0.05			
	Gender-role attitudes	-0.10	.07	-0.07	-0.11	.07	-0.08	-0.11	.08	-0.11	-0.04	.07	-0.05
	Attitudes concerning gender-typed play	0.22	.04	0.24***	0.68	.05	0.54***	0.20	.05	0.27***	0.06	.05	0.10
	Attitudes concerning cross-gender play	-0.14	.04	-0.15***	-0.14	.04	-0.14**	0.03	.05	0.05	-0.02	.04	-0.05
	Disapproval of other gender characteristics	0.01	.03	0.01	-0.02	.03	-0.03	0.00	.03	-0.01	0.00	.04	0.01
	Child's age	0.00	.00	-0.03	-0.01	.00	-0.05	0.01	.00	0.11	0.00	.01	0.05

		UK			Poland			North Macedonia			Egypt		
		<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
<b>Hypothetical cross-gender toy choices</b>		$R^2 = .08$			$R^2 = .37$			$R^2 = .31$			$R^2 = .22$		
<i>Step 1</i>	Constant	1.54	.58		-2.55	.48		0.17	.73		3.69	.84	
	Social attitudes	0.27	.13	0.10*	0.22	.13	0.08	0.26	.18	0.10			
	Gender-role attitudes	0.13	.08	0.07	0.32	.08	0.20***	0.04	.11	0.03	-0.08	.11	-0.06
	Attitudes concerning gender-typed play	-0.07	.04	-0.07	0.08	.05	0.05	-0.11	.07	-0.09	0.04	.08	0.04
	Attitudes concerning cross-gender play	0.09	.04	0.08*	0.46	.05	0.41***	0.39	.06	0.43***	0.12	.07	0.14
	Disapproval of other gender characteristics	-0.14	.04	-0.16***	-0.04	.03	-0.05	-0.11	.04	-0.18**	-0.32	.06	-0.43***
		$R^2 = .08$			$R^2 = .37$			$R^2 = .32$			$R^2 = .22$		
<i>Step 2</i>	Constant	1.63	.60		-2.53	.47		-0.01	.74		3.47	.87	
	Social attitudes	0.27	.13	0.10*	0.22	.13	0.08	0.29	.18	0.12			
	Gender-role attitudes	0.13	.08	0.07	0.32	.08	0.20***	0.03	.11	0.02	-0.07	.11	-0.05
	Attitudes concerning gender-typed play	-0.08	.04	-0.07	0.08	.05	0.06	-0.11	.07	-0.10	0.02	.08	0.02
	Attitudes concerning cross-gender play	0.09	.04	0.08*	0.46	.05	0.41***	0.39	.06	0.43***	0.12	.07	0.14
	Disapproval of other gender characteristics	-0.15	.04	-0.16***	-0.04	.03	-0.05	-0.11	.04	-0.18**	-0.32	.06	-0.42***
	Child's age	0.00	.00	-0.03	0.00	.00	-0.01	0.01	.01	0.06	0.01	.01	0.07

		UK			Poland			North Macedonia			Egypt		
		<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
<b>Gender-typing of real-life toy choices</b>		$R^2 = .03$			$R^2 = .05$			$R^2 = .08$			$R^2 = .06$		
<i>Step 1</i>	Constant	4.87	.23		5.15	.24		4.58	.36		3.70	.45	
	Social attitudes	-0.06	.05	-0.05	-0.07	.07	-0.07	-0.09	.09	-0.09			
	Gender-role attitudes	-0.05	.03	-0.07	-0.11	.04	-0.17**	-0.03	.05	-0.06	0.02	.06	0.03
	Attitudes concerning gender-typed play	0.05	.02	0.11**	0.00	.03	0.01	0.05	.03	0.09	0.07	.04	0.16
	Attitudes concerning cross-gender play	0.01	.02	0.03	-0.01	.02	-0.01	-0.03	.03	-0.08	-0.04	.04	-0.09
	Disapproval of other gender characteristics	0.02	.02	0.04	0.00	.01	0.01	0.04	.02	0.16*	0.07	.03	0.19*
		$R^2 = .05$			$R^2 = .10$			$R^2 = .11$			$R^2 = .15$		
<i>Step 1</i>	Constant	4.66	.23		4.93	.23		4.39	.36		3.17	.45	
	Social attitudes	-0.06	.05	-0.05	-0.08	.06	-0.07	-0.07	.09	-0.06			
	Gender-role attitudes	-0.05	.03	-0.07	-0.10	.04	-0.16**	-0.05	.05	-0.08	0.06	.06	0.08
	Attitudes concerning gender-typed play	0.05	.02	0.11**	-0.01	.03	-0.01	0.04	.03	0.08	0.04	.04	0.08
	Attitudes concerning cross-gender play	0.01	.02	0.03	-0.01	.02	-0.02	-0.03	.03	-0.08	-0.03	.03	-0.06
	Disapproval of other gender characteristics	0.02	.01	0.06	0.00	.01	0.01	0.04	.02	0.16*	0.08	.03	0.22**
	Child's age	0.01	.00	0.15***	0.01	.00	0.22***	0.01	.00	0.15*	0.02	.00	0.31***

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## *Summary of the Results*

The regression analyses found parents' attitudes to be significant predictors of their hypothetical gender-typed toy choices in three of the four national samples included in the study: the British, Polish, and North Macedonian samples. The proportion of variance explained by the model was high in Poland (33%), but could be considered low in the UK and North Macedonia (9%). There were also some differences between the three samples in terms of the relative contribution of specific attitude measures. Attitudes concerning gender-typed play was the only consistent predictor. In all three countries, parents with more positive attitudes concerning gender-typed play were more likely to indicate that they would buy gender-typed toys for their children. Attitudes concerning cross-gender play significantly predicted hypothetical gender-typed toy choices in the UK and Poland. In these two countries, parents with more positive attitudes concerning cross-gender play were less likely to indicate that they would buy gender-typed toys. Finally, in the Polish sample, social attitudes were also found to be a significant predictor of hypothetical gender-typed toy choices. Specifically, more liberal parents were less likely to indicate that they would buy gender-typed toys for their children. Including child's age in the model did not alter the above patterns of results and age was a non-significant predictor of hypothetical gender-typed toy choices.

When it comes to hypothetical cross-gender toy choices, the regression analyses found parents' attitudes to be significant predictors of such toy choices in all the national samples. The proportion of variance explained by the model was moderate-to-high in Poland, North Macedonia, and Egypt and ranged between 22 and 33 percent; it was, however, low in the UK (8%). There were also some differences between the three samples in terms of the relative contribution of specific attitude measures. Attitudes concerning cross-gender play significantly predicted hypothetical cross-gender toy choices in the UK, Poland, and North Macedonia. In these three countries, parents with more positive attitudes concerning children's cross-gender play were more likely to indicate that they would buy cross-gender toys for their children. On the other hand, disapproval of other gender characteristic was a significant predictor of hypothetical cross-gender toy choices in the UK, North Macedonia, and Egypt. In these countries, parents who disapproved of children having other gender characteristics were less likely to indicate that they would buy cross-gender toys for their children. Social attitudes turned out to be a significant predictor of hypothetical cross-gender toy choices in the UK. There, more liberal parents were more likely to indicate that they would buy cross-gender toys for their children. Finally, gender-role attitudes significantly predicted hypothetical cross-

gender toy choices in the Polish sample. Polish parents with more egalitarian gender-role attitudes were more likely to indicate that they would buy cross-gender toys for their children. Including child's age in the model did not alter the above patterns of results and age was a non-significant predictor of hypothetical cross-gender toy choices.

Parents' attitudes were also found to be significant predictors of parents' gender-typing of real-life toy choices in all four countries. However, the proportion of variance explained by the model was low for all the samples and ranged between three and eight percent. There were differences between the samples concerning the contribution of specific parental attitude measures. Disapproval of other gender characteristics significantly predicted gender-typing in real-life toy choices in North Macedonia and Egypt. In these two countries, parents who were more negative towards children displaying other gender characteristics were more likely to engage in gender-typing when choosing toys for their children in various real-life situations. Among parents in the UK, attitudes concerning gender-typed play were a significant predictor of parents' gender-typing of real-life toy choices. Parents with more positive attitudes towards gender-typed play were more likely to engage in gender-typing when choosing toys for their children. Finally, in Poland, gender-role attitudes significantly predicted gender-typing of real-life toy choices. Parents with more egalitarian gender-role attitudes were less likely to engage in gender-typing when choosing toys for their children. Including child's age in the model did not alter the above patterns of results, but child's age was found to be a significant predictor of real-life toy choices (these effects were moderate-to-small). Parents with older children were more likely to engage in gender-typing when choosing toys.

### **National Context as the Moderator of the Relationship between Parental Attitudes and Parental Toy Choices**

The above analyses suggest that although parental attitudes are overall predictive of parental toy choices their effects seem to vary between countries. For instance, different measures of attitudes seem to be more influential when explaining variability in parental toy choices in different countries. In addition, the proportion of variance explained by the tested model appears to vary as well; for instance, parental attitudes explained 33 percent of variance in parents' hypothetical gender-typed toy choices in Poland, but only nine percent in both the UK and North Macedonia, and two percent in Egypt (where the model was statistically insignificant). This between-group variability could be potentially attributed to differences in the magnitude of individual relationships between specific attitude and toy choices variables. Therefore, it was decided that the effects of national context on the relationships between specific attitude and toy choices variables would be investigated in further analyses. A series of



moderation analyses (with national context as a moderator) were conducted for those pairs of attitude and toy choices measures that showed significant associations at least in one of the countries in the previous analyses. Overall, 10 moderation models were tested. Three sets of dummy variables, including three variables each, were created for the national context to allow for comparisons between all the countries included in the study. The first set adopted the UK as the comparison group, the second one adopted Poland, and the third one adopted North Macedonia. The analyses were performed using the PROCESS v.4.0 macro for SPSS (Model 1; Hayes 2013).

When it comes to hypothetical gender-typed toy choices, the relationships with the following variables were investigated: social attitudes, attitudes concerning gender-typed play, and attitudes concerning cross-gender play. The analyses showed that national context influenced the relationship between social attitudes and hypothetical gender-typed toy choices. The interaction effect was significant for the UK vs. Poland and Poland vs. North Macedonia comparisons (see Table 12). Simple slopes indicated that the negative association between social attitudes and hypothetical gender-typed toy choices was significantly greater in Poland,  $b = -0.60$ ,  $t = -6.61$ ,  $p < .001$ , than in both the UK,  $b = -0.33$ ,  $t = -3.86$ ,  $p < .001$ , and North Macedonia,  $b = -0.10$ ,  $t = -0.72$ ,  $p > .05$ . The analyses also found that national context was a moderator of the relationship between attitudes concerning gender-typed play and hypothetical gender-typed toy choices. The interaction was significant for the UK vs. Poland, UK vs. Egypt, Poland vs. North Macedonia, Poland vs. Egypt, and Egypt vs. North Macedonia comparisons (see Table 13). Simple slopes indicated that the positive association between the two variables was significantly greater in Poland,  $b = 0.62$ ,  $t = 14.05$ ,  $p < .001$ , than in the UK,  $b = 0.19$ ,  $t = 6.08$ ,  $p < .001$ , North Macedonia,  $b = 0.22$ ,  $t = 3.84$ ,  $p < .001$ , and Egypt,  $b = 0.05$ ,  $t = 1.02$ ,  $p > .05$ . Further, the association between attitudes concerning gender-typed play and hypothetical gender-typed toy choices was significantly greater in both the UK and North Macedonia than in Egypt. The moderation analyses also showed that national context influenced the relationship between attitudes concerning cross-gender play and hypothetical gender-typed toy choices. The interaction effect was significant for the UK vs. North Macedonia and UK vs. Egypt comparisons (see Table 14). Simple slopes indicated that the negative association between the two variables was significantly greater in the UK,  $b = -0.10$ ,  $t = -2.92$ ,  $p < .01$ , than in Egypt,  $b = -0.01$ ,  $t = -0.10$ ,  $p > .05$ . In North Macedonia, the effect, although insignificant, indicated the relationship in the opposite direction,  $b = 0.05$ ,  $t = 1.10$ ,  $p > .05$ .

To summarise, the results indicated that social attitudes and attitudes concerning gender-typed play were stronger predictors of hypothetical gender-typed toy choices in Poland than in all the other countries of comparison. In addition, attitudes concerning gender-typed play were

a stronger predictor in both the UK and North Macedonia than in Egypt. Finally, attitudes concerning cross-gender play contributed more to explaining hypothetical gender-typed toy choices in the UK than in North Macedonia and Egypt (but not Poland).

For hypothetical cross-gender toy choices, the relationships with the following variables were investigated: social attitudes, gender-role attitudes, attitudes concerning cross-gender play, and disapproval of other gender characteristics. The analyses showed that national context influenced the relationship between social attitudes and hypothetical cross-gender toy choices. The interaction effect was significant for the UK vs. Poland comparison (see Table 15). Simple slopes indicated that the positive association between social attitudes and hypothetical cross-gender toy choices was significantly greater in Poland,  $b = 1.09$ ,  $t = 10.14$ ,  $p < .001$ , than in the UK,  $b = 0.54$ ,  $t = 5.37$ ,  $p < .001$ . The analyses also found that national context was a moderator of the relationship between gender-role attitudes and hypothetical cross-gender toy choices. The interaction was significant for the UK vs. Poland, Poland vs. North Macedonia, Poland vs. Egypt, and North Macedonia vs. Egypt comparisons (see Table 16). Simple slopes indicated that the positive association between the two variables was significantly greater in Poland,  $b = 0.70$ ,  $t = 11.31$ ,  $p < .001$ , than in the UK,  $b = 0.34$ ,  $t = 5.30$ ,  $p < .001$ , North Macedonia,  $b = 0.47$ ,  $t = 5.33$ ,  $p < .001$ , and Egypt,  $b = 0.21$ ,  $t = 2.28$ ,  $p < .05$ . The association between gender-role attitudes and hypothetical cross-gender toy choices was also significantly greater in North Macedonia than in Egypt. Further, the moderation analyses showed that national context influenced the relationship between attitudes concerning cross-gender play and hypothetical cross-gender toy choices. The interaction effect was significant for the UK vs. Poland, UK vs. North Macedonia, Poland vs. North Macedonia, Poland vs. Egypt, and North Macedonia vs. Egypt comparisons (see Table 17). Simple slopes indicated that the positive association between the two variables was significantly greater in Poland,  $b = 0.63$ ,  $t = 14.66$ ,  $p < .001$ , than in the UK,  $b = 0.10$ ,  $t = 2.61$ ,  $p < .01$ , North Macedonia,  $b = 0.46$ ,  $t = 8.47$ ,  $p < .001$ , and Egypt,  $b = 0.23$ ,  $t = 4.00$ ,  $p < .001$ . In addition, the effect was also stronger in North Macedonia than in both the UK and Egypt. Finally, the analyses showed that national context influenced the relationship between disapproval of other gender characteristics and hypothetical cross-gender toy choices. The interaction effect was significant for the UK vs. Egypt, Poland vs. North Macedonia, and Poland vs. Egypt comparisons (see Table 18). Simple slopes indicated that the negative association between the two variables was significantly greater in Egypt,  $b = -0.33$ ,  $t = -6.39$ ,  $p < .001$ , than in the UK,  $b = -0.19$ ,  $t = -5.51$ ,  $p < .001$ , and Poland,  $b = -0.11$ ,  $t = -3.43$ ,  $p < .001$ . The association was also stronger in North Macedonia,  $b = -0.22$ ,  $t = -6.39$ ,  $p < .001$ , than in Poland.

To summarise, the results indicated that gender-role attitudes and attitudes concerning cross-gender play were stronger predictors of hypothetical cross-gender toy choices in Poland than in all the other countries. In addition, gender-role attitudes and attitudes concerning cross-gender play were also stronger predictors in North Macedonia than both in Egypt and the UK. As to social attitudes, they were better predictors of hypothetical cross-gender toy choices in Poland than in the UK. Finally, disapproval of other gender characteristics contributed more to explaining hypothetical cross-gender toy choices in Egypt than in the UK and Poland (but not North Macedonia). Disapproval of other gender characteristics was also a better predictor in North Macedonia than in Poland.

When it comes to gender-typing of real-life toy choices, the relationships with the following variables were investigated: gender-role attitudes, attitudes concerning gender-typed play, and disapproval of other gender characteristics. The analyses showed that national context influenced the relationship between gender-role attitudes and gender-typing of real-life toy choices. The interaction effect was significant for the UK vs. Poland comparison (see Table 19). Simple slopes indicated that the negative association between gender-role attitudes and gender-typing of real-life toy choices was significantly greater in Poland,  $b = -0.15$ ,  $t = -5.68$ ,  $p < .001$ , than in the UK,  $b = -0.07$ ,  $t = -2.58$ ,  $p < .05$ . Further, the analyses found that national context was a moderator of the relationship between attitudes concerning gender-typed play and gender-typing of real-life toy choices. The interaction was significant for the UK vs. Poland comparison (see Table 20). Simple slopes indicated that in the UK the association between the two variables was significant and positive,  $b = 0.10$ ,  $t = 2.45$ ,  $p < .05$ , whereas in Poland it was negative and non-significant,  $b = -0.01$ ,  $t = -0.15$ ,  $p > .05$ . The moderation analyses also showed that national context influenced the relationship between disapproval of other gender characteristics and gender-typing of real-life toy choices. The interaction effect was significant for the UK vs. Egypt and Poland vs. Egypt comparisons (see Table 21). Simple slopes indicated that the positive association between the two variables was significantly greater in Egypt,  $b = 0.08$ ,  $t = 3.67$ ,  $p < .001$ , than in the UK,  $b = 0.03$ ,  $t = 2.31$ ,  $p < .05$ , and Poland,  $b = 0.02$ ,  $t = 1.54$ ,  $p > .05$ .

To summarise, the results indicated that gender-role attitudes were a stronger predictor of gender-typing of real-life toy-choices in Poland than in the UK. On the other hand, attitudes concerning gender-typed play were a stronger predictor in the UK than in Poland (where the effect was not only non-significant but also in the opposite direction). Finally, disapproval of other gender characteristics contributed more to explaining gender-typing of real-life toy choices in Egypt than in the UK and Poland (but not North Macedonia).

**Table 12**

*Moderation Effects of Cultural Background on the Relationship between Social Attitudes and Hypothetical Gender-Typed Toy Choices of Parents*

	<i><b>B</b></i>	<i><b>SE B</b></i>	<i><b>t</b></i>	<i><b>p</b></i>
<b>UK vs.</b>				
Constant	4.78	.32	14.91	< .001
Social attitudes	-0.33	.08	-3.86	< .001
UK vs. Poland (W1)	1.80	.46	3.93	< .001
UK vs. North Macedonia (W2)	-0.92	.56	-1.65	.10
Social attitudes x W1	-0.28	.12	-2.23	.03
Social attitudes x W2	0.23	.16	1.45	.15
<b>Poland vs.</b>				
Constant	6.59	.33	20.07	< .001
Social attitudes	-0.61	.09	-6.61	< .001
Poland vs. North Macedonia (W3)	-2.73	.56	-4.84	< .001
Social attitudes x W3	0.51	.16	3.12	.002

**Table 13**

*Moderation Effects of Cultural Background on the Relationship between Attitudes Concerning Gender-Typed Play and Hypothetical Gender-Typed Toy Choices of Parents*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	2.46	.18	13.62	< .001
Attitudes concerning gender-typed play	0.19	.03	6.08	< .001
UK vs. Poland (W1)	-1.62	.32	-5.14	< .001
UK vs. North Macedonia (W2)	-0.17	.38	-0.46	.64
UK vs. Egypt (W3)	1.11	.37	3.01	.003
Attitudes concerning gender-typed play x W1	0.42	.05	7.83	< .001
Attitudes concerning gender-typed play x W2	0.03	.06	0.39	.70
Attitudes concerning gender-typed play x W3	-0.14	.06	-2.26	.02
<b>Poland vs.</b>				
Constant	0.85	.26	3.29	.001
Attitudes concerning gender-typed play	0.62	.04	14.05	< .001
Poland vs. North Macedonia (W4)	1.44	.42	3.44	< .001
Poland vs. Egypt (W5)	2.73	.41	6.63	< .001
Attitudes concerning gender-typed play x W4	-0.40	.07	-5.55	< .001
Attitudes concerning gender-typed play x W5	-0.56	.07	-8.21	< .001
<b>North Macedonia vs.</b>				
Constant	2.29	.33	6.92	< .001
Attitudes concerning gender-typed play	0.22	.06	3.84	< .001
North Macedonia vs. Egypt (W6)	1.28	.46	2.78	.01
Attitudes concerning gender-typed play x W6	-0.16	.08	-2.12	.03

**Table 14**

*Moderation Effects of Cultural Background on the Relationship between Attitudes Concerning Cross-Gender Play and Hypothetical Gender-Typed Toy Choices of Parents*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.12	.20	20.84	< .001
Attitudes concerning cross-gender play	-0.10	.03	-2.92	.004
UK vs. Poland (W1)	0.64	.28	2.26	.02
UK vs. North Macedonia (W2)	-0.82	.31	2.63	.01
UK vs. Egypt (W3)	-0.20	.32	-0.64	.52
Attitudes concerning cross-gender play x W1	0.04	.05	0.78	.44
Attitudes concerning cross-gender play x W2	0.15	.06	2.61	.01
Attitudes concerning cross-gender play x W3	0.10	.06	1.60	.11
<b>Poland vs.</b>				
Constant	4.76	.20	23.67	< .001
Attitudes concerning cross-gender play	-0.06	.04	-1.63	.10
Poland vs. North Macedonia (W4)	-1.46	.31	-4.65	< .001
Poland vs. Egypt (W5)	-0.84	.32	-2.63	.01
Attitudes concerning cross-gender play x W4	0.11	.06	1.88	.06
Attitudes concerning cross-gender play x W5	0.06	.06	0.91	.36
<b>North Macedonia vs.</b>				
Constant	3.30	.24	13.75	< .001
Attitudes concerning cross-gender play	0.05	.05	1.10	.27
North Macedonia vs. Egypt (W6)	0.62	.34	1.79	.07
Attitudes concerning cross-gender play x W6	-0.06	.07	-0.84	.40

**Table 15**

*Moderation Effects of Cultural Background on the Relationship between Social Attitudes and Hypothetical Cross-Gender Toy Choices of Parents*

	<i><b>B</b></i>	<i><b>SE B</b></i>	<i><b>t</b></i>	<i><b>p</b></i>
<b>UK vs.</b>				
Constant	1.13	.38	2.96	.003
Social attitudes	0.54	.10	5.37	< .001
UK vs. Poland (W1)	-2.42	.54	-4.45	< .001
UK vs. North Macedonia (W2)	-1.63	.67	-2.44	.01
Social attitudes x W1	0.54	.15	3.71	< .001
Social attitudes x W2	0.24	.19	1.26	.21
<b>Poland vs.</b>				
Constant	-1.29	.39	-3.34	< .001
Social attitudes	1.09	.11	10.14	< .001
Poland vs. North Macedonia (W3)	0.80	.67	1.19	.23
Social attitudes x W3	-0.31	.19	-1.61	.11

**Table 16**

*Moderation Effects of Cultural Background on the Relationship between Gender-Role Attitudes and Hypothetical Cross-Gender Toy Choices of Parents*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	1.17	.38	3.06	.002
Gender-role attitudes	0.34	.06	5.30	< .001
UK vs. Poland (W1)	-2.07	.49	-4.20	< .001
UK vs. North Macedonia (W2)	-1.51	.61	-2.48	.01
UK vs. Egypt (W3)	0.45	.58	0.79	.43
Gender-role attitudes x W1	0.35	.09	3.95	< .001
Gender-role attitudes x W2	0.13	.11	1.20	.23
Gender-role attitudes x W3	-0.13	.11	-1.12	.26
<b>Poland vs.</b>				
Constant	-0.91	.31	-2.89	.004
Gender-role attitudes	0.70	.06	11.31	< .001
Poland vs. North Macedonia (W4)	0.56	.57	0.99	.32
Poland vs. Egypt (W5)	2.53	.54	4.71	< .001
Gender-role attitudes x W4	-0.22	.11	-2.04	.04
Gender-role attitudes x W5	-0.48	.11	-4.27	< .001
<b>North Macedonia vs.</b>				
Constant	-0.34	.47	-0.73	.47
Gender-role attitudes	0.47	.09	5.33	< .001
North Macedonia vs. Egypt (W6)	1.96	.64	3.05	.002
Gender-role attitudes x W6	-0.26	.13	-2.00	.05



**Table 17**

*Moderation Effects of Cultural Background on the Relationship between Attitudes Concerning Cross-Gender Play and Hypothetical Cross-Gender Toy Choices of Parents*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	2.57	.23	11.14	< .001
Attitudes concerning cross-gender play	0.10	.04	2.61	.01
UK vs. Poland (W1)	-3.29	.33	-10.07	< .001
UK vs. North Macedonia (W2)	-2.67	.36	-7.44	< .001
UK vs. Egypt (W3)	-1.09	.37	-2.95	.003
Attitudes concerning cross-gender play x W1	0.52	.06	8.94	< .001
Attitudes concerning cross-gender play x W2	0.35	.07	5.27	< .001
Attitudes concerning cross-gender play x W3	0.12	.07	1.77	.08
<b>Poland vs.</b>				
Constant	-0.72	.23	-3.11	.002
Attitudes concerning cross-gender play	0.63	.04	14.66	< .001
Poland vs. North Macedonia (W4)	0.62	.36	1.71	.09
Poland vs. Egypt (W5)	2.20	.37	5.94	< .001
Attitudes concerning cross-gender play x W4	-0.17	.07	-2.44	.01
Attitudes concerning cross-gender play x W5	-0.40	.07	-5.63	< .001
<b>North Macedonia vs.</b>				
Constant	-0.10	.28	-0.37	.71
Attitudes concerning cross-gender play	0.46	.05	8.48	< .001
North Macedonia vs. Egypt (W6)	1.58	.40	3.96	< .001
Attitudes concerning cross-gender play x W6	-0.23	.08	-2.95	.003

**Table 18**

*Moderation Effects of Cultural Background on the Relationship between Disapproval of Other Gender Characteristics and Hypothetical Cross-Gender Toy Choices of Parents*

	<i><b>B</b></i>	<i><b>SE B</b></i>	<i><b>t</b></i>	<i><b>p</b></i>
<b>UK vs.</b>				
Constant	3.52	.08	46.08	< .001
Disapproval of other gender characteristics	-0.19	.03	-5.51	< .001
UK vs. Poland (W1)	-0.60	.13	-4.65	< .001
UK vs. North Macedonia (W2)	-0.60	.17	-3.48	< .001
UK vs. Egypt (W3)	0.64	.27	2.36	.02
Disapproval of other gender characteristics x W1	0.08	.05	1.77	.08
Disapproval of other gender characteristics x W2	-0.03	.05	-0.55	.59
Disapproval of other gender characteristics x W3	-0.14	.06	-2.31	.02
<b>Poland vs.</b>				
Constant	2.92	.11	27.80	< .001
Disapproval of other gender characteristics	-0.11	.03	-3.43	< .001
Poland vs. North Macedonia (W4)	0.00	.19	0.00	1.00
Poland vs. Egypt (W5)	1.24	.28	4.44	< .001
Disapproval of other gender characteristics x W4	-0.11	.05	-2.20	.03
Disapproval of other gender characteristics x W5	-0.23	.06	-3.73	< .001
<b>North Macedonia vs.</b>				
Constant	2.92	.16	18.70	< .001
Disapproval of other gender characteristics	-0.22	.04	-5.48	< .001
North Macedonia vs. Egypt (W6)	1.24	.30	4.11	< .001
Disapproval of other gender characteristics x W6	-0.12	.07	-1.77	.08

**Table 19**

*Moderation Effects of Cultural Background on the Relationship between Gender-Role Attitudes and Parents' Gender-Typing of Real-Life Toy Choices*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.61	.16	28.58	< .001
Gender-role attitudes	-0.07	.03	-2.56	.01
UK vs. Poland (W1)	0.48	.21	2.39	.02
UK vs. North Macedonia (W2)	0.43	.26	1.68	.09
UK vs. Egypt (W3)	0.08	.25	0.30	.76
Gender-role attitudes x W1	-0.08	.04	-2.06	.04
Gender-role attitudes x W2	-0.06	.04	-1.29	.20
Gender-role attitudes x W3	0.00	.05	0.02	.99
<b>Poland vs.</b>				
Constant	5.09	.13	37.95	< .001
Gender-role attitudes	-0.15	.03	-5.68	< .001
Poland vs. North Macedonia (W4)	-0.05	.24	-0.21	.83
Poland vs. Egypt (W5)	-0.40	.23	-1.73	.08
Gender-role attitudes x W4	0.02	.05	0.40	.69
Gender-role attitudes x W5	0.08	.05	1.62	.10
<b>North Macedonia vs.</b>				
Constant	5.04	.20	25.31	< .001
Gender-role attitudes	-0.13	.04	-3.49	< .001
North Macedonia vs. Egypt (W6)	-0.35	.28	-1.28	.20
Gender-role attitudes x W6	0.06	.06	1.09	.27

**Table 20**

*Moderation Effects of Cultural Background on the Relationship between Attitudes Concerning Gender-Typed Play and Parents' Gender-Typing of Real-Life Toy Choices*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.44	.10	44.05	< .001
Attitudes concerning gender-typed play	0.04	.02	2.45	.01
UK vs. Poland (W1)	-0.40	.21	-1.95	.05
UK vs. North Macedonia (W2)	0.25	.21	1.19	.23
UK vs. Egypt (W3)	0.10	.17	0.45	.65
Attitudes concerning gender-typed play x W1	0.10	.03	2.90	.003
Attitudes concerning gender-typed play x W2	0.07	.04	1.90	.06
Attitudes concerning gender-typed play x W3	0.04	.03	1.33	.18
<b>Poland vs.</b>				
Constant	4.37	.14	31.02	< .001
Attitudes concerning gender-typed play	-0.01	.02	-0.15	.88
Poland vs. North Macedonia (W4)	-0.17	.23	-0.74	.46
Poland vs. Egypt (W5)	-0.32	.23	-1.42	.16
Attitudes concerning gender-typed play x W4	0.03	.04	0.80	.42
Attitudes concerning gender-typed play x W5	0.06	.04	1.57	.12
<b>North Macedonia vs.</b>				
Constant	4.20	.18	22.84	< .001
Attitudes concerning gender-typed play	0.03	.03	0.89	.37
North Macedonia vs. Egypt (W6)	-0.15	.26	-0.60	.55
Attitudes concerning gender-typed play x W6	0.03	.04	0.65	.52

**Table 21**

*Moderation Effects of Cultural Background on the Relationship between Disapproval of Other Gender Characteristics and Parents' Gender-Typing of Real-Life Toy Choices*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.14	.03	128.54	< .001
Disapproval of other gender characteristics	0.03	.02	2.30	.02
UK vs. Poland (W1)	0.15	.05	2.66	.01
UK vs. North Macedonia (W2)	0.03	.07	0.41	.68
UK vs. Egypt (W3)	-0.14	.11	-1.23	.22
Disapproval of other gender characteristics x W1	-0.01	.02	-0.67	.51
Disapproval of other gender characteristics x W2	0.02	.02	0.97	.33
Disapproval of other gender characteristics x W3	0.05	.03	1.81	.07
<b>Poland vs.</b>				
Constant	4.28	.04	96.80	< .001
Disapproval of other gender characteristics	0.02	.01	1.54	.12
Poland vs. North Macedonia (W4)	-0.12	.08	-1.47	.14
Poland vs. Egypt (W5)	-0.29	.12	-2.43	.02
Disapproval of other gender characteristics x W4	0.03	.02	1.62	.10
Disapproval of other gender characteristics x W5	0.06	.03	2.36	.02
<b>North Macedonia vs.</b>				
Constant	4.17	.07	64.01	< .001
Disapproval of other gender characteristics	0.05	.04	3.30	.001
North Macedonia vs. Egypt (W6)	-0.17	.13	-1.34	.18
Disapproval of other gender characteristics x W6	0.03	.03	0.96	.34

## Exploratory Analysis: Differences in Parental Toy Choices across Countries

Although parental attitudes turned out to be predictive of different parental toy choices variables, their predictive power was rather low, especially in the case of hypothetical gender-typed toy choices (with the exception of the Polish sample) and gender-typing of real-life toy choices. This suggests that there are other factors that contribute to parents' decisions regarding toys for their children. These factors could include parent's financial situation and toy costs, gender-typed marketing, children's own toy preferences, and others (e.g., Al Kurdi, 2017; Dinella & Weisgram, 2018; Weisgram & Bruun, 2018). Some of these potential alternative factors could be expected to result in differences in parents' toy choices between the countries included in the study, whereas others could lead to similar levels of gender-typing among parents in all the samples. Regarding parents' financial situation, if parents have limited resources and can provide their children only with a small number of toys, then they could turn their attention to more obvious and popular choices, which would likely be more gender-typed. Therefore, parents in less economically developed countries (such as North Macedonia or Egypt) could potentially engage in more gender-typing when choosing toys than parents in more economically developed countries (such as Poland or the UK). On the other hand, if parents' toy choices are influenced by gender-typed marketing of toys, then these should be more similar across countries, as due to globalisation and technology developments, most parts of the world are likely to be exposed to similar gender-typed products. Taking all of this into consideration, it was decided that between-country differences in parents' toy choices would be investigated in further analyses in order to aid interpretation of the findings reported in the previous section (as well as for informative purposes). A one-way ANOVA with national background as an independent variable with four levels (the UK vs. Poland vs. North Macedonia vs. Egypt) was conducted for the three measures of parental toy choices: hypothetical gender-typed toy choices, hypothetical cross-gender toy choices, and gender-typing of real-life toy choices. These analyses revealed a significant effect of cultural background on all the dependant variables. The results are presented in Table 22.

When it comes to hypothetical gender-typed toy choices, the Bonferroni post hoc test revealed that parents in Poland were more likely to indicate that they would buy gender-typed toys for their child than parents in all the other national samples: the UK ( $d = 0.91$ ), North Macedonia ( $d = 0.99$ ), and Egypt ( $d = 0.62$ ); and that parents in Egypt were more likely to indicate that they would buy such toys than parents in the UK ( $d = 0.45$ ) and North Macedonia ( $d = 0.53$ ). Parents in the UK and North Macedonia did not differ in terms of hypothetical gender-typed toy choices ( $p > .05$ ). As to hypothetical cross-gender toy choices, parents in the

UK were more likely to indicate that they would buy cross-gender toys for their child than parents in the other three countries: Poland ( $d = 0.50$ ), North Macedonia ( $d = 0.93$ ), and Egypt ( $d = 0.52$ ). Further, parents in Poland and Egypt were more likely to indicate that they would buy cross-gender toys for their child than parents in North Macedonia ( $d = 0.40$  for both comparisons). Parents in Poland and Egypt did not differ in terms of hypothetical cross-gender toy choices ( $p > .05$ ). The Bonferroni post hoc test conducted for gender-typing of real-life toy choices showed that parents in the UK engaged in less gender-typing when choosing toys for their children in different real-life situations than parents in the remaining samples: Poland ( $d = 0.31$ ), North Macedonia ( $d = 0.36$ ), and Egypt ( $d = 0.36$ ). Poland, North Macedonia, and Egypt did not differ when it comes to parents' gender-typing of real-life toy choices ( $p > .05$ ).

**Table 22**

*Means, Standard Deviations, and One-Way Analyses of Variance for all the Toy Choices Measures Included in the Study*

	<b>UK (N = 721)</b>	<b>Poland (N = 553)</b>	<b>North Macedonia (N = 267)</b>	<b>Egypt (N = 196)</b>		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F</i>	<i>df</i>
Hypothetical gender-typed toy choices	3.55 <sub>a</sub> (.90)	4.43 <sub>b</sub> (1.03)	3.55 <sub>a</sub> (.71)	3.90 <sub>c</sub> (.62)	113.82***	1715
Hypothetical cross-gender toy choices	3.17 <sub>a</sub> (1.11)	2.60 <sub>b</sub> (1.18)	2.15 <sub>c</sub> (1.08)	2.59 <sub>b</sub> (1.14)	62.40***	1728
Gender-typing of real-life toy choices	4.20 <sub>a</sub> (.43)	4.35 <sub>b</sub> (.48)	4.36 <sub>b</sub> (.46)	4.38 <sub>b</sub> (.55)	15.62***	1724

*Note.* \*\*\*  $p < .001$ ; Means that do not share the same subscript letter differed significantly at the  $p < .001$  level.

### **Parental Toy Choices as Predictors of Children's Toy Preferences and Play Behaviours**

A series of multiple regression analyses were conducted to examine whether parental toy choices were a significant predictor of children's toy preferences and play behaviours in the four national samples. In all the samples, separate analyses were conducted for the two outcome variables, i.e., gender-typed toy preferences and gender-typed play behaviours. Each of these analyses tested a model including the three measures of parental toy choices, i.e., hypothetical gender-typed toy choices, hypothetical cross-gender toy choices, and gender-

typing of real-life toy choices. Therefore, two separate regression models with three predictors were tested for each sample. It was decided that the measures of hypothetical toy choices and real-life toy choices would be tested together in order to examine the relative contribution of each variable. As explained previously, these measures are likely to capture two different phenomena (i.e., behavioural intention vs. actual behaviour), and therefore it seemed relevant to examine their respective role as predictors. In addition, it was decided that all the regression models would include an additional step in which two control variables, child's age and child's sex, would be introduced as independent predictors to test for confounding effects. As mentioned previously, it is possible that as children grow older, toy choices of parents become more impacted by children's own gender-typed preferences. At the same time, children's sex-related behaviours have been shown to increase linearly with age. As to child's sex, research suggests that parents might engage in more gender-typing when choosing toys for boys (e.g., Fisher-Thompson, 1993; Robinson & Morris, 1986) and that boys' toy choices are usually more gender-typed than girls' toy choices (e.g., Cherney & London, 2006; Dinella et al., 2017). Therefore, both child's age and sex could potentially influence the relationship between parents' toy choices and children's gender-typed play. Child's sex was coded as a dummy variable with girls as the reference category (0 = girl, 1 = boy). All the analyses were preceded with tests of regression assumptions (linearity, homoscedasticity, independent and normally distributed errors, no perfect multicollinearity; Berry, 1993); if met, these were not discussed.

## **UK**

Correlations for all the measures of parental toy choices and children's play in the British sample are presented in Table 23. The regression analysis conducted for gender-typed toy preferences of children in the UK found all measures of parental toy choices to be significant predictors of such toy preferences (see Table 27). Specifically, parents who indicated that they would be likely to buy gender-typed toys for their child were more likely to have children with more gender-typed toy preferences. At the same time, parents who indicated that they would be likely to buy cross-gender toys were more likely to have children with less gender-typed toy preferences. Finally, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children with more gender-typed toy preferences. The explanatory power of the model was substantial. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were found to be significant predictor of children's gender-typed toy preferences. Older children as well as boys were reported to have more gender-typed toy preferences.



Similar results were observed in the regression analysis conducted for gender-typed play behaviours (see Table 27). Parents who indicated that they would be likely to buy gender-typed toys for their child were more likely to have children displaying more gender-typed play behaviours. In contrast, parents who indicated that they would be likely to buy cross-gender toys were more likely to have children displaying less gender-typed play behaviours. Parents who chose gender-typed toys for their child in various real-life situations were more likely to have children displaying more gender-typed play behaviours. The explanatory power of this model was moderate-to-low. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were significant predictors of gender-typed play behaviours. Older children as well as boys were reported to display more gender-typed play behaviours.

**Table 23**

*Correlation Coefficients for the Measures of Parental Toy Choices and Children's Toy Preferences and Play Behaviours in the UK*

	2.	3.	4.	5.
1. Hypothetical gender-typed toy choices	.22***	.01	.06	.06
2. Hypothetical cross-gender toy choices		-.16***	-.16***	-.22***
3. Gender-typing of real-life toy choices			.53***	.32***
4. Gender-typed toy preferences				.42***
5. Gender-typed play behaviours				

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### ***Poland***

Correlations for all the measures of parental toy choices and children's play in the Polish sample are presented in Table 24. The regression analysis conducted for gender-typed toy preferences of children in Poland found two measures of parental toy choices to be significant predictors of such toy preferences: hypothetical cross-gender toy choices and gender-typing of real-life toy choices (see Table 27). Specifically, parents who indicated that they would be likely to buy cross-gender toys for their child were more likely to have children with less gender-typed toy preferences. On the other hand, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children with more gender-typed

toy preferences. The explanatory power of the model was substantial. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were found to be significant predictors of children's gender-typed toy preferences. Older children as well as boys were reported to have more gender-typed toy preferences.

The regression analysis conducted for gender-typed play behaviours found all measures of parental toy choices to be significant predictors (see Table 27). Parents who indicated that they would be likely to buy gender-typed toys for their child were more likely to have children displaying more gender-typed play behaviours. In contrast, parents who indicated that they would be likely to buy cross-gender toys were more likely to have children displaying less gender-typed play behaviours. Finally, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children displaying more gender-typed play behaviours. The explanatory power of this model was moderate. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were significant predictors of gender-typed play behaviours. Older children as well as boys were reported to display more gender-typed play behaviours.

**Table 24**

*Correlation Coefficients for the Measures of Parental Toy Choices and Children's Toy Preferences and Play Behaviours in Poland*

	2.	3.	4.	5.
1. Hypothetical gender-typed toy choices	.12**	.01	.04	.08
2. Hypothetical cross-gender toy choices		-.29***	-.32***	-.34***
3. Gender-typing of real-life toy choices			.57***	.24***
4. Gender-typed toy preferences				.29***
5. Gender-typed play behaviours				

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### ***North Macedonia***

Correlations for all the measures of parental toy choices and children's play in the Macedonian sample are presented in Table 25. The regression analysis conducted for gender-typed toy preferences of children in North Macedonia found one measure of parental toy choices—gender-typing of real-life toy choices—to be a significant predictor of such toy

preferences (see Table 27). Specifically, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children with more gender-typed toy preferences. The explanatory power of the model was substantial. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were found to be significant predictors of children's gender-typed toy preferences. Older children as well as boys were reported to have more gender-typed toy preferences.

The regression analysis conducted for gender-typed play behaviours found two measures of parental toy choices to be significant predictors: hypothetical cross-gender toy choices and gender-typing of real-life toy choices (see Table 27). Parents who indicated that they would be likely to buy cross-gender toys for their child were more likely to have children displaying less gender-typed play behaviours. In contrast, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children displaying more gender-typed play behaviours. The explanatory power of this model was moderate. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were significant predictors of gender-typed play behaviours. Older children as well as boys were reported to display more gender-typed play behaviours.

**Table 25**

*Correlation Coefficients for the Measures of Parental Toy Choices and Children's Toy Preferences and Play Behaviours in North Macedonia*

	2.	3.	4.	5.
1. Hypothetical gender-typed toy choices	.12	.04	.02	.05
2. Hypothetical cross-gender toy choices		-.36***	-.24***	-.31***
3. Gender-typing of real-life toy choices			.59***	.34***
4. Gender-typed toy preferences				.46***
5. Gender-typed play behaviours				

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### ***Egypt***

Correlations for all the measures of parental toy choices and children's play in the Egyptian sample are presented in Table 26. The regression analysis conducted for gender-typed toy preferences of children in Egypt found two measures of parental toy choices to be significant

predictors of such toy preferences: hypothetical cross-gender toy choices and gender-typing of real-life toy choices (see Table 27). Specifically, parents who indicated that they would be likely to buy cross-gender toys for their child were more likely to have children with less gender-typed toy preferences. On the other hand, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children with more gender-typed toy preferences. The explanatory power of the model was substantial. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but both variables were found to be significant predictors of children's gender-typed toy preferences. Older children as well as boys were reported to have more gender-typed toy preferences.

The regression analysis conducted for gender-typed play behaviours found two measures of parental toy choices to be significant predictors: hypothetical cross-gender toy choices and gender-typing of real-life toy choices (see Table 27). Parents who indicated that they would be likely to buy cross-gender toys for their child were more likely to have children displaying less gender-typed play behaviours. In contrast, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children displaying more gender-typed play behaviours. The explanatory power of this model was low-to-moderate. The pattern of results was not affected by including child's age and child's sex as predictors in the analysis, but child's age was a significant predictor of gender-typed play behaviours. Older children were reported to display more gender-typed play behaviours.

**Table 26**

*Correlation Coefficients for the Measures of Parental Toy Choices and Children's Toy Preferences and Play Behaviours in Egypt*

	2.	3.	4.	5.
1. Hypothetical gender-typed toy choices	.16*	.07	.10	-.02
2. Hypothetical cross-gender toy choices		-.08	-.16*	-.21**
3. Gender-typing of real-life toy choices			.58***	.26***
4. Gender-typed toy preferences				.43***
5. Gender-typed play behaviours				

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 27**

*Multiple Regressions for Parental Toy Choices and Age Predicting Children's Gender-Typed Toy Preferences and Play Behaviours in the UK, Poland, North Macedonia, and Egypt*

		UK			Poland			North Macedonia			Egypt		
		<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
<b>Gender-typed toy preferences</b>		$R^2 = .29$			$R^2 = .36$			$R^2 = .35$			$R^2 = .35$		
<i>Step 1</i>	Constant	1.96	.17		2.19	.19		1.65	.32		1.90	.32	
	Hypothetical gender-typed toy choices	0.04	.02	0.08*	0.03	.02	0.06	0.00	.04	0.01	0.06	.05	0.07
	Hypothetical cross-gender toy choices	-0.04	.01	-0.10**	-0.08	.02	-0.18***	-0.02	.03	-0.04	-0.07	.03	-0.14*
	Gender-typing of real-life toy choices	0.56	.04	0.51***	0.54	.04	0.52***	0.66	.06	0.58***	0.56	.06	0.57***
		$R^2 = .33$			$R^2 = .39$			$R^2 = .42$			$R^2 = .41$		
<i>Step 2</i>	Constant	1.90	.16		2.09	.19		1.63	.30		2.05	.31	
	Hypothetical gender-typed toy choices	0.06	.02	0.12***	0.04	.02	0.07	0.00	.04	0.00	0.03	.05	0.04
	Hypothetical cross-gender toy choices	-0.05	.01	-0.12***	-0.06	.02	-0.15***	0.00	.03	0.00	-0.05	.03	-0.10*
	Gender-typing of real-life toy choices	0.50	.04	0.46***	0.46	.04	0.44***	0.57	.06	0.50***	0.45	.06	0.45***
	Child's age	0.01	.00	0.15***		.00	0.10**	0.01	.00	0.20***	0.01	.00	0.20**
	Child's sex (boys vs. girls)	0.14	.03	0.15***	0.22	.04	0.21***	0.20	.06	0.19***	0.21	.07	0.20**

		UK			Poland			North Macedonia			Egypt		
		<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
<b>Gender-typed play behaviours</b>		$R^2 = .14$			$R^2 = .15$			$R^2 = .17$			$R^2 = .10$		
<i>Step 1</i>	Constant	26.29	3.85		42.01	3.85		31.66	6.75		42.96	7.04	
	Hypothetical gender-typed toy choices	1.07	.39	0.10**	0.89	.34	0.11**	1.14	.82	0.08	0.20	1.16	0.01
	Hypothetical cross-gender toy choices	-1.73	.32	-0.20***	-2.22	.31	-0.31***	-2.00	.58	-0.22***	-1.61	.61	-0.19**
	Gender-typing of real-life toy choices	6.57	.81	0.29***	2.96	.76	0.16***	5.73	1.33	0.27***	4.31	1.26	0.24***
		$R^2 = .20$			$R^2 = .23$			$R^2 = .22$			$R^2 = .13$		
<i>Step 2</i>	Constant	27.86	3.44		39.74	3.70		31.16	6.54		43.28	7.02	
	Hypothetical gender-typed toy choices	2.27	.36	0.21***	1.17	.34	0.14**	1.18	.81	0.08	0.13	1.16	0.01
	Hypothetical cross-gender toy choices	-2.14	.28	-0.24***	-1.82	.30	-0.25***	-1.48	.58	-0.16**	-1.86	.65	-0.22**
	Gender-typing of real-life toy choices	5.67	.75	0.25***	2.72	.78	0.15***	4.23	1.34	0.20***	4.12	1.40	0.23**
	Child's age	0.10	.03	0.09**	0.05	.04	0.06	0.13	.06	0.12*	0.16	.08	0.16*
	Child's sex (boys vs. girls)	4.03	0.64	0.23***	5.23	.76	.30***	4.46	1.24	0.22***	-0.98	1.56	-0.05

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### *Summary of the Results*

In all the national samples, the regression analyses found parental toy choices to be significant predictors of children's gender-typed toy preferences. The proportion of variance explained by the model was high and ranged between 29 and 36 percent. However, there were differences between the samples concerning the contribution of specific parental toy choices measures. Parents' gender-typing of real-life toy choices was the most consistent predictor: it was found to significantly predict children's toy preferences in all the countries. It was also the strongest predictor in all the samples (as per standardised beta coefficients). In general, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children with more gender-typed toy preferences. Hypothetical cross-gender toy choices of parents were a significant independent predictor of children's toy preferences in the UK, Poland, and Egypt (but not in North Macedonia). In these three countries, parents who indicated that they would be likely to buy cross-gender toys for their child were more likely to have children with less gender-typed toy preferences. Finally, hypothetical gender-typed toy choices of parents were found to be a significant independent predictor of children's toy preferences only in the UK. Its predictive power was, however, relatively low. Nonetheless, British parents who indicated that they would be likely to buy gender-typed toys were more likely to have children with more gender-typed toy preferences. Including child's age and child's sex in the model did not alter the above patterns of results, but both variables proved to be significant predictors of children's toy preferences in all four countries. Older children as well as boys were reported to have more gender-typed toy preferences.

The analyses found that parental toy choices were also predictive of children's gender-typed play behaviours in all the national samples. In this case, however, the proportion of variance explained by the model was lower and ranged between 10 and 17 percent (i.e., moderate-to-low effect). There were also some differences between the samples regarding the relative contribution of specific toy choices measures. Parents' gender-typing of real-life toy choices turned out to be a significant predictor of children's play behaviours in all four countries. Overall, parents who chose gender-typed toys for their child in various real-life situations were more likely to have children displaying more gender-typed play behaviours. Hypothetical cross-gender toy choices of parents were also a significant independent predictor in all the samples. Parents who indicated that they would buy cross-gender toys for their child were more likely to have children displaying less gender-typed play behaviours. In most samples, parents' gender-typing of real-life toy choices was a slightly better predictor than hypothetical cross-gender toy choices (as per standardised beta coefficients). Finally,

hypothetical gender-typed toy choices of parents were found to be a significant independent predictor of children's play behaviours only in the UK and Poland, and their contribution to the model was lower than the contribution of the other two predictors. In the two countries, parents who indicated that they would be likely to buy gender-typed toys were more likely to have children displaying more gender-typed play behaviours. Including child's age and child's sex in the model did not alter the above patterns of results, but age proved to be a significant predictor of children's play behaviours in the UK, North Macedonia, and Egypt, while sex proved to be a significant predictor of children's play behaviours in the UK, Poland, and North Macedonia. Older children as well as boys were reported to display more gender-typed play behaviours.

### **National Context as the Moderator of the Relationship between Parental Toy Choices and Children's Toy Preferences and Play Behaviours**

The above analyses suggest that parental toy choices are strong predictors of children's gender-typed toy preferences and moderate predictors of children's gender-typed play behaviours across all the samples. However, the analyses also found some differences between the countries in terms of the proportion of variance explained by the tested model as well as the relative contribution of specific measures of parental toy choices. These could be potentially attributed to differences in the magnitude of individual relationships between specific parent-level and child-level variables. Alternatively, they could be indicative of the fact that in some countries the contributions of particular predictors to the model overlapped to a greater extent than in other countries. In order to evaluate whether national context had a statistically significant impact on the relationships between parent-level and child-level variables, a series of moderation analyses (with national context as a moderator) were conducted for all the possible pairs of parental toy choices measures and children's behavioural outcomes. Overall, six moderation models were tested. Three sets of dummy variables, including three variables each, were created for the national context to allow for comparisons between all the countries included in the study. The first set adopted the UK as the comparison group, the second one adopted Poland, and the third one adopted North Macedonia. The analyses were performed using the PROCESS v.4.0 macro for SPSS (Model 1; Hayes 2013).

The analyses found that national context did not significantly influence the relationship between hypothetical gender-typed toy choices of parents and children's gender-typed toy preferences (see Table 28). The same was found true for the relationship between children's gender-typed toy preference and parents' gender-typing of real-life toy choices (see Table 30). In other words, the strength and direction of the relationships between these pairs of variables



were not impacted by the country in which the study took place. A significant moderation effect was found, however, in the model investigating hypothetical cross-gender toy choices as a predictor of children's gender-typed toy preferences. The interaction effect was significant for the UK vs. Poland comparison (see Table 29). Simple slopes indicated that hypothetical cross-gender toy choices were a significant negative predictor of children's gender-typed toy preferences in both samples, but the effect was stronger in Poland,  $b = -0.13$ ,  $t = -7.81$ ,  $p < .001$ , than in the UK,  $b = -.07$ ,  $t = -4.21$ ,  $p < .001$ .

When it comes to children's gender-typed play behaviours, the analyses found no significant effect of national context on the relationship between hypothetical gender-typed toy choices of parents and children's gender-typed play behaviours (see Table 31). The same was found for the relationship between children's gender-typed toy preference and hypothetical cross-gender toy choices of parents (see Table 32). Therefore, the strength and direction of the relationships between these pairs of variables were not impacted by the country in which the study took place. Nonetheless, a significant moderation effect was found in the model investigating the relationship between parents' gender-typing of real-life toy choices and children's gender-typed play behaviours. The interaction effect was significant for the UK vs. Poland and Poland vs. North Macedonia comparisons (see Table 33). Simple slopes indicated that gender-typing of real-life toy choices was a significant positive predictor of children's gender-typed play behaviours in all these samples, but the effect in Poland was weaker,  $b = 4.41$ ,  $t = 5.43$ ,  $p < .001$ , than the effects in both the UK,  $b = 7.30$ ,  $t = 9.16$ ,  $p < .001$ , and North Macedonia,  $b = 7.33$ ,  $t = 6.05$ ,  $p < .001$ .

**Table 28**

*Moderation Effects of Cultural Background on the Relationship between Hypothetical Gender-Typed Toy Choices of Parents and Children's Gender-Typed Toy Preferences*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.23	.08	56.11	< .001
Hypothetical gender-typed toy choices	0.03	.02	1.56	.12
UK vs. Poland (W1)	0.13	.12	1.06	.29
UK vs. North Macedonia (W2)	0.25	.18	1.40	.16
UK vs. Egypt (W3)	-0.14	.24	-0.60	.55
Hypothetical gender-typed toy choices x W1	-0.01	.03	-0.45	.65
Hypothetical gender-typed toy choices x W2	-0.02	.05	-0.41	.68
Hypothetical gender-typed toy choices x W3	0.05	.06	0.89	.37
<b>Poland vs.</b>				
Constant	4.36	.09	46.21	< .001
Hypothetical gender-typed toy choices	0.02	.02	0.91	.36
Poland vs. North Macedonia (W4)	0.12	.18	0.64	.52
Poland vs. Egypt (W5)	-0.27	.24	-1.11	.27
Hypothetical gender-typed toy choices x W4	-0.01	.05	-0.14	.89
Hypothetical gender-typed toy choices x W5	-0.07	.06	1.11	.27
<b>North Macedonia vs.</b>				
Constant	4.47	.16	28.21	< .001
Hypothetical gender-typed toy choices	0.01	.04	0.28	.78
North Macedonia vs. Egypt (W6)	-0.39	.28	-1.41	.16
Hypothetical gender-typed toy choices x W6	0.07	.07	1.03	.30

**Table 29**

*Moderation Effects of Cultural Background on the Relationship between Hypothetical Cross-Gender Toy Choices of Parents and Children's Gender-Typed Toy Preferences*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	4.56	.05	83.74	< .001
Hypothetical cross-gender toy choices	-0.07	.02	-4.21	< .001
UK vs. Poland (W1)	0.23	.07	3.14	.001
UK vs. North Macedonia (W2)	0.22	.09	2.55	.01
UK vs. Egypt (W3)	0.07	.10	0.65	.52
Hypothetical cross-gender toy choices x W1	-0.07	.02	-2.87	.004
Hypothetical cross-gender toy choices x W2	-0.05	.03	-1.64	.10
Hypothetical cross-gender toy choices x W3	-0.01	.03	-0.29	.77
<b>Poland vs.</b>				
Constant	4.79	.05	95.90	< .001
Hypothetical cross-gender toy choices	-0.14	.02	-7.81	< .001
Poland vs. North Macedonia (W4)	-0.01	.08	-0.15	.88
Poland vs. Egypt (W5)	-0.17	.10	-1.66	.10
Hypothetical cross-gender toy choices x W4	0.02	.03	0.48	.63
Hypothetical cross-gender toy choices x W5	0.06	.04	1.66	.10
<b>North Macedonia vs.</b>				
Constant	4.78	.07	71.80	< .001
Hypothetical cross-gender toy choices	-0.12	.03	-4.36	< .001
North Macedonia vs. Egypt (W6)	-0.15	.11	-1.41	.16
Hypothetical cross-gender toy choices x W6	0.04	.04	1.03	.30

**Table 30**

*Moderation Effects of Cultural Background on the Relationship between Parents' Gender-Typing of Real-Life Toy Choices and Children's Gender-Typed Toy Preferences*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	1.90	.15	12.52	< .001
Gender-typing of real-life toy choices	0.58	.04	16.10	< .001
UK vs. Poland (W1)	-0.02	.22	-0.07	.94
UK vs. North Macedonia (W2)	-0.34	.29	-1.19	.23
UK vs. Egypt (W3)	0.00	.29	0.00	1.00
Gender-typing of real-life toy choices x W1	0.01	.05	0.13	.90
Gender-typing of real-life toy choices x W2	0.10	.07	1.50	.14
Gender-typing of real-life toy choices x W3	-0.01	.07	-0.10	.92
<b>Poland vs.</b>				
Constant	1.89	.16	11.84	< .001
Gender-typing of real-life toy choices	0.59	.04	16.09	< .001
Poland vs. North Macedonia (W4)	-0.32	.29	-1.12	.26
Poland vs. Egypt (W5)	0.02	.29	0.06	.95
Gender-typing of real-life toy choices x W4	0.09	.07	1.39	.16
Gender-typing of real-life toy choices x W5	-0.01	.07	-0.20	.85
<b>North Macedonia vs.</b>				
Constant	1.57	.24	6.55	< .001
Gender-typing of real-life toy choices	0.68	.05	12.43	< .001
North Macedonia vs. Egypt (W6)	0.34	.34	1.00	.32
Gender-typing of real-life toy choices x W6	-0.10	.08	-1.35	.18

**Table 31**

*Moderation Effects of Cultural Background on the Relationship between Hypothetical Gender-Typed Toy Choices of Parents and Children's Gender-Typed Play Behaviours*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	49.95	1.46	34.26	< .001
Hypothetical gender-typed toy choices	0.64	.40	1.61	.11
UK vs. Poland (W1)	0.35	2.33	0.15	.88
UK vs. North Macedonia (W2)	4.07	3.35	1.21	.23
UK vs. Egypt (W3)	9.92	4.65	2.13	.03
Hypothetical gender-typed toy choices x W1	-0.01	.56	-0.02	.98
Hypothetical gender-typed toy choices x W2	0.06	.93	0.06	.94
Hypothetical gender-typed toy choices x W3	-1.01	1.19	-0.85	.40
<b>Poland vs.</b>				
Constant	50.30	1.82	27.70	< .001
Hypothetical gender-typed toy choices	0.63	.40	1.57	.12
Poland vs. North Macedonia (W4)	3.72	3.52	1.05	.29
Poland vs. Egypt (W5)	9.57	4.78	2.00	.05
Hypothetical gender-typed toy choices x W4	0.07	.93	0.08	.94
Hypothetical gender-typed toy choices x W5	-0.10	1.19	-0.84	.40
<b>North Macedonia vs.</b>				
Constant	54.01	3.02	17.88	< .001
Hypothetical gender-typed toy choices	0.70	.84	0.40	.40
North Macedonia vs. Egypt (W6)	5.85	5.35	1.09	.27
Hypothetical gender-typed toy choices x W6	-1.07	1.40	-0.77	.44

**Table 32**

*Moderation Effects of Cultural Background on the Relationship between Hypothetical Cross-Gender Toy Choices of Parents and Children's Gender-Typed Play Behaviours*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	58.37	1.04	56.11	< .001
Hypothetical cross-gender toy choices	-1.94	.31	-6.26	< .001
UK vs. Poland (W1)	1.08	1.41	0.77	.44
UK vs. North Macedonia (W2)	4.16	1.64	2.54	.01
UK vs. Egypt (W3)	4.71	1.94	2.43	.02
Hypothetical cross-gender toy choices x W1	-0.54	.46	-1.18	.24
Hypothetical cross-gender toy choices x W2	-0.90	.61	-1.47	.14
Hypothetical cross-gender toy choices x W3	0.14	.66	0.21	.83
<b>Poland vs.</b>				
Constant	59.45	.95	62.54	< .001
Hypothetical cross-gender toy choices	-2.48	.33	-7.42	< .001
Poland vs. North Macedonia (W4)	3.08	1.58	1.94	.05
Poland vs. Egypt (W5)	3.63	1.90	1.92	.06
Hypothetical cross-gender toy choices x W4	-0.36	.62	-0.58	.57
Hypothetical cross-gender toy choices x W5	0.68	.67	1.01	.31
<b>North Macedonia vs.</b>				
Constant	62.53	1.27	49.33	< .001
Hypothetical cross-gender toy choices	-2.84	.53	-5.39	< .001
North Macedonia vs. Egypt (W6)	0.55	2.07	0.27	.79
Hypothetical cross-gender toy choices x W6	1.03	0.78	1.32	.19

**Table 33**

*Moderation Effects of Cultural Background on the Relationship between Parents' Gender-Typing of Real-Life Toy Choices and Children's Gender-Typed Play Behaviours*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>UK vs.</b>				
Constant	21.56	3.37	6.41	< .001
Gender-typing of real-life toy choices	7.30	.80	9.16	< .001
UK vs. Poland (W1)	12.27	4.89	2.51	.01
UK vs. North Macedonia (W2)	2.88	6.29	0.46	.65
UK vs. Egypt (W3)	16.83	6.27	2.68	.01
Gender-typing of real-life toy choices x W1	-2.89	1.14	-2.54	.01
Gender-typing of real-life toy choices x W2	0.03	1.45	0.02	.98
Gender-typing of real-life toy choices x W3	-2.72	1.44	-1.89	.06
<b>Poland vs.</b>				
Constant	33.83	3.55	9.52	< .001
Gender-typing of real-life toy choices	4.41	.81	5.43	< .001
Poland vs. North Macedonia (W4)	-9.39	6.40	-1.47	.14
Poland vs. Egypt (W5)	4.55	6.38	0.71	.48
Gender-typing of real-life toy choices x W4	2.92	1.46	2.00	.05
Gender-typing of real-life toy choices x W5	0.17	1.45	0.12	.91
<b>North Macedonia vs.</b>				
Constant	24.44	5.32	4.60	< .001
Gender-typing of real-life toy choices	7.33	1.21	6.05	< .001
North Macedonia vs. Egypt (W6)	13.94	7.50	1.86	.06
Gender-typing of real-life toy choices x W6	-2.75	1.70	-1.62	.11

## **Age as a Moderator of the Relationship between Parental Toy Choices and Children's Toy Preferences and Play Behaviours**

The previous analyses suggest that parental toy choices are moderate-to-strong predictors of children's gender-typed toy preferences and play behaviours, and this was found across different national contexts (although some between-group differences in the strength of these associations were also observed). However, it is yet to be examined whether these associations can be found for different age groups of children, and if so, whether their strength remains the same. As discussed before, any relationships between parents' gendered treatment of children and children's gender-typed behaviours might be expected to decrease with children's age, as factors other than parental socialisation are likely to begin to influence children's choices and preferences. In their first two years of life, infants' play behaviours should be affected by non-parental social agents only to a limited extent, as infants' interactions with peers are scarce (e.g., Brownell & Brown, 1992; Davis & Didow, 1989), they are unlikely to have a frequent exposure to media (e.g., Arufe-Giráldez et al., 2022; Certain & Kahn, 2002), and it is uncommon for them to have regular contact with early year educators. Therefore, effects of parental socialisation on children's preferences might be the strongest then. Once children start spending more time watching tv or online content (around the age of two), and attend a nursery school (around the age of three), the relative influence of parental socialisations might diminish. In order to examine whether the relationships between parental toy choices and children's toy preferences as well as play behaviours indeed change with child's age, a series of moderation analyses (with child's age as a moderator) were conducted for all the possible pairs of parental toy choices measures and children's behavioural outcomes. Overall, six moderation models were tested. Age was included in the model as a categorical variable with three levels: 12-23 months, 24-35 months, and 36-47 months. The analyses were performed using the PROCESS v.4.0 macro for SPSS (Model 1; Hayes 2013).

The analyses showed that child's age did not influence any of the relationships between parental toy choices measures and children's gender-typed toy preferences (see Table 34). In other words, the strength and direction of the relationships between parental toy choices variables and children's gender-typed toy preferences were not impacted by the age group that the child belonged to. Similar findings were observed for the associations between parental toy choices measures and children's gender-typed play behaviours: none of them was moderated by child's age (see Table 35).



**Table 34**

*Moderation Effects of Child's Age on the Relationship between Parental Toy Choices and Children's Gender-Typed Toy Preferences*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>Hypothetical gender-typed toy choices</b>				
<i>12-23 months vs.</i>				
Constant	4.12	.08	53.60	< .001
Hypothetical gender-typed toy choices	0.04	.02	2.30	.02
12-23 months vs. 24-35 months (W1)	0.23	.11	2.16	.03
12-23 months vs. 24-35 months (W2)	0.28	.13	2.12	.03
Hypothetical gender-typed toy choices x W1	-0.01	.03	-0.65	.51
Hypothetical gender-typed toy choices x W2	-0.01	.03	-0.29	.77
<i>24-35 months vs.</i>				
Constant	4.36	.08	56.97	< .001
Hypothetical gender-typed toy choices	0.03	.02	1.36	.17
24-35 months vs. 36-47 months (W3)	0.05	.13	0.36	.72
Hypothetical gender-typed toy choices x W3	0.01	.03	0.24	.81
<b>Hypothetical cross-gender toy choices</b>				
<i>12-23 months vs.</i>				
Constant	4.56	.04	103.51	< .001
Hypothetical cross-gender toy choices	-0.10	.01	-6.55	< .001
12-23 months vs. 24-35 months (W1)	0.24	.06	3.67	< .001
12-23 months vs. 24-35 months (W2)	0.33	.08	4.19	< .001
Hypothetical cross-gender toy choices x W1	-0.02	.02	-1.02	.31
Hypothetical cross-gender toy choices x W2	-0.03	.03	-1.04	.30

***24-35 months vs.***

Constant	4.80	.05	100.67	< .001
Hypothetical cross-gender toy choices	-0.12	.02	-7.69	< .001
24-35 months vs. 36-47 months (W3)	0.09	.08	1.11	.27
Hypothetical cross-gender toy choices x W3	-0.01	.03	-0.19	.85

**Gender-typing of real-life toy choices*****12-23 months vs.***

Constant	1.73	.15	11.20	< .001
Gender-typing of real-life toy choices	0.61	.04	16.61	< .001
12-23 months vs. 24-35 months (W1)	0.23	.21	1.08	.28
12-23 months vs. 24-35 months (W2)	0.32	.24	1.32	.19
Gender-typing of real-life toy choices x W1	-0.03	.05	-0.62	.54
Gender-typing of real-life toy choices x W2	-0.04	.06	-0.79	.43

***24-35 months vs.***

Constant	1.96	.14	13.76	< .001
Gender-typing of real-life toy choices	0.58	.03	17.59	< .001
24-35 months vs. 36-47 months (W3)	0.09	.24	0.40	.69
Gender-typing of real-life toy choices x W3	-0.01	.05	-0.26	.80

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**Table 35**

*Moderation Effects of Child's Age on the Relationship between Parental Toy Choices and Children's Gender-Typed Play Behaviours*

	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
<b>Hypothetical gender-typed toy choices</b>				
<i>12-23 months vs.</i>				
Constant	54.48	1.54	35.35	< .001
Hypothetical gender-typed toy choices	-0.42	.38	-1.09	.28
12-23 months vs. 24-35 months (W1)	-5.03	2.16	-2.33	.02
12-23 months vs. 24-35 months (W2)	-2.07	2.63	-0.79	.43
Hypothetical gender-typed toy choices x W1	1.16	.66	1.76	.08
Hypothetical gender-typed toy choices x W2	1.01	.54	1.65	.10
<i>24-35 months vs.</i>				
Constant	49.44	1.51	32.68	< .001
Hypothetical gender-typed toy choices	1.20	.38	3.14	.002
24-35 months vs. 36-47 months (W3)	2.97	2.61	1.14	.26
Hypothetical gender-typed toy choices x W3	-0.46	.66	-0.70	.49
<b>Hypothetical cross-gender toy choices</b>				
<i>12-23 months vs.</i>				
Constant	59.26	.87	68.26	< .001
Hypothetical cross-gender toy choices	-2.39	.29	-8.12	< .001
12-23 months vs. 24-35 months (W1)	1.41	1.28	1.10	.27
12-23 months vs. 24-35 months (W2)	3.78	1.53	2.48	.01
Hypothetical cross-gender toy choices x W1	0.04	.42	0.09	.93
Hypothetical cross-gender toy choices x W2	-0.36	.51	-0.71	.48

***24-35 months vs.***

Constant	60.67	.93	64.91	< .001
Hypothetical cross-gender toy choices	-2.36	.31	-7.71	< .001
24-35 months vs. 36-47 months (W3)	2.37	1.57	1.52	.13
Hypothetical cross-gender toy choices x W3	-0.40	.51	-0.78	.44

**Gender-typing of real-life toy choices*****12-23 months vs.***

Constant	27.22	3.55	7.68	< .001
Gender-typing of real-life toy choices	6.07	.84	7.24	< .001
12-23 months vs. 24-35 months (W1)	-2.71	4.80	-0.56	.57
12-23 months vs. 24-35 months (W2)	6.50	5.55	1.17	.24
Gender-typing of real-life toy choices x W1	0.77	1.12	0.68	.49
Gender-typing of real-life toy choices x W2	-1.16	1.28	-0.91	.36

***24-35 months vs.***

Constant	24.51	3.24	7.57	< .001
Gender-typing of real-life toy choices	6.83	.75	9.17	< .001
24-35 months vs. 36-47 months (W3)	9.21	5.36	1.72	.09
Gender-typing of real-life toy choices x W3	-1.93	1.22	-1.58	.11

**Sex Differences in Children's Toy Preferences and Play Behaviours across Countries**

In order to check for the presence of sex differences in children's toy preferences and play behaviours and compare them between the countries, a two (child's sex: girl vs. boy) x four (national background: the UK vs. Poland vs. North Macedonia vs. Egypt) factorial ANOVA was conducted for the measures of children's toy preferences and play behaviours. Unlike in the previous analyses, however, the child-level variables were included in their initial, untransformed form, i.e., 'feminine (vs. masculine) toy preferences' instead of 'gender-typed toy preferences', and 'masculine (vs. feminine) play behaviours' (i.e., the standardised PSAI

scores) instead of ‘gender-typed toy preferences’; this was due to the fact that the aim of this analysis was to compare boys’ and girls’ preferences, and not investigate samples as a whole (as previously). Including the variables in their transformed version would allow for comparing the levels of sex-typing in interests of boys and girls across countries, but would not offer information regarding the extent to which boys and girls differed in their particular preferences. Focusing on untransformed variables also made it possible to see whether sex differences observed in this study would be similar to those found in other studies investigating differences in boys’ and girls’ toy and play preferences. Any significant interactions found in the analyses were further explored with simple effects analysis. If simple effects analysis was indicative of between-sample differences in effect sizes, these were investigated with the Z-test method described by Borenstein et al. (2009, pp. 156-157).

For feminine (vs. masculine) toy preferences, the two-way (child’s sex x national background) ANOVA revealed a significant main effect of sex,  $F(1, 1722) = 1035.15, p < .001$ . Overall, girls were reported to have more feminine (or less masculine) toy preferences than boys (see Table 36 for means and standard deviations). The effect size for this comparison was very large ( $d = 1.68$ ). There was also a significant effect of cultural background on children’s toy preferences,  $F(3, 1722) = 3.43, p < .05$ . The Bonferroni post hoc test revealed that children in the UK had more feminine toy preferences than children in North Macedonia ( $p < .05$ ). The effect size for this comparison was small-to-negligible ( $d = 0.16$ ). All the other comparisons were non-significant. Finally, the interaction between child’s sex and national background was also significant,  $F(1, 1722) = 10.12, p < .001$ . Analysis of simple main effects revealed that the effect of sex was significant for all four countries: the UK,  $F(1, 1722) = 351.92, p < .001$ ; Poland,  $F(1, 1722) = 454.69, p < .001$ ; North Macedonia,  $F(1, 1722) = 301.99, p < .001$ ; and Egypt,  $F(1, 1722) = 147.25, p < .001$ . Therefore, the interaction likely stemmed from differences in the effect sizes between the samples. A series of Z-tests comparing these effects found that the difference between boys and girls was significantly smaller in the UK ( $d = 1.46$ ) than in Poland ( $d = 1.83; p < .01$ ) and North Macedonia ( $d = 2.00; p < .01$ ). Polish, Macedonian, and Egyptian ( $d = 1.66$ ) samples did not differ significantly regarding the size of the effect ( $p > .05$ ).

For masculine (vs. feminine) play behaviours, the two-way (child’s sex x national background) ANOVA revealed a significant main effect of sex,  $F(1, 1713) = 715.53, p < .001$ . Overall, boys were reported to display more masculine (or less feminine) play behaviours than girls (see Table 36 for means and standard deviations). The effect size for this comparison was large ( $d = 1.15$ ). There was also a significant main effect of cultural background on children’s

play behaviours,  $F(3, 1713) = 9.54, p < .001$ . The Bonferroni post hoc test revealed that children in the UK displayed more masculine behaviours than children in Poland ( $p < .01$ ) and Egypt ( $p < .001$ ). The effect sizes for these comparisons were small ( $d = 0.19$  and  $d = 0.31$ , respectively). In addition, children in North Macedonia displayed significantly more masculine behaviours than children in Egypt ( $p < .001$ ). The effect size for this comparison was small as well ( $d = 0.24$ ). Finally, the interaction between child's sex and national background was also significant,  $F(1, 1713) = 37.08, p < .001$ . Analysis of simple main effects revealed that the effect of sex was significant for all four countries: the UK,  $F(1, 1722) = 112.05, p < .001$ ; Poland,  $F(1, 1722) = 153.82, p < .001$ ; North Macedonia,  $F(1, 1722) = 206.77, p < .001$ ; and Egypt,  $F(1, 1722) = 252.31, p < .001$ . Therefore, the interaction likely stemmed from differences in the effect sizes between the samples. A series of Z-tests comparing these effects found that the difference between boys and girls was significantly smaller in the UK ( $d = 0.79$ ) than in Poland ( $d = 1.14; p < .01$ ), North Macedonia ( $d = 1.66; p < .001$ ), and Egypt ( $d = 2.02, p < .001$ ). Further, the difference between boys and girls was significantly smaller in Poland than in North Macedonia ( $p < .01$ ) and Egypt ( $p < .001$ ). Finally, Macedonian and Egyptian samples did not differ significantly regarding the size of the difference ( $p > .05$ ).

**Table 36**

*Means and Standard Deviations for Feminine (vs. Masculine) Toy Preferences and Masculine (vs. Feminine) Play Behaviours in the UK, Poland, North Macedonia, Egypt, and for Everyone*

	<b>Boys</b> ( <i>N</i> = 926/922)	<b>Girls</b> ( <i>N</i> = 804/799)	<b>Everyone</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>Feminine (vs. masculine) toy preferences</b>			
UK ( <i>N</i> = 721)	3.56 (.48)	4.22 (.42)	3.86 (.56)
Poland ( <i>N</i> = 551)	3.40 (.47)	4.25 (.46)	3.81 (.63)
North Macedonia ( <i>N</i> = 266)	3.30 (.49)	4.31 (.52)	3.76 (.71)
Egypt ( <i>N</i> = 192)	3.40 (.50)	4.23 (.50)	3.80 (.66)
All countries combined	3.45 (.49)	4.25 (.46)	3.82 (.62)

**Masculine (vs. feminine) play behaviours**

UK ( <i>N</i> = 717)	56.19 (8.29)	49.16 (9.37)	53.04 (9.46)
Poland ( <i>N</i> = 549)	55.76 (8.23)	46.39 (8.24)	51.24 (9.47)
North Macedonia ( <i>N</i> = 263)	59.61 (7.91)	43.85 (10.87)	52.48 (12.21)
Egypt ( <i>N</i> = 192)	59.18 (7.43)	38.89 (12.09)	49.35 (14.22)
All countries combined	56.91 (8.25)	46.25 (10.13)	51.97 (10.60)

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**Discussion**

The present research sought to gain greater insight into parents' role in the development of sex differences in young children's play. Specifically, its goal was to investigate the interrelations among parental attitudes, parental toy choices, and children's toy and play preferences. The research was conducted among parents of one- to three-year old children across four countries. It was believed that conducting this research among parents from different cultural settings might offer an opportunity to increase variability in attitudes and behaviours observed and allow to test whether any associations between these variables are generalisable to different populations, rather than being attributable to some culturally specific factors. In addition, cross-cultural research would make it possible to examine cross-cultural robustness of sex differences in children's toy preferences and play behaviours. The four countries—the UK, Poland, North Macedonia, and Egypt—were selected as they were believed to promote differing norms and beliefs regarding gender and gender roles. At the same time, all four countries provide access to similar toys and activities for children, which would allow for the use of uniform measures across samples. Overall, the UK was chosen as a context most supportive of egalitarian gender roles and expectations regarding children's behaviours. Poland and North Macedonia were chosen as contexts promoting moderately traditional views on gender and gender roles, which could potentially differ in terms of specific norms and practices. Egypt was chosen as a context encouraging very traditional beliefs and attitudes concerning gender and gender roles.

## **Parental Attitudes as Predictors of Parental Toy Choices**

The first main aim of this research was to explore the link between gender-related parental attitudes and gender-typing in parental toy choices among parents of one- to three-year-olds across four countries. Gender-related attitudes are possibly the most frequently proposed factor behind differential treatment of sons and daughters in general (e.g., Blakemore, 1998; Katz, 1996), and in the context of parental toy provisions specifically (e.g., MacPhee & Prendergast, 2019; Rheingold & Cook, 1975). Yet, there is little empirical evidence supporting the link between parents' attitudes and the toys they choose for their sons and daughters. Moreover, the few studies that have found positive results looked only at parents' hypothetical toy choices or attitudes concerning such choices, and not actual behaviours (Kollmayer et al., 2018; Weisgram & Bruun, 2018). This research sought to replicate past findings, while adding a measure of actual parental toy choices. The following hypothesis was tested: Parents' egalitarian/liberal gender-related attitudes are a negative predictor of the extent to which parents' toy choices (both hypothetical and real-life) are gender-typed. The research looked at three different types of attitudes: attitudes towards social issues, attitudes towards child's gender-related behaviours, and attitudes regarding gender-roles in adulthood.

Before testing the hypothesis, differences in attitudes of parents from four national samples were examined in order to check whether these would confirm the assumptions made regarding the characteristics of each country and between-country variability. It was found that parents in the UK held, on average, more liberal and egalitarian attitudes (both when it comes to adult and child gender roles) than parents from the other three national samples. Parents in Egypt, on the other hand, reported the least egalitarian views on most of the measures. Finally, parents in Poland and Macedonia expressed, overall, more egalitarian views than Egyptian parents, but less egalitarian views than the UK parents. When it comes to differences between these two groups, parents in Poland reported more egalitarian views on some of the measures and less egalitarian ones on others. Therefore, the four countries did seem to promote differing norms and beliefs regarding gender and gender roles, and these were in line with the predictions.

The results of the main analysis indicated that parents' attitudes were significant predictors of their hypothetical gender-typed toy choices in three of the four national samples: the British, Polish, and North Macedonian. The proportion of variance explained by the model was high in Poland (33%), but low in the UK and North Macedonia (9%). There were also some differences between the samples in terms of the relative contribution of specific attitude measures. Attitudes concerning gender-typed play was the only consistent predictor. Attitudes concerning cross-gender play were a significant independent predictor of hypothetical gender-



typed toy choices in the UK and Poland. Finally, in the Polish sample, social attitudes were also found to be a significant independent predictor of hypothetical gender-typed toy choices. Further analyses suggested that the between-sample differences concerning the predictive power of the model as well as the relative contribution of specific attitude variables stemmed to some extent from the differences in the magnitude of individual relationships between specific attitude variables and the outcome measure.

As to hypothetical cross-gender toy choices, the results indicated that parents' attitudes were significant predictors of such toy choices in all four countries. The proportion of variance explained by the model was moderate-to-high in Poland, North Macedonia, and Egypt, and ranged between 22 and 33 percent; however, it was low in the UK (8%). There were also some differences between the three samples in terms of the relative contribution of specific attitude measures. Attitudes concerning cross-gender play significantly predicted hypothetical cross-gender toy choices in the UK, Poland, and North Macedonia. On the other hand, disapproval of other gender characteristics was a significant predictor of hypothetical cross-gender toy choices in the UK, North Macedonia, and Egypt. Social attitudes turned out to be a significant independent predictor of hypothetical cross-gender toy choices in the UK. Finally, gender-role attitudes significantly predicted hypothetical cross-gender toy choices in the Polish sample. As previously, further investigation suggested that the between-sample differences concerning the predictive power of the model as well as the relative contribution of specific attitude variables stemmed to some extent from the differences in the magnitude of individual relationships between specific attitude variables and the outcome measure.

Furthermore, parents' attitudes were also found to be significant predictors of parents' gender-typing of real-life toy choices in all four countries. However, the proportion of variance explained by the model was low across all samples and ranged between three and eight percent. The samples differed concerning the contribution of specific parental attitude measures. Disapproval of other gender characteristics significantly predicted gender-typing in real-life toy choices in North Macedonia and Egypt. Attitudes concerning gender-typed play were a significant predictor of parents' gender-typing of real-life toy choices in the UK. Finally, in Poland, gender-role attitudes significantly predicted gender-typing of real-life toy choices. Here, further analyses suggested that while some of these between-sample differences stemmed from the differences in the magnitude of individual relationships between attitude variables and the outcome measure (e.g., differences concerning the contribution of disapproval of other gender characteristics), others appeared to have resulted from the fact that in some countries specific attitude measures overlapped in their contributions to the model (e.g., in North

Macedonia, the contribution of gender-role attitudes seemed to overlap with the contribution of disapproval of other gender characteristics).

Apart from examining the relationships between parental attitudes and toy choices, all the models included in the study tested also for any confounding effects of child's age. Including child's age in the analyses did not significantly affect any of the main findings. Child's age was, however, a significant predictor of real-life toy choices in all four countries (but not of hypothetical toy choices). Parents with older children engaged in more gender-typing when choosing toys in different real-life situations. This is in line with findings from studies looking at young children's room contents, showing that the number of gender-typed toys provided to children increases with age (e.g., Pomerleau et al, 1990; Rheingold & Cook, 1975).

Overall, the findings of the research were supportive of the hypothesis tested. Parents' egalitarian/liberal gender-related attitudes were indeed a negative predictor of the extent to which parents' toy choices (both hypothetical and real-life) were gender-typed; and this was true for all the national samples included in the study. Attitudes towards gender-related behaviours in children proved to be the most consistent, and overall strongest, predictor of parents' hypothetical and real-life toy choices. This is in line with the principle of measurement correspondence in attitude-behaviour research (e.g., Ajzen & Fishbein, 1977; Fishbein & Ajzen, 1975). As explained before, the principle suggests that when predicting behaviour, higher predictive validity should be achieved if the explanatory variable (e.g., attitude) is operationalised at the same level of specificity as the behavioural outcome. In other words, measures of attitude and behaviour should match one another in terms of action and context if attitude is to be successful in predicting behaviour. In this research, attitudes towards gender-related behaviours (mainly play-related) in children were closer in context and action to the outcome variable (i.e., gender-typing of toy choices for children) than attitudes concerning gender roles in adults or social issues, which could explain them being a better predictor.

At the same time, it is important to point out that the relative contribution of specific facets of attitudes towards gender-related behaviours in children differed between countries. For instance, disapproval of other gender characteristics was a more important predictor of parents' hypothetical and real-life toy choices in Egypt and North Macedonia, than in Poland. The findings also showed some between-sample differences in relative contributions of other attitude types. For instance, gender-role attitudes were found to be a significant independent predictor of parents' hypothetical and real-life toy choices in Poland, but not in the other three countries. Social attitudes, on the other hand, independently predicted hypothetical toy choices in Poland and the UK, but not in Egypt and North Macedonia. These between-sample

differences stemmed in part from the fact that individual relationships between particular attitude and toy choice variables differed in magnitude between countries. It is also important to point out that not all measures seemed to be equally effective in assessing parental attitudes in all four countries. It was especially evident in the case of the disapproval of other gender characteristics variable, the values of which were suggestive of a floor effect in the UK sample. Specifically, the majority of the UK parents strongly disagreed with statements concerning their potential discouragement of cross-gender behaviours in their children, which seems in line with transphobic views becoming less and less acceptable within the British society (e.g., More in Common, 2022). This finding is indicative of the issue mentioned previously that although parents in the so-called ‘neo-liberal’ Western societies might potentially hold a variety of attitudes and beliefs concerning gender roles, these are overall likely to be skewed towards the values promoted in such societies, which are predominantly egalitarian (e.g., Inglehart & Norris, 2003). At the same time, parents with more conservative views might feel normative pressure not to express them out of fear of being judged. Consequently, it might be difficult to find suitable measures for assessing parental attitudes in studies on gendered socialisation in some Western societies.

Taken all of the above into consideration, it appears that predictive associations between parental attitudes and parental toy choices might depend both on the types of measures used and on the national context in which a study is conducted, which might be something worth considering in future research on the role of attitudes in parental socialisation of play. Overall, more attention should be likely paid to measures that focus on attitudes concerning an array of diverse issues and behaviours that would potentially lower the effects of social desirability and allow to capture greater within-group variability in both conservative and more egalitarian contexts. For instance, parents might feel more comfortable sharing negative views about their child's engagement in specific cross-gender activities than about cross-gender behaviour in general.

The research also found that parental attitudes were good predictors of hypothetical cross-gender toy choices across countries (although considerably less so in the UK); however, with an exception of the Polish sample, their contribution to explaining hypothetical gender-typed toy choices was small. This resembles the findings of the two previous studies that investigated the relationship between parents' attitudes and their intentions concerning toys (i.e., Kollmayer et al., 2018; Weisgram & Bruun, 2018). Kollmayer et al. (2018) found that parents' gender-role attitudes were significantly associated with parents' judgments concerning desirability of cross-gender toys for their children, but not with their judgments concerning desirability of

gender-typed toys. Similarly, Weisgram and Bruun (2018) found that parents' attitudes concerning gender-appropriateness of toys were a significant predictor of parents' willingness to purchase cross-gender toys (although only for sons), but not of their willingness to purchase gender-typed toys. The proportion of variance explained by attitudes in the latter study was similar to what was found in the current research.

One interpretation of these patterns of results could be that social perceptions of gender-typed and cross-gender toys tend to differ. Purchasing cross-gender toys as well as engaging in cross-gender play is not a norm in many social contexts (including countries like Poland, North Macedonia, or Egypt), and might be a source of controversy. Due to this, cross-gender toys may be more likely to be a part of the public discourse considering gender roles and gender in general. For instance, some groups might advocate for the benefits of children engaging with cross-gender toys, whereas others might see them as harmful to children's gender development and a threat to traditional norms and values. In line with this, Google search concerning cross-gender toys or cross-gender play in Polish and Macedonia yields headlines such as "Dolls teach boys empathy" and "Children should play with whatever they want", but also "Gender ideology is an attack on the innocence of our children" and "How to protect children from gender ideology?" Considering this, parents' intentions or willingness to buy cross-gender toys might be associated with their attitudes towards gender roles or social attitudes. On the other hand, in many parts of the world, purchasing or playing with gender-typed toys have traditionally been a norm, and therefore people might see it as something 'ordinary' or 'normal'. If behaviour is perceived as something done by everyone, then it will likely be less affected by any ideological variables. Hence, attitudes would play a limited role in parents' intentions to buy gender-typed toys. Finally, in contexts where both cross-gender and gender-typed purchases are normalised, parents' attitudes could have a limited impact on parents' intentions to buy either type of toy. This could potentially explain why the UK differed from the other countries in the study. Nonetheless, the above ideas are purely speculative and should be treated as such.

In this research, parental attitudes were also a consistently better predictor of parents' hypothetical cross-gender toy choices (and hypothetical gender-typed toy choices in case of the Polish sample) than of parents' gender-typing of real-life toy choices. This could be attributed to the fact that the former is a measure of intended or expected behaviour, whereas the latter is a measure of actual behaviour. As signalled in the literature review, although behavioural intention might be a good predictor of behaviour, it is also known that intentions do not always translate into action. The two are conceptually different phenomena, and as such might be

differentially impacted by situational and personal processes (e.g., normative influence, attitudes, perceived control). Regarding attitudes, research in the area of planned behaviour shows that the link between attitudes and behaviour intentions tend to be stronger than the one between attitudes and actual behaviour (e.g., Armitage & Christian, 2003). The current findings suggest that the same might be true in the context of parental toy choices. Moreover, in this research, attitudes not only were a stronger predictor of intended than real-life toy choices, but their predictive power was low in case of the latter in all national samples. Attitudes contributed to explaining only three to eight percent of the variance in gender-typing of real-life toy choices, whereas for hypothetical cross-gender toy choices it was over 20% everywhere apart from the UK. These findings suggest that while in some national contexts attitudes might influence parents' intentions and plans regarding toy purchases for their sons and daughters, their role in guiding parents' actual toy choices might be limited. This could explain why some of the previous studies that looked at actual parental behaviours concerning toys and play did not find any significant attitude-behaviour associations (e.g., Fagot, 1978; Wood et al., 2002), while association were observed in studies looking at expected or intended behaviours (e.g., Kollmayer et al., 2018; Weisgram & Bruun, 2018). Taking all of this into consideration, factors other than attitudes should be explored as potential causes of parents' gendered decisions regarding toys.

As already mentioned in the literature review, parents' toy choices could be a response to the preferences observed in or directly communicated by their children (e.g., Weisgram & Bruun, 2018; Wong et al., 2013). Nonetheless, there a number of reasons as to why responding to children's own preferences is unlikely to be the sole explanation behind parents' gender-typed toy choices. This will be discussed in more detail in the next section that focuses specifically on the relationship between parents' toy choices and children's toy preferences and play behaviours.

Another factor that ought to be considered are parents' own childhood preferences. It has been proposed that parents who played with gender-typed toys as children might have developed cognitive or affective associations (either explicit or implicit) with such toys, which could later influence the toys they select for their sons and daughters (Dinella & Weisgram, 2018; Weisgram & Bruun, 2018). For instance, a mother whose favourite childhood plaything was a doll, might purchase dolls for her daughter thinking that she will enjoy playing with them too. Weisgram and Bruun (2018) conducted a study to examine this suggestion and found that parents' retrospective toy play was indeed a significant predictor of parents' hypothetical gender-typed and cross-gender toy purchases for their children. Specifically, parents who

reported playing with gender-typed toys as children were more likely to indicate that they would buy gender-typed toys for their sons and daughters; while parents who reported playing with cross-gender toys as children were more likely to indicate that they would buy cross-gender toys for their sons and daughters. It is therefore possible that parents' own childhood experiences with toys could be a factor contributing to gender-typing in their toy choices for children. At the same time, it is important to point out that the study by Weisgram and Bruun (2018) looked at parents' expected and not actual toy purchases. As witnessed throughout this research, parents' intentions concerning toy choices and parents' actual decisions are largely independent phenomena, and their relationships with potential explanatory variables might differ. Therefore, it might be useful for future research to explore the relationship between parents' childhood play and their toy choices for children, while including a measure of actual behaviour.

Critical considerations aside, the influence of parents' own childhood experiences on parents' toy provisions could potentially explain the between-country differences in parents' real-life toy choices observed in the current research. The exploratory analysis found that parents in the UK engaged in less gender-typing when choosing toys for their children than parents in the three other samples. However, parents in Poland, North Macedonia, and Egypt all engaged in similar levels of gender-typing in real-life toy choices. If one were to assume that parents' toy choices are a product of their own childhood experiences, then parents' toy choices could be reflective of the wider socio-cultural environment in which they were growing up. Although Poland, North Macedonia, and Egypt might differ when it comes to gender roles and gender norms they promote nowadays, these differences might have been less pronounced 30-40 years ago. For instance, in the late 1980s, women in Poland were experiencing high levels of discrimination in the labour market, with average woman's earnings accounting only for 60-70% of a man's salary (e.g., Brainerd, 2000; Fidelis, 2020); and this gender gap, although less pronounced, continued in the post-transformation period (e.g., Brainerd, 2000). Moreover, the majority of Polish society in the 1990s subscribed to the belief that men should be breadwinners, while women should take care of the household and childrearing (e.g., Saxonberg, 2000; Titkow, 1999). Similar observations considering women's role in the society could be made regarding late Yugoslavia and early Macedonian Republic (e.g., Kaser, 2008; Lakinska-Popovska & Bornarova, 2004). Accordingly, gender roles promoted in Poland and North Macedonia 30-40 years ago might have been more similar to those promoted in Egypt. The UK, on the other hand, with the third wave of feminism making its impact throughout the 1990s, might have still been somewhat more progressive (e.g., Park

et al., 2013). Therefore, parents' gender-related childhood experiences in the four countries could have followed the same pattern as parents' toy choices observed in this research, suggesting that the relationship between the two might have been possible. In more general terms, the influence of childhood experiences on parents' toy choices could explain why gender-typing in parents purchases appears to change at a slower rate than gender-related attitudes and norms.

Another factor that could potentially influence parents' gendered toy provisions and explain the low between-country variability in parents' choices observed in this research is gendered marketing of toys (e.g., Dinella & Weisgram, 2018). Research shows that even in more egalitarian Western contexts, toys tend to be marketed in a highly gender-stereotypical way (e.g., Auster & Mansbach, 2012; Kvidal-Røvik, 2021; Orenstein, 2011); in fact, gender-typed marketing appears to have increased in the last few decades as compared to 1970s and 1980s (Sweet, 2014). Toy producers generally consider boys and girls to be different target markets, and their products often include explicit gender labels or other characteristics that are associated with gender (e.g., gender-typed colours; Auster & Mansbach, 2012; Owen & Padron, 2015). Although gender-typed marketing of toys could differ to some extent from country to country, due to globalisation and technology developments, most parts of the world are likely to be exposed to similar products. For instance, toys produced by global giants such as Mattel, The Lego Group, and Disney, which do engage in gender-typed marketing (e.g., Auster & Mansbach, 2012; Azmi et al., 2021; Reich et al., 2018), are available in the majority of countries. Consequently, if parents' toy purchases are influenced by gender-typed marketing, they might be quite similar between countries, which would be in line with the findings of this research.

Unfortunately, the effects of gender-typed marketing have so far been solely explored in the context of children's gender-typed toy choices (e.g., Klinger et al., 2001; Pike & Jennings, 2005); and there appears to be no empirical data on how such marketing might impact gender-typed toy choices of parents. It is important to explore this, as studies suggest that parents tend to be affected by advertising when selecting toys. For instance, Hassinger-Das et al. (2021) looked at the influence of manufacturers' descriptions on parents' selection of electronic and traditional toys for infants. They found that when no descriptions were provided, parents were more likely to select traditional than electronic toys. However, when electronic toys were accompanied by a description concerning their developmental benefits, parents became more likely to select electronic toys. Therefore, what manufacturers say about toys might influence parents' toy choices. Regarding manufacturers' messages concerning gender (e.g., explicit or

implicit gender labels, photographs of a boy/girl playing with the toy), these could impact parents' decisions concerning toys in a few different ways. For instance, such messages could be interpreted as social norms, both prescriptive and descriptive, regarding who plays or should play with particular toys, and consequently, who typically receives or should receive them. Parents might feel reluctant or uncomfortable engaging in a purchase violating such norms, even if they personally believe that both boys and girls could play with the toy. In general, research in a variety of behavioural domains demonstrates that people's perceptions of social norms tend to predict both their intentions to engage in behaviour as well as their actual behaviour (e.g., Miller & Prentice, 2016; Smith et al., 2010), even if these norms are at odds with their personal beliefs (e.g., Crandall et al., 2002; Prentice & Miller, 1993). Alternatively, manufacturers' messages could influence parents on a more subliminal, automatic level; that is, they could activate certain implicit gendered associations that parents might not be consciously aware of. For instance, in cultures where pink is considered a marker of femininity, pink packaging might activate associations with feminine traits or femininity in general, leading to a parent of a boy ignoring such a toy without conscious consideration. Research shows that specific colour cues indeed tend to automatically trigger the activation of gender-related knowledge, even in cases where colour is an irrelevant part of the stimulus (e.g., Cunningham & Macrae, 2011); and such colour cues can influence brand perceptions and subsequent purchasing behaviours (e.g., Hess & Melnyk, 2016). All in all, future research might examine these ideas as well as the general effects of gender-typed marketing on parents' toy choices.

Other factors also have been suggested to potentially influence parents' toy choices (e.g., parent's financial situations and toy costs, family sex composition, media, family life-style; Al Kurdi, 2017; Dinella & Weisgram, 2018; McHale et al., 2003; Weisner & Wilson-Mitchell, 1990). However, as with the ones described above, they either received little empirical attention or have not been investigated at all. Furthermore, many "new" factors could yet be identified. In general, as previous studies have focused mainly on the role of attitudes in parental socialisation of play, much is left to explore in this area of research. In the future, it might be useful to conduct interview-based, qualitative studies that would explore parents' reasoning and motivations behind their gender-typed decisions concerning toys in more detail. This could potentially offer some insights as to which factors might be more important to explore or which factors have been overlooked in the past. Moreover, when investigating associations with parents' toy choices, future research might seek to include several factors at the same time, in order to assess their relative contributions to parents' gender-typed toy choices, and interrelations between them.



## **Parental Toy Choices as Predictors of Children's Toy Preferences and Play Behaviours**

The second main aim of this research was to explore the link between parental toy provisions and gender-typed toy and play preferences of one- to three-year-olds across four national samples. A wide range of studies have shown that parents both encourage their sons and daughters to play with different types of toys (e.g., Caldera & Sciaraffa, 1998; Fagot, 1978) and provide them with different types of toys (e.g., Fisher-Thompson, 1993; Rheingold & Cook, 1975). This differential treatment has been believed to contribute to the development of sex-typed play in children (e.g., Brown & Stone, 2017). However, there appears to be no empirical data that would support the relationship between parents' provision of gender-typed toys and sex differences in children's toy and play preferences. This research sought to fill in this gap. The following hypothesis was tested: The extent to which parents' toy choices are gender-typed is a positive predictor of the extent to which children's toy preferences and play behaviours are sex-typed. In other words, it was expected that children whose parents provide them with more cross-gender toys and less gender-typed toys would have less sex-typed toy and play preferences. The research looked at both hypothetical and real-life toy choices of parents.

The results indicated that parental toy choices were indeed significant predictors of children's gender-typed toy preferences in all the national samples. The proportion of variance explained by the model (including the three measures of parental toy choices) was high across samples and ranged between 29 and 36 percent. Parents' gender-typing of real-life toy choices was the most consistent predictor: it was found to significantly predict children's toy preferences in all the countries; it was also the strongest predictor and its effects were large. Hypothetical cross-gender toy choices of parents were a significant independent predictor of children's toy preferences in the UK, Poland, and Egypt (but not in North Macedonia). The contributions of this variable to the model were, however, much smaller than in the case of gender-typing of real-life toy choices. Finally, hypothetical gender-typed toy choices of parents were a significant independent predictor of children's toy preferences only in the UK. Their predictive power was, however, low. Further analyses suggested that the between-sample differences concerning the relative contribution of hypothetical toy choices to the model stemmed mainly from the fact that in some countries the contribution of hypothetical toy choices overlapped entirely with the contribution of real-life toy choices, whereas in others this contribution was, in part, unique.

Furthermore, the results indicated that parental toy choices were also predictive of children's gender-typed play behaviours in all national samples. The proportion of variance

explained by the model was, however, lower than in the case of toy preferences, and ranged between 10 and 17 percent (i.e., moderate-to-low effect). Parents' gender-typing of real-life toy choices was found to significantly predict children's play behaviours in all four samples. Hypothetical cross-gender toy choices of parents were also a significant independent predictor of gender-typed play behaviours in all samples. The effects of both predictors were moderate-to-small, but parents' gender-typing of real-life toy choices was a slightly better predictor than hypothetical cross-gender toy choices. Finally, hypothetical gender-typed toy choices of parents were found to be a significant independent predictor of children's play behaviours only in the UK and Poland, and their contribution to the model was low as compared to the other two predictors. Further analyses suggested that the differences concerning the relative contribution of hypothetical gender-typed toy choices to the model stemmed mainly from the fact that, in some countries, the contribution of gender-typed hypothetical toy choices overlapped entirely with the contribution of the other two variables, whereas in others this contribution was, in part, unique.

Apart from assessing the relationships between parental toy choices and children's gender-typed toy preferences and play behaviours, all the models included in the study tested also for any confounding effects of child's age and child's sex. Including these two variables in the analyses did not alter the observed patterns of results. However, both were found to be significant predictors of children's toy preferences in all four countries: older children as well as boys were reported to have more gender-typed toy preferences. Child's age was also a significant predictor of children's play behaviours in the UK, North Macedonia, and Egypt. In these three countries, older children were reported to display more gender-typed play behaviours. On the other hand, child's sex was a significant predictor of children's play behaviours in the UK, Poland, and North Macedonia. In these samples, boys were reported to display more gender-typed play behaviours. Overall, these findings are in line with previous research suggesting that boys' and girls' gender-related toy preferences and behaviours might increase with age in a linear fashion (e.g., Davis & Hines, 2020; Golombok et al., 2008), and that boys' preferences tend to be more gender-typed than girls' preferences (e.g., Charney & London, 2006; Dinella et al., 2017).

Overall, the findings of the current research were supportive of the hypothesis tested. The extent to which parents' toy choices were gender-typed was indeed a positive predictor of the extent to which both children's toy preferences and play behaviours were gender-typed; and this was true for all the national samples included in the study. The proportion of variance explained by parental toy choices was high for children's gender-typed toy preferences and

moderate-to-low for gender-typed play behaviours. This difference in effects is not surprising as the measures of parental toy choices and children's toy preferences tap into the same level of domain-specificity, whereas the measure of children's play behaviours taps into a more general domain. Moreover, parental decisions regarding toys constitute one of the main (and most direct) ways in which parents could influence their children's toy choices; however, there are other ways in which parents can impact more general play behaviours of their children and these might not always be linked to their practices and opinions concerning toys (e.g., children might observe their parents engaging in certain household roles and they might re-enact these roles in their play).

The study also found that the measure of actual parental behaviours, i.e., real-life toy choices, was the most consistent predictor of children's toy preferences and play behaviours, and an overall better predictor than the measures of intended behaviour, i.e., hypothetical toy choices. This is not unexpected, as theoretically, children's play preferences should be more related to the toys their parents provide them with than to parents' beliefs concerning what they will or should provide children with. Moreover, (variability in) parents' real-life toy choices might encompass (variability in) parents' intended toy choices, as behavioural intention constitutes one of the main antecedents of actual behaviour (e.g., Austin & Vancouver, 1996; Gollwitzer & Moskowitz, 1996); this would consequently reduce the independent contribution of intended toy choices in explaining child-level variables. Indeed, in some of the national samples the contribution of hypothetical toy choices overlapped entirely with the contribution of real-life toy choices. However, in some of the countries there were instances of parents' hypothetical gender-typed and cross-gender toy choices having a partial independent contribution to children's toy preferences and play behaviours. For instance, hypothetical cross-gender toy choices predicted children's toy preferences in the UK, Poland, and Egypt.

As discussed before, although the relationship between behavioural intention and actual behaviour tends to be high, behavioural intentions do not always translate into behaviour. Behavioural intentions are conceptually different from behavioural acts and as such might be differentially impacted by situational and personal factors. Intentions are believed to be a function of personal attitudes and subjective norms; behaviour may also reflect subjective norms and attitudes, but it might also be impacted by factors like perceived lack of control over the behaviour, habitual control, and social pressure (e.g., Webb & Sheeran, 2006). In the context of parental toy choices, parents' intentions to buy specific toys could be reflective of their personal attitudes towards these toys or more general beliefs concerning gender norms; however, when actually buying toys, parents could be affected by actual or perceived social

pressure (e.g., comments of other people in the store, expectations of being judged by a family member) or by some more automated processes (e.g., habits, non-conscious activation of gender schemata). Such differential influences could explain why in some of the study samples hypothetical toy choices were predictive of children's play independently of real-life toy choices. As some of these influences are also context-dependant (e.g., social pressure to comply with traditional gender norms will differ between countries), they could also potentially explain some of the between-sample differences observed in the study. Nonetheless, as any suggestions concerning sources of particular differences between particular national contexts would be solely speculative (and outside of the scope of this research), they will not be discussed. Future research might seek to further explore the links between parents' intentions to choose gender-typed toys and their actual real-life toy choices, and the contributions of each to the development of gender-typed play in children.

Despite some differences between the samples concerning the effects of specific measures of parental toy choices, the results of this study demonstrate that parents' choice of toys is predictive of not only children's gender-typed toy preferences, but also more general gender-typed play behaviours; and that these associations are culturally robust, as they were observed in four different cultural contexts characterised by different views on gender and gender roles. This could be viewed as evidence in support of social perspectives on gender development, which see parents as important socialisers of gender-typed behaviours in children. It has been suggested previously that parents might contribute to the development of sex differences in children's play by providing their sons and daughters with different toys. No study, until now, has however explored this link between parents' gendered toy provisions and children's sex-typed preferences empirically. This research provides empirical evidence that parents who provide their children with more gender-typed and less cross-gender toys have children who demonstrate more gender-typed toy preferences and play behaviours. Therefore, it appears possible that parental behaviours indeed facilitate the emergence of gender-typed play preferences. This is in line with evidence showing that children whose parents encourage gender-typed play are more likely to engage in such play (Eisenberg et al., 1985; Wong et al., 2013).

There are different ways in which parental toy choices could potentially influence children's preferences. First, when young children are continuously exposed to gender-typed toys (and have limited access to other types of toys), gender-typed toys might gain positive affective value as they become more familiar. In infancy, familiarity to stimuli has been consistently found to increase interest in objects and object categories (e.g., Civan et al., 2005;

Hunter & Ames, 1988). Second, by being exposed to some gender-typed toys children might develop particular skills, which they might seek to advance further by engaging with other similar toys. Finally, by exposing children to gender-typed toys parents might implicitly influence children to believe that such toys are appropriate for them and their gender, contributing to the development of gendered cognitions that will further facilitate gender-typed preferences and behaviours (e.g., Martin et al. 2002; Weisgram et al., 2014). Although more research is needed to explore these potential mechanisms through which parents' toy choices could impact children's play, it appears that a fairly strong association between the two might exist.

However, it should be highlighted that one of the main limitations of this research was its correlational and cross-sectional design, which makes it impossible to establish the direction of the relationship observed. Consequently, alternative interpretations of the findings should be given serious consideration. Specifically, the possibility that it is not parents' choices that influence children's preferences, but rather children's preferences that influence parents' choices is viable; and has been suggested in other studies on parental socialisation (e.g., Eisenberg et al., 1985; Weisgram et al., 2018). As mentioned previously, there is some evidence showing that children might demonstrate sex-typed toy preferences in visual paradigms as early as six months of age, even before they can fully engage with toys (e.g., Alexander et al., 2009). Moreover, it has been found that already two-year-olds request gender-typed toys from their parents (e.g., Bradbard, 1985), and that these requests might be rather uncompromising (e.g., Halim et al., 2014). Based on this, parents' toy purchases could be first affected by non-verbal displays of children's gender-typed preferences (e.g., looking behaviours, pointing, reaching), and then further reinforced by children's verbal statements and requests regarding gender-typed toys. As a result, parents whose children demonstrate more gender-typed play preferences could be more likely to engage in more gender-typed toy purchases, which would explain the relationships observed in the current research. This would be in line with parents' reports of children's intense preoccupation with a variety of interests and activities that appear to occur without any external encouragement (e.g., DeLoache et al., 2007). This would also be congruent with reports of clinicians who work with parents of gender non-conforming children, which indicate that parents frequently describe the experience of children presenting themselves to them with their cross-gender interests and behaviours early in life (e.g., Ehrensaft, 2011), and that many of them try to then accommodate these interests (e.g., Corbett, 2009).

Nonetheless, it seems unlikely that children's own play preferences could have accounted for the entirety of the relationships observed in this research. To reiterate what was already discussed in the literature review, parents tend to choose different toys and create different home environments for boys and girls even before children demonstrate or communicate any gender-related interests (e.g., Pomerleau et al., 1990; Rheingold & Cook, 1975), including gender non-conformity. Therefore, parents' purchases, at least initially, are likely to be independent from children's preferences. Further, these initial purchases will constitute an initial pool of toys that children are exposed to; this initial pool might already guide children's early preferences in a particular direction. On a different note, if children's preferences were to be the sole cause of parents' purchases in the current research, one could expect that the observed relationships would have increased in strength across the three age groups. As older children are able to directly request toys and their toy preferences are easier to observe, their influence on parents' choices should be more pronounced than in the case of infants. This impact should be especially evident in the case of the oldest group, as children's rigidity in gender-typed interests appear to increase significantly between the ages of three and four (e.g., Halim, 2012). However, the results of the current research showed that child's age did not seem to influence any of the relationships between parental toy choices measures and children's gender-typed toy preferences and play behaviours (see below). Therefore, there are several arguments as to why the findings of this research cannot be explained solely by the influence of children's play preferences on parents' toy choices. At the same time, it is clear that parents' toy choices and children's play preferences are not independent variables, and the relationship between the two may be bidirectional and dynamic. For instance, as suggested by Spivey et al. (2018), parents who are comfortable with cross-gender behaviour might provide more opportunities for their child to explore cross-gender interests (e.g., buying a doll for their son), while children who frequently engage in cross-gender activities might make their parents be more comfortable with non-stereotypical expressions of gender.

Overall, in the future, it would be advisable to examine these relationships through both longitudinal and experimental studies to determine the direction and strength of effects among the variables. For instance, one could measure parents' intended and actual purchases close to their child's birth and at several later time points, and look at children's sex-typed toy preferences at the age when they begin to emerge (six to 12 months; e.g., Alexander et al., 2009; Jadvá et al., 2010; Serbin et al., 2001) as well as when they are likely to be more firmly established (two years; e.g., O'Brien & Huston, 1985; van de Beek et al., 2009). In the future, it might also be useful to investigate sex-typed play in 'theybies', i.e., children whose parents

decided to raise them in gender-neutral way. Assuming that gendered treatment in such families is minimal, they might provide a good test for parental socialisation theories. If ‘theybies’ are found to demonstrate sex-typed preferences similar to those of children raised in gender-typical way, it could point to the limited role of parents in the development of sex-typed play. ‘Theybies’ might also provide more insight into the relative role of other socialisation agents, such as peers and teachers.

When interpreting the above findings, one should also consider issues that could potentially arise from employing particular measures of parent and child behaviour in this study. First, children’s toy and play preferences were measured through parental reports, which may be a somewhat unreliable measure of gender-typed behaviours in children (e.g., Pasterski et al., 2005). When reporting on the behaviour of their children, parents might be affected by various biases. For instance, they might seek to present their children as more or less gender-typed depending on what they consider socially desirable. Moreover, when recalling their children’s past play, they might remember certain behaviours better due to them being unusual/surprising or, on the contrary, fitting into their idea of how their child should behave. Similar issues could stem from the fact that parents’ toy choices were measured with self-reports. Parents could, for example, choose to report only such toy purchases that would represent what they believe is socially expected of them; alternatively, their reports could be affected by recall errors. Since similar biases might affect parents’ answers on both types of measures, this could potentially inflate the correlations between them: a parent who wants their child to appear more gender-typical might also report more gender-typed choices on their side.

Some of these potential problems might have been avoided by employing behavioural observation to measure children’s gender-typed toy preferences and play behaviours. However, the use of behavioural observation would make it impossible to recruit large and culturally diverse samples. In addition, as suggested by Wong et al. (2013), observation, though less subjective, can provide only a snapshot of a limited range of behaviour, often in an unusual setting; parent reports, on the other hand, can assess a wide array of behaviours displayed in everyday situations. Moreover, the choice of toys used in structured observations is limited and determined by the experimenter, while parent reports might include a wide array of toys available in the child’s environment. Therefore, parent reports might actually offer a more accurate estimate of children’s typical behaviours. Finally, and importantly, previous research has suggested that parental reports and behavioural observation of children’s play yield similar conclusions (e.g., Spencer et al., 2021), suggesting that, despite being prone to biases, parent reports are likely a valid measure of children’s gender-typed behaviours. Nonetheless, it might

be helpful for future studies investigating the effects of parental socialisation to use both behavioural observation and parent reports to measure children's gender-typed play; verifying parents' toy choices through other informants (e.g., partners, grandparents) could also be useful.

### ***Age as a Moderator of the Relationship between Parental Toy Choices and Children's Toy Preferences and Play Behaviours***

Apart from investigating the relationships between parents' toy choices and children's gender-typed toy preferences and play behaviours, this research also examined whether such relationships could be found for different age groups of children, and if so, whether these would be similar in strength. Any relationships between parental socialisation and children's gender-typed behaviours might be expected to diminish with children's age due to other factors increasing in influence. Before the age of two, children spend most of their time with their parents and their exposure to other socialisation agents is rather limited. Therefore, the effects of parental socialisation on children's preferences are likely to be the strongest at such age. Once children become more exposed to tv or online content as well as start attending a nursery school and spending more time with their peers, the relative impact of parental influences could decrease.

The results of this study showed that child's age group (12-23 vs. 24-35 vs. 36-47 months) did not influence any of the relationships between parental toy choices measures and children's gender-typed toy preferences. In other words, the strength and the direction of the relationships between parental toy choices variables and children's gender-typed toy preferences were not impacted by child's age. Similar findings were observed for the associations between parental toy choices measures and children's gender-typed play behaviours: none of them was affected by child's age. This could suggest that the potential influence of parental toy choices on children's gender-typed play remains fairly stable in the first few years of children's life (at least up to the age of four). Although around the age of two children's exposure to other social agents increases, it might be that their influences are unstable or/and limited until later ages.

Studies have shown that as early as two or three years of age children start segregating themselves into same-gender peer groups (e.g., Maccoby, 1988; Maccoby & Jacklin, 1987); this self-segregation by gender consequently results in socialisation by same-gender playmates, who reinforce gender-typed behaviours and punish cross-gender behaviours (e.g., Langlois & Downs, 1980). However, it has also been found that still at the age of three, the degree of gender segregation is rather low and changes from one situation to another; moreover, children



in these early same-gender groups continue to play with cross-gender toys (e.g., Powlishta et al., 1993). Similarly, although various media, such as cartoon shows and books, appear to promote gender-stereotypical roles and behaviours in boys and girls (e.g., Diekman & Murnen, 2004; Götz et al., 2008; Hunting et al., 2018), this issue seems to be more pervasive in media aimed at school-age children and adolescents than pre-schoolers (e.g., Walsh & Leaper, 2020). Moreover, many of the contemporary popular cartoon shows for younger children actually appear to challenge gender and sexuality stereotypes (e.g., Keys, 2016; Laskar, 2021; Moudry, 2017). Therefore, it is possible that the role of peers and media in socialisation of gender-typed play becomes more important later than early preschool years.

Nonetheless, as this study focused solely on parental socialisation, any suggestions concerning the influence of other socialising agents remain speculative. What is clear based on the current findings is that predictive power of parental toy choices on children's toy preferences and play behaviours appears stable from the age of one up to the fourth birthday. Future research might seek to explore these age effects further as well as examine the relative contributions of parental, peer, and media influences to children's gender-typed play.

### **Sex Differences in Children's Toy Preferences in Play Behaviours across Countries**

An accompanying aim of the current research was to examine cross-cultural robustness of sex differences in children's toy preferences and play behaviours. Although dozens of studies have investigated boys' and girls' play and toy preferences, consistently finding large sex differences, these studies have mostly been confined to Western, English-speaking, and industrialized nations; and those conducted outside of these English-speaking contexts, looked at similarly wealthy North-Western Europe (e.g., Lamminmäki et al., 2012; Nordenström et al., 2002; van de Beek et al., 2009). This is a limitation of the field, as results from such minority cultures cannot be assumed to generalise to other parts of the world, which might be characterised by different views on gender, play, and child-rearing practices in general (e.g., Gaskins, 2013; Roopnarine, 2010; Tudge et al., 2010). This research offered an opportunity to test whether sex-differences in children's toy preferences and play behaviours would be similar in a Western, English-speaking country (the UK) and in three novel contexts: Eastern European (Poland), Balkan (North Macedonia), and North African (Egypt). As already discussed, the four countries included in the study are known to differ in terms of various social phenomena that are likely to contribute to different beliefs regarding gender and gender roles (e.g., cultural values, religiosity, gender equality in various social domains). Therefore, building on the socialisation perspective on gender development, it was hypothesised that children in these

countries might differ regarding the extent of their sex-typed toy preferences and play behaviours. Specifically, it was predicted that children in Egypt would show the most sex-typed toy preferences and behaviours, whereas children in the UK would show the least sex-typed toy preferences and behaviours. Children in Poland and Macedonia were expected to be found in-between these two samples.

The results indicated that girls were reported to have more feminine (or less masculine) toy preferences than boys in all four countries, and that these differences were very large. However, there were some between-country differences concerning the overall size of this effect. The difference in toy preferences between boys and girls was significantly smaller in the UK than in Poland and North Macedonia. Polish, Macedonian, and Egyptian samples did not differ significantly regarding the size of the effect. Regarding more general differences between the samples, the results also suggested that children in the UK had more feminine toy preferences than children in North Macedonia, but the effect size for this comparison was small-to-negligible, and therefore it will not be discussed further.

Regarding play behaviours, the results showed that boys were reported to display more masculine (or less feminine) play behaviours than girls in all the countries. However, as in the case of toy preferences, there were some differences between the samples regarding the overall size of this effect. The difference in play behaviours between boys and girls was smaller in the UK than in Poland, North Macedonia, and Egypt. Further, it was smaller in Poland than in North Macedonia and Egypt. Macedonian and Egyptian samples did not differ significantly regarding the size of the difference. The effect of child's sex on play behaviours was large in the UK, large-to-very large in Poland, and very large in North Macedonia and Egypt. Regarding more general differences between the samples, the results also indicated that children in the UK displayed more masculine behaviours than children in Poland and Egypt. In addition, children in North Macedonia displayed significantly more masculine behaviours than children in Egypt. The effect sizes for all these comparisons were, however, small.

Overall, the results showed that sex differences in children's play behaviours found in the four samples were close to what was expected based on the social characteristics of each country. The difference between boys' and girls' play behaviours was largest in Egypt and North Macedonia and smallest in the UK. Polish children were in-between these samples. As to sex differences in children's toy preferences, these were more uniform across the countries. The only sample that differed was the British one; the difference between boys' and girls' toy preferences was smaller there than in two other samples. These results are in line with what was observed by Turner et al. (1993) in their cross-cultural study of British and Hungarian

children. Also there, the samples were found to be similar in terms of children's sex-typed toy choices, but between-sample differences were found regarding more general sex-typed activities. In general, the findings might suggest that children's general play behaviours, at least as measured by the PSAI, are more affected by various socio-cultural factors than children's toy preferences.

The PSAI was constructed in the early 1990s to include interests and activities favoured by either boys or girls. However, many of these interests and activities were also representative of what was considered traditionally masculine or feminine in many societies at the time. With changes in the overall social structure and adult gender roles occurring in more egalitarian societies, social perceptions of these interests and activities might have evolved, which could influence children's engagement in them. To give an example, the PSAI includes items referring to sporting activities (e.g., engaging in sports and ball games, climbing gym equipment). Although sports might have been traditionally a men's domain and many barriers to female sports participation continue to exist, the number of women engaging in sports, both professionally and leisurely, has been increasing in many parts of the world (e.g., Acosta & Carpenter, 2012; Donnelly & Donnelly, 2013; Sport England, 2021), and in some of the most egalitarian countries (e.g., Denmark, Sweden) women actually appear to be more likely to participate in sports regularly than men (e.g., Van Tuyckom et al., 2010). A similar situation appears to apply to women's sport viewership (e.g., Jones, 2021). As the number of female role models increases and women's sports become more popular, it might be more common for girls to develop interest in sports; and indeed, girls in the Western world appear to be increasingly involved in sports, even those seen as highly masculine (e.g., Bevan et al., 2021; Tanaka et al., 2021). In addition, as social perceptions change, girls might also experience more encouragement from different social agents to participate in sports. Familial support and encouragement as well as normalisation of the sport experience, particularly in terms of gender, have all been linked to girls' participation in physical activity (e.g., Dixon et al., 2008; Eime et al., 2013). Taking all of this into consideration, sex differences in sport-related activities in children might be expected to reflect gender roles and gender-related attitudes prevalent in children's cultural context at a given time.

Similar observations could be made regarding another PSAI item: 'playing house' (i.e., pretend cooking and cleaning). Although cooking and cleaning have long been seen as women's only domain, over the years many industrialized societies have witnessed an overall decrease in household labour participation among women and a continual increase in men's participation (e.g. Hook, 2006; Kan et al., 2011). Therefore, as women's participation in the

job market increases, the overall gender gap in household labour narrows down. As a result, boys might have more opportunities to observe their fathers, and men in general, performing chores and potentially model their behaviour in a symbolic play. In addition, as engaging in cooking and cleaning becomes a more gender-neutral domain, parents and other socialising agents might be more positive about boys engaging with domestic toys and in domestic activities. And indeed, research suggests that parents in more gender egalitarian settings find it desirable for both boys and girls to engage in domestic activities (e.g., Blakemore & Hill, 2008). Therefore, it is likely that sex differences in playing house are influenced by gender roles and gender-related attitudes in children's wider environment.

Many other activities included in the PSAI (e.g., playing at having a male occupation, avoiding getting dirty) might be susceptible to similar socio-cultural processes, which could lead to differing findings when the measure is used in different cultural contexts, like in the current research. Nonetheless, although it is likely that between-sample differences concerning sex differences in children's play found in the current research might be indicative of the effects of socio-cultural factors, the role of other influences cannot be discounted. Even if sex differences in children's play behaviours were found to be considerably smaller in the most egalitarian context (i.e., the UK) than in the least egalitarian one (i.e., Egypt), they were still large in size in the former context. This could potentially suggest that sex differences in the PSAI are in part affected by some universal factors, such as biologically-based predispositions. On the other hand, although the UK is more gender-egalitarian than the other three countries included in the study, it has not yet achieved full gender equality in many areas of social life, and therefore children in the UK are likely to be exposed to some level of gender-stereotypical socialisation that could have contributed to the observed sex differences. To measure the extent of socio-cultural influences on sex differences in the PSAI, it might be useful to investigate them in one of the most gender-egalitarian societies (Iceland, Finland, or Norway, WEF, 2021).

Regarding children's toy preferences, the fact that sex differences in this case were rather consistent across the four national samples may suggest that toy preferences are less susceptible to socio-cultural factors in child's wider environment. Further, between-country consistency could be interpreted by some as evidence in support of the biological perspective on gender development. Since boys and girls differ in their toy preferences to a similar extent across countries, and these differences are very large, it is possible that there are some universal processes that underpin these differences. As discussed previously, it has been suggested that sex differences in play could be attributed to the differences in prenatal and neonatal hormone exposure of boys and girls. Specifically, early androgens, which are notably

higher in boys than in girls, might contribute to masculinisation of play and toy preferences (e.g., Berenbaum & Hines, 1992; Pasterski et al., 2005). As to the underlying mechanisms, it has been proposed that by organising the developing brain, hormonal differences might result in universal perception/action differences between males and females (e.g., Alexander, 2003; Hurlbert & Ling, 2007; Williams & Pleil, 2008). For instance, boys might develop preference for propulsive or mechanical motion, which could later contribute to their preference for toy vehicles (Benenson et al., 1997, 2011; Connellan et al., 2000). Girls, on the other hand, might develop preference for human faces or social stimuli in general, which could later contribute to their preference for dolls and role-play (Connellan et al., 2000; Lutchmaya & Baron-Cohen, 2002). Therefore, the large and highly consistent sex differences in toy preferences observed in the current study could perhaps be due in part to such universal perception/action processes.

On the other hand, even if sex differences in toy preferences observed in the current research did not seem to be as reflective of children's wider cultural contexts, one cannot discount the potential influences of other more specific social factors. Findings discussed in the previous sections point especially to the role of parental variables. Parental toy choices were found to be a strong predictor of children's toy preferences across all samples in the current study. Moreover, similarly to children's toy preferences, parental toy choices did not seem to reflect the differences in gender-related norms and attitudes between the four national contexts. As theorised in the previous sections, parents' toy choices might be influenced by their own childhood experiences, which would make these choices independent, at least in part, of the environment parents find themselves in currently. If parents' toy choices do not depend on their present environment, and they influence children's toy preferences, this could lead to patterns of sex differences that are more similar across countries. Interestingly, in the study, the patterns of parents' real-life toy choices matched the patterns of sex differences in children's toy preferences across samples (e.g., parents in the UK were less likely to choose gender-typed toys for their children than parents in the other three countries; and children in the UK were less likely to play with sex-typed toys than children in the other three countries). Therefore, the influence of parental toy choices on children's play could potentially explain the patterns of sex differences in toy preferences observed in the current research. At the same time, as acknowledged previously, there is also a possibility that any relationships between parental toy choices and children's play observed in the current research could be indicative of parents simply responding to the preferences observed in or directly communicated by their children; and these preferences could stem in part from biological predispositions. Even if one discounts this possibility as the sole explanation of the observed effects, it is nonetheless evident that

biological and social phenomena are likely to interact and are difficult to separate. To attempt to disentangle the impact of biological and social influences on children's toy preferences, future studies might implement longitudinal designs where children's preferences as well as social factors (e.g., parental toy choices) are measured at multiple time points.

To conclude, sex differences in children's toy preferences and play behaviours were found both in the context that have been extensively studied before and in the three new cultural contexts. However, sex differences in children's play behaviours largely varied in size between samples in a way that was close to what was predicted based on the social characteristics of each country. This could suggest that sex differences in children's play (as measured with the PSAI) are susceptible to various socio-cultural factors. On the other hand, sex differences in children's toy preferences were more consistent across samples and very large in size, which could imply that there might be some universal processes that underpin such differences. Nonetheless, based on other findings in this research, parental influences could also be a part of the explanation of this pattern of results.

## **General Limitations and Considerations**

### ***Sample Biases and Other Disadvantages of (Online) Surveys***

Some of the limitations of the research presented in this dissertation stem from the fact that it was based on online surveys disseminated through various social media channels (including Facebook, community forums, and Instagram). Online surveys come with certain inherent problems and disadvantages that ought to be considered.

First, online surveys appear to be associated with specific self-selection biases. Studies suggest that respondent characteristics such as gender, education, ethnicity, or areas of interest might all influence the willingness to participate in online surveys (e.g., Jang & Vorderstrasse, 2019; Lefever et al., 2007). For instance, it has been found that more educated and more affluent people are more likely to participate in online surveys than less educated and less affluent people (e.g., Heiervang & Goodman, 2011; Jang & Vorderstrasse, 2019); moreover, women are more likely to participate than men (e.g., Sax et al., 2003; Smith, 2008; Underwood et al., 2000), and ethnic majorities are more likely to participate than ethnic minorities (e.g., Patrick et al., 2013; Porter & Umbach, 2006). Therefore, conducting online survey-based studies might lead to an over-representation of certain social groups over others. This seemed to be the case also in the current research. In both the pilot and main studies, the samples were relatively ethnically homogeneous, well-educated, and included more women than men. Consequently, it is unclear whether the findings discussed in this dissertation could be

generalised to the general population, especially since some of these sample characteristics have been previously associated with more egalitarian gender-related attitudes among parents (Kollmayer et al., 2018). At the same time, research has shown that more traditional modes of survey studies (such as paper-and-pencil mail or in-person surveys) are susceptible to similar self-selection biases (e.g., Curtin et al., 2002; Goyder et al., 2002; Moore & Taranai, 2002). Therefore, it is likely that similar samples would have been obtained even if the current research had been conducted via different means. Nevertheless, whichever method is used, increasing response from underrepresented demographic groups deserves consideration in future research.

Second, using online communities and social media groups to recruit participants might be a source of sampling bias (e.g., Alessi & Martin, 2010). Such groups might attract members who share similar values, beliefs, or interests, which may lead to the over-representation of a particular viewpoint among survey participants. The main study was advertised among some groups promoting specific parenting practices, such as positive discipline or attachment-based parenting. Such practices are associated with greater focus on children's needs and agency, which, in turn, could have influenced parents' responses to some of the questions included in the study (e.g., parents who focus on their children's needs could be more inclined to pay attention to children's preferences when choosing toys or be more open-minded regarding gender roles in children). Consequently, overrepresentation of such parents in the study could impact both the patterns and the generalisability of the results. Although an effort was made in the current study to reach a broad range of online groups that represent an array of different points of view, it was impossible to make sure that a similar number of members from these different groups would participate in the study. In some groups the study gained high visibility, whereas in others it was overlooked. In addition, as the study was advertised via a copyable link, participants were able to invite their friends and colleagues to participate, which further diminished control over sample characteristics. Therefore, it might be useful if future studies introduce measures that will help oversee whether different groups of parents are equally represented in their sample (e.g., via the use of individualised links).

Third, conducting online surveys (as well as online research in general) might make it more challenging to ensure participants do not engage in any deceptive practices (e.g., providing duplicate responses or lying regarding one's eligibility to participate), do not complete the study solely for the chance of reward, and pay the study their full attention (e.g., Evans & Mathur, 2018). In the current research, the survey platform allowed for collection of participants' IP addresses, which made it possible to control for potential duplicate answers. In

addition, participants had to share their email addresses if they wanted to participate in the prize draws and, therefore, any double entries would be easily spotted. Although some participants could have still overcome these safeguards (e.g., using a VPN, having alternative email addresses), there is no reason to believe that there would be many individuals willing to put so much effort for a chance to receive a small reward. Regarding participants' eligibility to take part in the main study, there was a high probability that participants actually were parents of children in the required age range, as the majority of Facebook parenting groups conduct personal information checks on those who request to join. Lastly, the average completion time for the study was approximately 24 minutes (slightly above the expected time), suggesting that participants paid attention when answering the survey, and not just clicked through it. Therefore, although it is possible that the data in the current research included some false or erroneous answers, their impact on the results would have been rather limited.

Notwithstanding the fact that the online nature of the current research might have impacted the representativeness of the samples and the quality of the data, there were also many benefits to using this methodology. To begin with, conducting the main study online made it possible to reach large groups of parents from geographically diverse locations (both locally and globally), which could not have been achieved via offline methods (due to financial costs and time constraints; e.g., Evans & Mathur, 2018). Most studies on parental socialisation have been limited to populations local to universities where these studies were conducted (e.g., Caldera et al., 1989; Kollmayer et al., 2018; Rheingold & Cook, 1975), which likely increased homogeneity of their samples. In the current study, parents from diverse urban and rural areas across four different countries were reached, resulting in possibly one of the most diverse samples recruited in research on parental socialisation to date.

Moreover, it is likely that conducting the study online led to higher participation rates than if the study had been conducted in person. Online (vs. in-person) studies tend to decrease the cost to participants (both in terms of time as well as money; e.g., Callegaro et al., 2015; Lefever et al., 2007); this might be especially relevant for parents of young children as their resources might be already stretched thin. Online studies reduce parents' need to take time off from work and other daily responsibilities or to arrange for alternative childcare; they can complete the online study at times convenient to them, and at their own pace.

Finally, conducting the study online might have resulted in lower levels of social desirability bias in participants' responses (e.g., Dillman & Smyth, 2007; Kreuter et al., 2008). Social desirability is associated with the degree of privacy and anonymity that a person experiences. When completing surveys online (vs. in person), participants feel more



anonymous as the researcher is not present, and therefore they appear to be more open when reporting certain beliefs or behaviours (e.g., Joinson, 1999). This is relevant, as the study focused on topics that could be considered sensitive by some respondents. For instance, some of the attitude questions asked about issues related to prejudice and discrimination, the phenomena that have been previously linked to social desirability in questionnaires (e.g., Janus, 2010; Phillips & Clancy, 1972). To conclude, choosing to conduct the research online might have affected both the composition of the samples and the shape of the data, but it also came with advantages that likely increased the power of the study and the variability in the responses.

### ***Underrepresentation of Data from Fathers***

Another important limitation of this research is the underrepresentation of data from fathers in the main study. Although the majority of social media groups in which the study was advertised were open to both mothers and fathers, and some targeted fathers specifically, only 112 participants out of 1,737 (6.4%) were fathers. As this group was further split across the four national samples, no statistically meaningful comparisons between mothers' and fathers' behaviours and attitudes could have been conducted; it was also impossible to test whether gender of the parent would influence the relationships between parent- and child-level variables in the study.

There is evidence showing that fathers both hold less egalitarian gender-related beliefs (e.g., Apparala et al., 2003; Athenstaedt, 2000; Kollmayer et al., 2018) and tend to encourage gender-typed play behaviours in their children more than mothers do (e.g., Caldera & Sciaraffa, 1998; Langlois & Downs, 1980). Little is known, however, about differences between mothers' and fathers' toy provisions outside of play. Based on the aforementioned research, one could expect that fathers purchase more gender-typed toys and less cross-gender toys for their children than mothers do. Kollmayer et al. (2018) investigated this hypothesis, finding no significant differences between mothers and fathers in their reported preference for specific toys for their children. Similarly, Fisher-Thompson (1993) found no significant differences between mothers' and fathers' toy purchases for sons. They did, however, find a difference in toy purchases for daughters: fathers were more likely than mothers to buy nongender-typed toys (i.e., cross-gender and neutral toys), which would suggest that fathers might actually engage in less gender-typing when choosing toys for their children. Although more research might be needed to establish patterns of toy choices among mothers and fathers, it is nonetheless likely that if more fathers participated in the current study, the patterns of both

attitudes and behaviours observed could have been different. In addition, it is possible that the relationship between parental attitudes and behaviours investigated in the study could have been stronger for fathers than for mothers, as men appear less likely to adapt their behaviours to external social pressures, such as social ostracism (e.g., Williams & Sommer, 1997) or normative influence (e.g., Bond & Smith, 1996).

Furthermore, no research so far has investigated the relative influence of maternal vs. paternal socialisation on gender-typed play behaviours. It has been proposed that fathers might be more important in socialising children's gendered play preferences, as the time they spend with their sons and daughters is more focused on play, as compared to mothers, who spend more time on caregiving responsibilities (e.g., Brown & Stone, 2018). In addition, fathers are more likely than mothers to give negative responses (e.g., criticism, ridicule) to children's cross-gender play (e.g., Fagot, 1978; Langlois & Downs, 1980); such responses have been proposed as one of the causes of behaviour avoidance in children (e.g., Jadva et al., 2010). On the other hand, despite the ongoing social changes in labour division between men and women, the majority of young children continue to spend most of their day with their mothers. For instance, in the UK, only two percent of fathers take advantage of shared parental leave (Usobrone, 2019); while in Poland, mothers are a hundred times more likely than fathers to take such leave (Ambroziak, 2018). Therefore, while fathers do have opportunities to exercise influence over children's behaviour during joint play, mothers' overall influences might be more constant; for example, they might have more occasions to witness their child's individual play and react to it, or to purchase toys together with their child. Taking this into consideration, it is possible that including more fathers in the current research would have influenced the relationship between parental toy choices and children's play, although the nature of this influence is a matter of speculation.

To conclude, it is important to acknowledge that the results of this research are a reflection of primarily maternal socialisation influences, and different findings could be obtained among fathers. At the same time, since mothers tend to play the role of primary caregivers more often than fathers, perhaps it should not come as a surprise that they are also more likely to participate in studies on children's socialisation as they might be more interested in such studies and have greater exposure to them. Moreover, research including solely (or mostly) mothers should still be highly informative as mothers might be able to provide more accurate information on child's environment and behaviour, especially when it comes to infancy. Nonetheless, it might be useful for future research to examine the interplay between fathers' attitudes, fathers' toy choices, and children's gender-typed play. Subsequently, it might also be

important to investigate more complex dynamics within families, such as interactions between paternal and maternal attitudes and behaviours, and their joint effects on children's gender development.

### **Summary of Contributions**

The general aim of this dissertation was to contribute new evidence on the role of parents in the emergence of sex differences in children's play. More specifically, this dissertation sought to address two gaps in the literature: first, that few studies have explored what factors might be influencing gender-typing in parental socialisation; and second, that little is known about the actual link between parents' behaviours and their children's sex-typed play. The focus of the dissertation was on the interrelations between parental gender-related attitudes, parental toy choices, and children's toy preferences and play behaviours.

The first main objective was to examine the link between gender-related parental attitudes and differential treatment of sons and daughters in terms of toy choices. Gender-related attitudes are the most frequently proposed factor behind parents' gendered toy provision, yet there is little empirical evidence supporting the relationship between the two. Moreover, studies that have explored it, looked solely at parents' intended toy choices and not actual behaviours. The research presented in this dissertation is the first to investigate the association between parental attitudes and both intended and actual parental decisions regarding toys. The second main objective was to investigate the relationship between parents' gender-typed toy choices and children's sex-typed play. Although gender-typing in parental toy choices is believed to contribute to the development of children's sex-typed preferences and behaviours, there appears to be no investigations of the relationship between the two. The research presented in this dissertation is the first to empirically examine whether parental toy choices are predictive of young children's toy preferences and play behaviours. An accompanying objective was to examine and compare sex differences in children's toy preferences and play behaviours in different cultural contexts. The research was conducted in four diverse countries (the UK, Poland, North Macedonia, and Egypt), making it likely the most culturally robust investigation of parental socialisation influences in the area of child play to date. The research focused on parents of one- to three-year-olds.

Parents' attitudes were found to predict both parents' hypothetical and real-life toy choices in all four countries. However, their predictive power was substantial only in the case of hypothetical toy choices. This could suggest that attitudes might influence parents' intentions and plans regarding toy purchases for their sons and daughters, but their role in directing

parents' actual toy choices might be limited. Factors other than attitudes might play a more pronounced role in parents' decisions concerning toys. Such factors could include parents' own childhood preferences, children's preferences, gender-typed marketing, and many others. The research results further indicated that parents' toy choices were predictive of both children's gender-typed toy preferences and gender-typed play behaviours, and that these effects were culturally robust and did not vary by child's age. The measure of actual parental behaviours, i.e., real-life toy choices, was the most consistent predictor of children's behaviours, and an overall better predictor than the measures of intended behaviour, i.e., hypothetical toy choices. These findings could be interpreted as evidence in support of social perspective on gender development, which sees parents as main socialisation agents of gender-typed play in children. Since parents who provide their children with more gender-typed and less cross-gender toys have children who demonstrate more gender-typed toy preferences and play behaviours, it is possible that parental toy choices do have an influence on the development of gender-typed play in children. Considering the lack of age effects, it is also possible that this influence of parental toy choices remains stable in the first few years of children's life. Nonetheless, the correlational and cross-sectional nature of the present work constitute an important limitation of this research, and any inferences about the directionality and the observed relationships should be made with caution, as alternative explanations are plausible. Finally, regarding sex differences in children's toy preferences and play behaviours, these were found in all four cultural contexts. However, differences in boys' and girls' play behaviours largely varied in size between samples, in line with what could be expected based on the social climate of each country. This could suggest that sex differences in general play are susceptible to various socio-cultural factors. On the other hand, sex differences in children's toy preferences were very large in size and more consistent across samples; this could imply that such differences might be influenced by universal (likely biological-based) processes. Nonetheless, based on the overall findings of the research, the potential role of parental influences should not be discounted.

Overall, this dissertation constitutes a first step in assessing the role of parental decisions concerning toys in the emergence of sex differences in children's play; and a step forward in exploring factors that might influence such decisions. The findings suggest that parents' toy choices might play a role in the development of children's sex-typed play, but that attitudes are likely to have a limited influence on these choices. However, as the research was correlational and cross-sectional, the magnitude and direction of the observed relationships should be explored further in longitudinal or experimental studies.

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## Appendices

### Appendix A: Participants' Information Sheet for Pilot 1

#### Toys: How do we perceive them?

You are being invited to take part in a research study. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

#### What is the purpose of this study?

You are invited to participate in a research study investigating the way people perceive children's toys. To participate, you must be (1) 18 years of age or older and (2) fluent in [language dependant on the country]. **You cannot complete this survey on a mobile device.**

#### Do I have to take part?

Taking part is entirely voluntary, and refusal or withdrawal will involve no penalty or loss, now or in the future. You are free to withdraw from the experiment at any time without explaining why.

#### What will the study involve?

This study is an online survey and will take you approximately 10 minutes to complete. You will view a series of pictures of toys and be asked questions about your opinions of these items. Then you will complete a set of questions on your demographic background. After completing the study, you can choose to enter your email address into a draw for [prize dependant on the country].

#### Are there any possible disadvantages or risks in taking part?

There are no known risks associated with participating in this study.

#### Confidentiality – who will have access to my personal data?

Personally identifiable data will not be made available outside of the study team. We will be using any personal information you give us in order to undertake this study and the University of Cambridge will act as the data controller for this purpose. The legal basis for using your personal information is to carry out a task (i.e. academic research) in the public interest. We will keep identifiable information about you for as long as necessary for the study. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will do our best to only use the minimum personally-identifiable information possible.

For further general information about the University of Cambridge's use of your personal data as a participant in a research study, please see <https://www.information-compliance.admin.cam.ac.uk/data-protection/research-participant-data>.

#### What will happen to the study results?

They will be kept for a minimum of 10 years securely in the Cambridge Department of Psychology in accordance with good research practice. Results from groups of individuals, without any means of identifying the individuals involved, may be presented at conferences and written up in journals.

**Who is organising the research?**

The study is organised in the Department of Psychology, University of Cambridge, by Marta Beneda. Questions or concerns can be directed to her at [Email redacted].

**Ethics Committee Approval**

The project has been reviewed by the Psychology Research Ethics Committee of the University of Cambridge.

## **Appendix B: Consent Form for Pilot 1**

### **Consent to Participate**

Please read and tick each of the following statements to acknowledge that you understand and consent to participating in this study. Please note that if you do not tick every statement, you will not be able to participate and will be taken to the end of the questionnaire.

- ☐ I confirm that I have read and understood the information about this study.
- ☐ I have received enough information about this study.
- ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- ☐ I understand that all personal information will remain confidential and that all efforts will be made to ensure I cannot be identified.
- ☐ I confirm that I am at least 18 years of age.
- ☐ I agree to take part in this study.



## Appendix C: Example of Questions Included in Pilot 1

Photo of a football player  
figure removed for  
copyright reasons.  
Copyright holder unknown.

How would you describe the toy above?



Photo of a scooter removed  
for copyright reasons.  
Copyright holder unknown.

How would you describe the toy above?



## **Appendix D: Participants' Information Sheet for the Main Study**

### **"Modern Parenting" Study**

You are being invited to participate in our research project "Modern Parenting". Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. If there is anything that is not clear or if you would like to receive more information, please contact [Email redacted]. Take time to decide whether you would like to participate. Once you have read all the information and made a decision, you will be asked to fill in a consent form.

#### **What is the purpose of the study?**

In this study, we would like to find out what parents of young children think nowadays about social roles and other relevant social issues and whether these opinions and attitudes differ from country to country. We also want to learn whether children's activity and toy preferences might be related to the attitudes of their parents. Finally, we would like to find out what kind of toys parents most often choose for their children.

#### **Why have you been chosen?**

You have been selected because you are the parent/primary caregiver of a 1-3-year-old child.

#### **Do you have to take part in the study?**

Your participation in this study is completely voluntary. You can withdraw from the study (by closing this window in your browser) at any stage without giving a reason.

#### **What will happen if you take part?**

If you choose to participate, you will be asked to complete an online questionnaire. In the questionnaire you will be asked about your opinions regarding social roles, political and social issues, and specific behaviours and activities that could interest your child. We will also ask about the toys you prefer for your child and about your child's activity and toy preferences. Finally, you will be asked questions about your demographic background, including your education, ethnicity, age, and family type. This information will be used to describe the group of our participants as a whole and will not be used to identify any one person. The questionnaire will take you 15-20 minutes to complete.

#### **What are the risks/disadvantages of taking part in the study?**

There are no psychological, physical, social, economic, or legal risks associated with participating in this study.

#### **What are the possible benefits of taking part?**

If you complete the study, you will be able to enter a draw for [prize dependent on the country]. Apart from this, we will also provide you with a summary of our research findings, so perhaps you will learn something interesting about children and parents from different countries.

#### **Will your taking part in this study be kept confidential?**

Any personally identifiable data (such as your email address) will not be made available outside of the study team. We will be using any personal information you give us in order to undertake this study and the University of Cambridge will act as the data controller for this purpose. The legal basis for using your personal information is to carry out a task (i.e.

academic research) in the public interest. We will keep identifiable information about you for as long as necessary for the study. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will do our best to only use the minimum personally-identifiable information possible.

For further general information about the University of Cambridge's use of your personal data as a participant in a research study, please see <https://www.information-compliance.admin.cam.ac.uk/data-protection/research-participant-data>.

### **What will happen to the results of the research project?**

They will be kept securely for a minimum of 10 years in the Department of Psychology in accordance with good research practice. Results from groups of individuals, without any means of identifying the individuals involved, will be summarised in a PhD thesis of one of the investigators and may be presented at conferences and written up in journals. Non-identifiable data may be shared with other researchers or the public as part of collaborations, joint projects, or open access provisions.

### **Who is organising the research?**

The study is organised in the Department of Psychology, University of Cambridge, by Marta Beneda together with [Names of collaborators in each country]. Questions or concerns can be directed to them at [Email redacted].

### **Ethical approval.**

The project has been reviewed by the Psychology Research Ethics Committee of the University of Cambridge.

Thank you for taking the time to read this.

## **Appendix E: Consent Form for the Main Study**

### **Consent to Participate**

Please tick each statement below as it applies to you. Please note that if you do not tick every statement, you will not be able to participate and will be taken to the end of the questionnaire.

- ☐ I confirm that I have read and understood the information about this study.
- ☐ I have received enough information about this study.
- ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- ☐ I understand that all personal information will remain confidential and that all efforts will be made to ensure I cannot be identified.
- ☐ I understand that, following open data recommendations, the data and findings obtained in this study may be shared with the research community, for example, by uploading the anonymised data file onto an online data depository.
- ☐ I confirm that I am at least 18 years of age.
- ☐ I confirm that I am the parent/primary caregiver of a child aged 1-3 years.
- ☐ I agree to take part in this study.

## **Appendix F: Adapted English Version of the SAQ**

Please indicate your evaluation of these general concepts. Use the provided scale ranging from "Very negative" to "Very positive."

1. Censorship of public opinion
2. Acceptance of refugees
3. Corporal (physical) punishment as an educational tool
4. Employed mothers
5. Disabled people in the workplace
6. Promiscuity
7. Preference for an English job seeker
8. Voting rights for non-native citizens
9. Single fathers
10. Leading role of men in society
11. Sex/gender transitioning
12. Legalisation of narcotics
13. Women in the army
14. Alternative medicine
15. Respect for authority
16. Homosexual marriage
17. Assimilation of foreigners
18. Status differences between groups
19. Women as leaders
20. Distribution of resources based on merit (i.e., meritocracy)
21. Protecting the rights of people who are 'different' from the norm

**Appendix G: Adapted English Version of the Child Gender Socialization Scale Items  
Included in the Main Study (Version for Parents of Boys)**

Please indicate your evaluation of your son taking part in the activities listed below (now or in the future). Use the provided scale ranging from "Very negative" to "Very positive."

1. Taking ballet lessons
2. Playing football
3. Playing with military toys
4. Playing with a toy kitchen set
5. Playing with toy guns
6. Playing with toy jewellery
7. Playing with a toy dish set
8. Playing with a toy tool kit
9. Playing with a toy nurse kit
10. Playing hopscotch
11. Playing with action figures
12. Playing with toy trucks
13. Playing with Barbie and similar dolls
14. Playing with baby dolls
15. Playing with toy cars

Please indicate the extent to which you agree or disagree with the following statements. Use the provided scale ranging from "Disagree strongly" to "Agree strongly."

1. I would discourage my son from playing with girls' toys or games.
2. I would discourage my son from acting like a girl.

## **Appendix H: English Version of the NGRO**

Below you will see a number of statements representing different opinions. We would like to find out to what extent these statements reflect your personal views. Please indicate the extent to which you agree or disagree with each statement. Use the provided scale ranging from "Disagree strongly" to "Agree strongly."

1. Men should be able to make use of parental leave after their children are born as much as women are.
2. It is preferable to have a male rather than a female boss.
3. Boys and girls should take on the same household duties.
4. Women are less interested in politics than men are.
5. Women should not be expected to do the housekeeping on their own.
6. A neat appearance is more important for a woman than for a man in order to make a good first impression.
7. Men as well as women should make sure to buy basic supplies for the household.
8. Women like it when men pay for dinner.
9. It is not a man's job to iron shirts.
10. A higher education is more important for men than women, because men are more likely to be placed in high positions.
11. Women are as qualified as men for leadership positions in technical fields.
12. When it comes to politics, men should listen to women more.
13. It would be good to have more male preschool teachers in society.
14. Men are better suited for some professions than women are.
15. Every boy should own a doll.
16. Girls like to help in the household more than boys do.
17. Cleaning tasks should be divided between spouses based on the time they have available.
18. The proportion of women and men in politics should be equal.
19. Female politicians are less trusted because they often have concerns other than their job.
20. Men generally earn more than women, because they are more devoted to their jobs.
21. It would be better to have a male than a female Defence Secretary.
22. Male police officers provide a greater sense of security than female police officers do.
23. Women are in charge of organising the household.

24. Women need to prepare at least one home cooked meal for the household everyday.
25. It is not okay for a woman to do home repairs while her husband prepares lunch.
26. House husband is as desirable a profession as house wife.
27. Usually women have more responsibilities in the household than men, because women are better housekeepers.
28. Men should engage in handicrafts (e.g., sewing, knitting) as much as women do.
29. Women and men are equally responsible for supporting the family financially.



## Appendix I: Pictures of Toys Included in the Measure of Hypothetical Toys Choices

### *Feminine purchases*

Photo of dolls removed for  
copyright reasons.  
Copyright holder unknown.

Photo of fancy dress  
costumes removed for  
copyright reasons.  
Copyright holder unknown.

Photo of a vanity set and a  
make up set removed for  
copyright reasons.  
Copyright holder unknown.

Photo of a doll styling head  
removed for copyright  
reasons. Copyright holder  
unknown.

Photo of doll outfits  
removed for copyright  
reasons. Copyright holder  
unknown.

Photo of a baby doll with  
accessories removed for  
copyright reasons.  
Copyright holder unknown.

Photo of a baby doll buggy  
removed for copyright  
reasons. Copyright holder  
unknown.

Photo of a My Little Pony  
toy removed for copyright  
reasons. Copyright holder  
unknown.

### *Masculine purchases*

Photo of action figures removed for copyright reasons. Copyright holder unknown.

Photo of super hero figures removed for copyright reasons. Copyright holder unknown.

Photo of toy soldiers removed for copyright reasons. Copyright holder unknown.

Photo of sports cards removed for copyright reasons. Copyright holder unknown.

Photo of a Transformer toy removed for copyright reasons. Copyright holder unknown.

Photo of a firefighter's set removed for copyright reasons. Copyright holder unknown.

Photo of guns and swords removed for copyright reasons. Copyright holder unknown.

Photo of cars and trucks removed for copyright reasons. Copyright holder unknown.

## Neutral purchases

Photo of crayons and plasticine removed for copyright reasons. Copyright holder unknown.	Photo of a slinky removed for copyright reasons. Copyright holder unknown.
Photo of a xylophone removed for copyright reasons. Copyright holder unknown.	Photo of board games removed for copyright reasons. Copyright holder unknown.
Photo of a toy tablet removed for copyright reasons. Copyright holder unknown.	Photo of a scooter and a tricycle removed for copyright reasons. Copyright holder unknown.
Photo of a swing and a trampoline removed for copyright reasons. Copyright holder unknown.	Photo of soft toys removed for copyright reasons. Copyright holder unknown.

## Appendix J: Real-Life Toy Choices Questions

Please think about the last time you and [NAME] played with toys together. What was the toy that you chose to play with?

It was: \_\_\_\_\_

Not applicable, because: \_\_\_\_\_

Please think about your daughter's/son's last birthday. What toy did you give her/him as a birthday present? If you gave her/him more than one toy, think about the one that was your first pick.

It was: \_\_\_\_\_

Not applicable, because: \_\_\_\_\_

Please think about the last gift-giving holiday you celebrated. What was the toy that you gave to [NAME]?

It was: \_\_\_\_\_

Not applicable, because: \_\_\_\_\_

Please try to remember the last time you went to buy a toy for [NAME] when there was no special occasion. What toy was it?

It was: \_\_\_\_\_

Not applicable, because: \_\_\_\_\_

What is the best toy, in your opinion, that [NAME] has ever received from your friends or relatives?

It was: \_\_\_\_\_

Not applicable, because: \_\_\_\_\_

## Appendix K: Toy Study–Toy Categories, Examples and Ratings

Toy/play categories	Examples	Gender ratings	
		M	SD
<b>Action and superhero figures</b>	Spiderman, Iron Man	2.60	1.06
<b>Animal families sets</b>	Sylvanian rabbit family, Li'l Woodzeez	4.26	0.91
<b>Animal figures</b>	Plastic snakes, safari animals	3.55	0.78
<b>Arts and crafts</b>	Colouring pencils, paint set	4.22	0.56
<b>Baby dolls and accessories</b>	Baby Annabell, feeding set	5.85	1.05
<b>Baby toys</b>	Rattle, teether	4.09	0.43
<b>Ball sports</b>	Basketball hoop & ball, golf set	3.24	0.94
<b>Balloons and inflatables</b>	Balloon, inflatable flamingo	4.02	0.35
<b>Balls and marbles</b>	Soft ball, wooden balls	3.60	0.81
<b>Bikes and ride-on toys</b>	Balance bike, scooter	3.78	0.67
<b>Board games and card games</b>	Memory game, Hungry Hungry Hippos	3.91	0.36
<b>Books and magazines</b>	Magazine with stickers, bath book	4.08	0.35
<b>Bubble makers</b>	Bubble wand, bubble machine	4.05	0.36
<b>Building blocks</b>	LEGO sets, wooden blocks	3.78	0.64
<b>Cars and trucks</b>	Matchbox cars, Tonka truck	2.22	0.99
<b>Cartoon characters</b>	'Hey Duggee' house, 'Bluey' family	4.51	0.95
<b>playhouses</b>	home		
<b>Clothing, bags, backpacks</b>	Suitcase, t-shirt	4.16	0.67
<b>Communication toys</b>	Walkie talkie set, toy mobile	3.77	0.59
<b>Construction vehicles</b>	Bulldozer, digger	2.17	0.99
<b>Dinosaurs and dragons</b>	T-Rex, dragon egg	2.94	1.02
<b>Doll houses and castles</b>	'Frozen' castle, Happyland cottage	5.49	1.13
<b>Domestic toys</b>	Hoover, sweeping brush	4.99	1.05
<b>Dressing up</b>	Dressing up box, fancy dress closet	4.99	1.11
<b>Electronics</b>	Toy laptop, toy tablet	3.67	0.65
<b>Farm toys</b>	Happyland farm, farm animals enclosure	3.88	0.60
<b>Fashion dolls and accessories</b>	Barbie doll, O.M.G. doll	6.46	0.82
<b>Fire department and police play</b>	Police station, firefighter's gear	2.51	1.07
<b>Food and kitchen sets</b>	Kitchen utensils, pizza set	5.11	1.13
<b>Furniture and home décor</b>	Beanbag, clock	4.90	0.95
<b>Gardening</b>	Toy lawnmower, garden spade	3.41	0.87
<b>Geography toys</b>	Map, globe	3.86	0.48
<b>Gymnastics and dancing</b>	Hula hoop, gymnastics beam	5.66	1.06
<b>Jewellery and jewellery-making</b>	Bracelet, necklace	6.07	1.03
<b>Jigsaws and puzzles</b>	Farm animals jigsaw, wooden puzzle	4.00	0.31
<b>Large outdoor toys</b>	Slide, swing	3.94	0.49
<b>Make up and beauty</b>	Vanity set, kids make up	6.57	0.80
<b>Martial arts</b>	Boxing gloves, punch bag	2.11	1.04
<b>Medical playsets</b>	Doctor's kit, hospital	4.22	0.64
<b>Military toys</b>	Toy soldiers, tank	1.73	0.90
<b>Modes of transportation other than cars</b>	Railway set, submarine	2.74	0.97

<b>Musical toys and instruments</b>	Drum, guitar	4.05	0.33
<b>Paw Patrol characters</b>	Marshall soft toy, Sky plastic toy	3.54	0.80
<b>People and people-like figures</b>	Little People figures, Chad Valley figures	4.20	0.88
<b>Peppa Pig characters</b>	Peppa Pig doll, Peppa Pig family	4.24	0.84
<b>Photography</b>	Camera, photo board	3.97	0.41
<b>Pirates</b>	Pirate doll, pirate hat	2.71	1.14
<b>Play with water</b>	Water guns, water balloons	3.67	0.66
<b>Princess dolls and accessories</b>	Elsa and Anna dolls, princess Raya doll	6.42	0.90
<b>Puppets</b>	Finger puppets, hand puppets	4.39	0.80
<b>Push and pull along toys</b>	Pull along dog, push along wheel	3.76	0.90
<b>Rocking toys</b>	Rocking horse, rocking caterpillar	4.08	0.46
<b>Sand and mud play</b>	Sandbox, beach bucket	4.00	0.38
<b>Science and exploration</b>	Microscope, fossil digging kit	3.64	0.72
<b>Sensory and interactive activity toys</b>	Activity cube, activity table	3.98	0.26
<b>Shape sorters and other sorting toys</b>	Animal shape sorter, pebbles sorter	3.98	0.43
<b>Shops and running errands</b>	Shopping trolley, wooden shop	4.67	0.91
<b>Slime and putty</b>	Slime-making kit, slime bucket	3.92	0.53
<b>Soft toys</b>	Teddy bear, plush kitty	4.40	0.90
<b>Stacking toys</b>	Stacking cups, wooden rainbow stack	3.84	0.57
<b>Toy weapons</b>	Nerf gun, lightsabre	1.83	0.94
<b>Toy workshop and tools</b>	Drill, toolbelt	2.33	1.01
<b>Toys teaching letters</b>	Alphabet blocks, alphabet fridge magnets	3.99	0.39
<b>Toys teaching numbers</b>	Abacus, counting bears	3.97	0.28
<b>Transformers</b>	Transformer robot, transformer car	2.27	1.01
<b>Vehicle accessories</b>	Ramp, car park	2.59	1.00