Fixing Onlies versus Advancing Multiples: Number of Children and Parents' Preferences for Educational Products

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Abstract

Due to a continuous decline in fertility rates in recent decades, the number of one-child families has been increasing in both developing and developed countries. Given this significant shift in family structure, it is imperative to investigate the complex dynamics of how the number of children within a family—whether it is a one-child family or a family with multiple children—affects parents' decision-making in the realm of education. Using a mixed-method approach, seven main studies, including a secondary data analysis (Study 1) and a field study (Study 2), and four supplementary studies, consistently found that, compared with multi-child parents, one-child parents have a stronger relative preference for deficit-based over strength-based educational products. Both mediation and moderation analyses suggest that this effect is driven by one-child parents' heightened parenting prevention focus. The current research not only enriches our understanding of parenting dynamics, educational decision-making, and parenting regulatory focus, but also has implications for a myriad of disciplines, including marketing, psychology, economics, and sociology. More importantly, it carries substantial implications for marketers, educators, and policymakers.

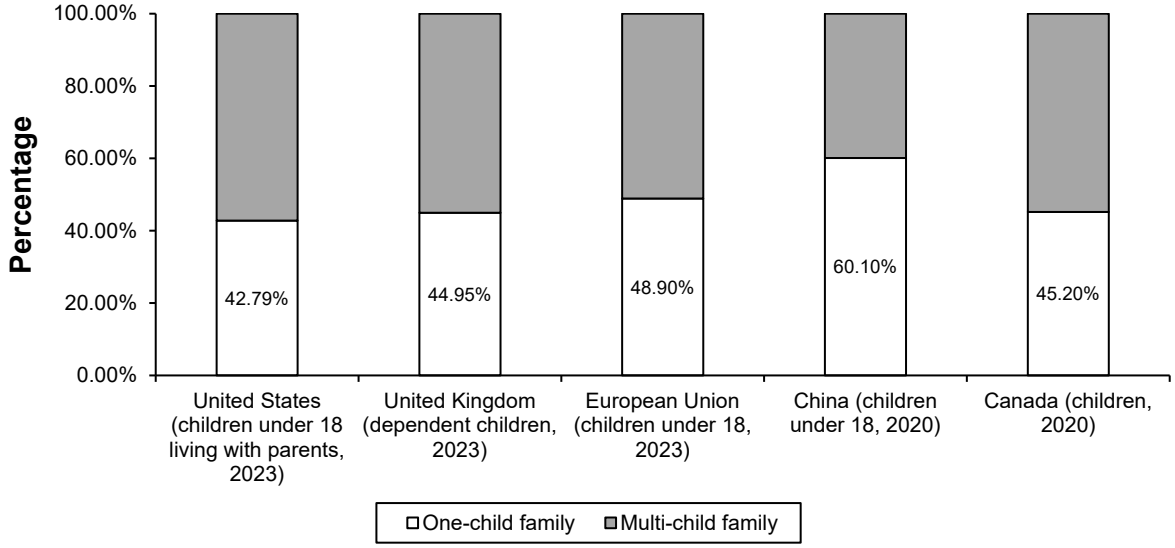
Keywords: number of children, educational products, parenting regulatory focus, deficit-based, strength-based, family structure

In recent decades, family structures around the world have changed significantly. One of the most prominent changes has been to family size—specifically, the number of children per household (George and Gold 1991; see changes in the total fertility rates of ten major economies in Web Appendix A). A decrease in fertility and a subsequent decrease in family size have become global trends driven by a range of political, economic, social, cultural, and individual factors, such as economic growth (Day 2015), increased population density (Sng et al. 2017), and the rise of individualism (Carter, Ransom, and Sutch 2003). For example, in the United States, the average number of children per family decreased from 3.7 in 1960 to 1.7 in 2022 (World Bank 2024). Even in Finland, a Nordic country famous for its world-class social welfare system, the number of children per household has plunged from 2.7 in 1960 to 1.3 in 2022 (World Bank 2024). From city-states such as Singapore to vast countries such as Canada, from developed economies like Japan to developing countries like Colombia, small families have become widespread. In many economies, one-child families now account for a significant portion of all households with children (Robey, Rutstein, and Morris 1993; see Figure 1).

With the increase in the number of one-child families, scholars in the social sciences have increasingly compared one-child families with multi-child families (e.g., Cameron et al. 2013; Chen and Goldsmith 1991; Liu, Munakata, and Onuoha 2005). This line of research has focused primarily on how having siblings affects individuals' developmental outcomes, such as academic achievement (Weitz and Wilkinson 1957), personality (Cameron et al. 2013), and individual well-being (Blake 1981), and has largely ignored the influence of the number of children on parenting behavior. Surprisingly, marketing research has remained

silent on this important topic. To fill this research gap, the current research examines the potential influence of the number of children in a family on parenting behavior in the marketing area—specifically, on parents' preferences for educational products.

Figure 1: Percentages of One-child versus Multi-child Families of Five Major Economies



The education market is a booming business. Education-related companies in the United States generated $1.1 trillion in revenues in 2020, and this number is projected to rise to $2.3 trillion by 2028 (Zion Market Research 2022). To better design effective marketing strategies and understand consumers' preferences for different educational products, marketing scholars (e.g., Chen, Wang, and Zhang 2024; Jung and Mittal 2021; Tu, Kwon, and Gao 2022) have categorized these products into different types. The current work focuses on the distinction between educational products based on the philosophy of self-improvement: deficit-based (i.e., those with a focus on addressing individuals' deficits) versus strength-based (i.e., those with a focus on developing individuals' strengths; Chen, Wang, and Zhang 2024). We hypothesize that one-child parents have a greater relative preference for deficit-based over strength-based educational products than multi-child parents, as one-child parents tend to

adopt a greater parenting prevention focus.

The present work makes several contributions. First, we contribute to the family dynamics literature in the marketing field by investigating a critical component of family structure, the number of children per family, in a marketing context. Second, by examining how the number of children impacts parents' behaviors rather than how it influences children per se, we extend previous literature in other fields that compared only child with children who have siblings (e.g., Cameron et al. 2013; Chen and Goldsmith 1991; Liu, Munakata, and Onuoha 2005). Third, we add to the ongoing conversation about parents' preferences for educational products (e.g., Chen, Wang, and Zhang 2024; Jung and Mittal 2021) by examining how a factor associated with family structure impacts parents' preferences for different types of educational products. Fourth, the present work contributes to the literature on regulatory focus by examining parenting regulatory focus (rather than general regulatory focus) and a critical antecedent of it—namely, the number of children in a family, demonstrating the influence of parenting regulatory focus on parents' preferences for educational products. Finally, and most importantly, the current work has significant managerial implications for marketers, educators, and policymakers.

Theoretical Framework

Only Child versus Children with Siblings

In human society, the family is the first and most common structure in which individuals develop their personalities, values, and abilities (Aviram 2014). Systems theory (Smith and Thelen 1994), the most widely acknowledged theoretical framework for investigating family-related research questions, views the family as a micro-level social system. In addition to

emphasizing the wholeness of families, this approach recognizes the interconnections and interactions among different elements within a family. This implies that different parts of a family system influence each other directly and indirectly, consciously and unconsciously (Minuchin 2002).

Tracking the changes in the number of children per household in recent decades has enabled social scientists to compare one-child families with multi-child families. Some research in this area has examined how having siblings impacts children's developmental outcomes (e.g., Cameron et al. 2013; Chen and Goldsmith 1991; Liu, Munakata, and Onuoha 2005). For example, some researchers confirmed the "one-child stereotype," suggesting that only child is generally less trustworthy, less cooperative, less liked by their peers, and more self-centered (e.g., Cameron et al. 2013; Kitzmann, Cohen, and Lockwood 2002; Thompson 1974). Yet, some studies have failed to demonstrate systematic differences in the developmental outcomes of only child and children with siblings (e.g., Chen and Goldsmith 1991; Liu, Munakata, and Onuoha 2005; Wang et al. 2000).

Another important question in this area has received scant empirical attention: What are the differences in how only child and children with siblings are parented? Answering this question is both theoretically and practically critical, as it not only could explain why having siblings may lead to different developmental outcomes but could also have implications for marketers, educators, and policymakers. Surprisingly, marketing scholars have not yet explored this topic. To fill this research gap, the current research investigates the difference between one-child families and multi-child families in the area of parents' spending decisions. Specifically, we aim to understand how the number of children in a family impacts

parents' preferences for educational products. We acknowledge that various factors, some of which could potentially be more significant than the number of children in a family, can greatly influence parents' educational decision-making for their children. Nevertheless, we contend that the number of children could play a vital role in shaping parents' decisions regarding their children's education.

Parents' Preferences for Educational Products

Parents' purchase of educational products constitutes the largest portion of parents' monetary investment in children in the United States (Hopcroft and Martin 2014). In a handful of studies, marketing scholars have begun to distinguish among types of educational products and to explore how individual or contextual variables influence parents' preferences for these different types of products. For instance, Jung and Mittal (2021) distinguished supplemental educational programs based on their pedagogical orientations—namely, conformance versus independence—and showed the influence of parents' political identities on their preferences for different supplemental educational programs.

In the current research, we broadly define "educational products" as any product with an educational purpose that is designed to help better one's child(ren). Of note, such products are not limited to those directly consumed by children; those targeting parents, such as parenting workshops and parenting books, are also included, as they share the same purpose. In the current research, we adopt an approach that differentiates educational products based on their fundamental focus—namely, whether they aim to address individuals' deficits (deficit-based) or to develop individuals' strengths (strength-based). Although both types of educational products aim to improve children, their foci of improvement are different.

Specifically, deficit-based educational products focus on areas in which children perform unsatisfactorily, whereas strength-based ones enable children to advance in domains in which they already perform well (Chen, Wang, and Zhang 2024).

Everyone has both deficits and strengths, and discussions of how we might better ourselves have become prevalent in academia and in daily life. Traditionally, we have been encouraged to focus on "fixing" what is not good about us (Seligman and Csikszentmihalyi 2014), but another approach urges us to focus on developing what is good about ourselves (Sankaranarayanan 2019). When people want to improve themselves, they can focus on one of these two approaches. For example, psychological interventions for people with mental issues emphasize either identifying and remedying clients' deficits, or finding and leveraging their strengths (Sauer-Zavala et al. 2019). Similarly, becoming a better leader could be achieved by either correcting one's weaknesses or maximizing one's talents (Kaiser and Overfield 2011; Morris and Garrett 2009). In a similar vein, educational strategies adopted by parents and teachers can be either deficit-based or strength-based (e.g., Hiemstra and van Yperen 2015; Waters 2015). For instance, remedial courses are created to address students' knowledge and skill deficiencies, whereas developmental courses are designed to enhance students' strengths (Higbee 1993). Psychologists have identified two types of self-regulated learning strategies (Hiemstra and Van Yperen 2015): strength-based self-regulated learning strategies, which focus on individual strengths and activities that improve those strengths, and deficit-based self-regulated learning strategies, which focus on individual shortcomings and activities to overcome them. More relatedly, in the marketing domain, Chen, Wang, and Zhang (2024) categorized educational products as either aimed at correcting weaknesses or

developing strengths, and further examined how parents' perceived social mobility impacts their preferences for these two categories of educational products.

To confirm the existence of this classification in consumers' daily lives, we conducted a pilot study on Prolific. Fifty U.S. residents (35 female, M_{age} = 35.52) were asked to write down daily scenarios in which parents could use educational products to fix their children's deficits and advance their children's strengths. Examples of daily scenarios about using deficit-based educational products include "Math or English apps targeting areas of weakness," "when a child has difficulties in a particular subject and needs extra help," and "a child is struggling to write at the level expected for their age." Examples of daily scenarios about using strength-based educational products include "a child is talented and able in math and wants to challenge themselves," "when a child has a strong interest in a particular area," and "when a child is doing quite well in a certain subject to improve further."

Numerous scholarly discussions have considered which of the two types of educational products is better; however, this question is beyond the scope of the current research. Instead, we are interested in exploring how parents' relative preferences for these two types of educational products are impacted by an important factor related to family structure—the number of children (i.e., one child vs. multiple children) in the family. We propose that, as compared to parents with multiple children, parents with one child will have a stronger relative preference for educational products with a deficit focus over those with a strength focus. Relevant to this, two points should be highlighted. First, given that parental resources are limited (Downey 1995; Sewell and Shah 1968), parents must choose how to allocate their money, time, and effort between addressing their children's weaknesses and nurturing their

strengths. We are not arguing that parents must exclusively opt for one type of educational products; rather, we suggest that parents prioritize and emphasize certain aspects of these products. Second, our argument does not imply that parents generally favor deficit-based educational products over strength-based products; instead, our focus is on understanding parents' relative preferences for these two types of educational products.

The Role of Parenting Regulatory Focus

Extending the basic hedonic principle of avoiding pain versus approaching pleasure to self-regulation, regulatory focus theory suggests that to achieve any specific goal, individuals may adopt either a prevention focus or a promotion focus (e.g., Higgins 1997; Lee, Aaker, and Gardner 2000). A promotion focus, reflecting people's basic need for accomplishments and nurturance, is characterized by individuals' pursuit of aspirations, whereas a prevention focus, concerning people's fundamental need for safety and responsibility, is marked by efforts to avoid losses and fulfill obligations (e.g., Higgins 1997; Lee, Aaker, and Gardner 2000). Regulatory focus theory has been applied to the context of parenting (e.g., Andre et al. 2019; Zhou et al. 2022). Parenting regulatory focus specifically captures the beliefs and values that motivate parents to raise their children in a particular manner. A parenting prevention focus emphasizes guiding children to avoid potential losses and fulfill obligations, while a parenting promotion focus emphasizes fostering children's ambitions and aspirations (Andre et al. 2019; Eiser, Eiser, and Greco 2002). While there may be a correlation between parents' general regulatory focus and their regulatory focus specifically related to parenting, the current research focuses on parenting regulatory focus, rather than general regulatory focus.

From an evolutionary standpoint, offspring serve as carriers of their parents' genetic material (Volk and Atkinson 2008). To optimize their chances of reproductive success, parents with multiple children must allocate resources among their offspring (Hertwig, Davis, and Sulloway 2002). In contrast, parents who have only one child will concentrate all of their resources on that child (Chanfreau and Goisis 2024). Thus, one-child parents typically allocate more resources, attention, and effort to nurturing their only child than multi-child parents allocate to each child, and this tends to result in overprotection of only child (Khadaroo and MacCallum 2021). Previous research has provided empirical evidence for a correlation between having only one child and exhibiting an overprotective parenting style. For example, Richards and Goodman (1996) found that one-child parents were rated as more overprotective than multi-child parents. Overprotective parents are "highly supervising, have difficulties with separation from the child, discourage independent behavior and are highly controlling" (Hancock, Lawrence, and Zubrick 2014, p.1). The primary objective of overprotection is to guarantee children's safety and security, which reflects a parenting prevention focus (Brussoni and Olsen 2013; Eiser, Eiser, and Greco 2002; Zhou et al. 2022). More importantly, the parenting prevention focus exhibited by one-child parents extends beyond personal safety and security to other areas. Since one-child parents devote all of their parenting resources to their only child, they tend to view their child as the sole hope and are resolute in preventing or rectifying even minor deviance or failure that could negatively impact the child (Howe and Madgett 1975; Xie and Hultgren 1994). This suggests a relationship between being one-child parents and a parenting prevention focus. For example, one-child parents were more concerned about their child's potential mental problems and

hence arranged more frequent revisits to psychiatric clinics than did parents with multiple children (Howe and Madgett 1975). Additionally, one-child parents were more inclined to believe that their child needed a savior, resulting in vigilant monitoring practices, a characteristic closely associated with parenting prevention focus (Allen 1975; Glass and Tabatsky 2014; Rains 2022). Therefore, we propose that one-child parents have a stronger parenting prevention focus than multi-child parents when making education-related decisions.

Prior work has demonstrated the effects of parenting regulatory focus on parents' attitudes and parenting behaviors (e.g., Eiser, Eiser, and Greco 2002; Zhou et al. 2022). For example, parenting prevention focus is negatively correlated with the quality of life experienced by children diagnosed with cancer (Eiser, Eiser, and Greco 2002). Since prevention orientation is embedded in the fundamental motivation of avoidance, prevention-focused parents tend to focus on how to help their children avoid potential negative outcomes when nurturing them. Children can experience negative outcomes from their deficits (domains where they currently do not perform well) and positive outcomes from their strengths (domains where they are already competent). Following this logic, compared with parents with a low level of parenting prevention focus, those with a high level of parenting prevention focus are more likely to concentrate their parenting efforts on helping children fix deficits (vs. develop strengths). Taken together, we formally hypothesize that:

H1: Compared to multi-child parents, one-child parents have a higher relative preference for deficit-based over strength-based educational products.

H2: The proposed relationship between the number of children and parents' preferences

for educational products is mediated by parenting prevention focus.

If parenting prevention focus can, at least partially, account for the relationship between the number of children in a family and parents' relative preferences for educational products, then there might be some factors that could moderate this relationship. Negative perfectionism captures individuals' concerns about mistakes and the establishment of unrealistically high standards (Egan, Piek, and Dyck 2015; Terry-Short et al. 1995), driven by the goal of preventing failures (Leonard and Harvey 2008). It is expected to be closely associated with a prevention focus, as it reflects a fear of making mistakes and a tendency to avoid failures (Beersma et al. 2013). Consequently, individuals exhibiting high levels of negative perfectionism are more likely to have a prevention focus than those who exhibit low levels of negative perfectionism. This association between negative perfectionism and prevention focus establishes a foundation for the moderating role of negative perfectionism in the proposed effect. More importantly, since there is a strong correlation between parents' self-oriented perfectionism and parental perfectionism (Leung 2022; Schittek, Roskam, and Mikolajczak 2023; Snell, Overbey, and Brewer 2005), parents who demand perfection from themselves tend to treat their children in the same way. Therefore, parents who score high on negative perfectionism should have a strong parenting prevention focus, regardless of the number of children they have. In such instances, the effect of the number of children on parents' preferences for educational products is likely to be diminished. Taken together, we hypothesize the following:

H3: The proposed relationship between the number of children in a family and parents'

preferences for educational products is diminished for parents with relatively high levels of negative perfectionism.

Overview of Studies

Using a multimethod research approach, we tested the above hypotheses across seven main studies (see Table 1) and four supplementary studies, including one secondary data analysis and one field study, by both measuring and manipulating the number of children. We fully acknowledge the challenge of manipulating the number of children in a family in a real-world setting. Despite potential issues associated with manipulating the number of children in a hypothetical scenario (e.g., imagining having children may not have a realistic effect, given that having children is a major commitment), such a research paradigm can provide suggestive evidence for a causal relationship. This research paradigm has been commonly used in previous studies regarding parenting behavior (e.g., Andeweg et al. 2021; Briers et al. 2024; Durante et al. 2015; Li, Haws, and Griskevicius 2019; Nikiforidis et al. 2018). In alignment with earlier studies on parenting behavior, several studies in the current research recruited non-parents (e.g., Andeweg et al. 2021; Briers et al. 2024; Liang, Huang, and Su 2023), while other recruited parents (e.g., Chen, Wang, and Zhang 2024; Girio-Herrera, Owens, and Langberg 2013; Wight et al. 2024) or included both parents and non-parents (e.g., Durante et al. 2015; Li, Haws, and Griskevicius 2019; Nikiforidis et al. 2018).

Study 1 leveraged data from a large-scale national survey and explored the relationship between the number of children in a family and the number of hours per week spent by a child on different types of tutorials. Study 2, conducted in a field setting with an incentive-

compatible measure, examined how the number of children impacts parents' real choices regarding parenting books. In Study 3, we used a consequential measure relevant to marketers to investigate the effect of the number of children on the selection of advertisement to view. Study 4 measured parents' preferences for deficit-based and strength-based educational products separately. The next two studies used mediation and process-by-moderation approaches to test the proposed parenting regulatory focus mechanism. Lastly, Study 7 revealed the moderating role of parents' negative perfectionism. In all studies, the target sample sizes were determined prior to data collection and were based on participant availability, study design, and collection method (Simmons, Nelson, and Simonsohn 2011). In all studies, we included all the collected data in the final analyses, and we reported all manipulations and measures employed throughout the research process. The detailed results regarding demographics and other variables (if any) for Studies 2-7 are provided in Web Appendix B.

Table 1: Overview of Main Studies

Study	Sample Selection	Sample Size	Educational Products	Dependent Variable	One-child Condition	Multi-child Condition
1	Parents in a Chinese national survey	4,334	Tutorials	Weekly hour difference	2.65 (8.04)	1.88 (7.07)
2	Parents in a Chinese primary school	544	Books	Real gift choice	30.5% chose deficit-based	21.6% chose deficit-based
3	U.S. consumers from Prolific (nonparents)	601	Schools	Choice of advertisement to view	14.4% chose deficit-based	9.0% chose deficit-based
4	U.S. consumers from Prolific (nonparents)	401	Educational products	Purchase likelihood (separate items)	Deficit-based: 5.19 (1.54)	Deficit-based: 4.79 (1.75)
					Strength-based: 5.65 (1.30)	Strength-based: 5.69 (1.22)
5	Consumers from Connect (nonparents)	402	Workshops	Relative preference (reverse coded)	4.51 (2.37)	3.99 (2.11)

6	U.S. consumers from Prolific (parents)	800	Workshops	Relative preference (reverse coded)	Prevention focus: 4.91 (2.54) Baseline: 4.78 (2.57)	Prevention focus: 4.83 (2.51) Baseline: 3.82 (2.43)
7	Chinese consumers from Credamo (both parents and nonparents)	400	Schools	Relative preference (reverse coded)	3.38 (2.41)	2.87 (2.03)

***Note*:** the two columns on the right indicate the mean value and standard deviation for each condition.

Study 1: A National Survey

Study 1 aims to provide initial support for our basic hypothesis by examining the data obtained in a large-scale, nationally representative survey. Administered at the family level, the survey explicitly required respondents to report the number of children in their families and their choices of educational products for each child (if they have any).

Methods

We obtained survey data from the China Family Panel Studies (CFPS), a nationally representative survey of Chinese communities, families, and individuals conducted by the Institute of Social Science Survey of Peking University, China (Xie and Zhou 2014). This national survey followed a strict sampling method, encompassing samples from 25 provinces in China. This dataset is particularly useful for our purposes because it includes parents' choices of educational products for each child. Specifically, the survey asked respondents who were parents to report the number of hours each of their children spent weekly on two types of extracurricular educational programs: curriculum-based tutorials and competition-based tutorials. Curriculum-based tutorials refer to educational programs focusing on helping students harness a satisfactory score in a certain subject they are not good at, whereas competition-based tutorials refer to educational programs focusing on helping students

prepare to win a competition in a certain subject that they are good at. To further boost the construct validity of the research, we conducted a pretest with Chinese participants regarding these two types of educational programs (see Web Appendix B). The results showed that participants indeed perceived "curriculum-based tutorials" as deficit-based educational products and "competition-based tutorials" as strength-based educational products.

We obtained the survey data collected in 2020. Families with no children at the time of participation were excluded from the analysis (see the distribution of the number of children per household in Web Appendix C). First, we recoded the number of children in each family into a binary variable (1 = one-child; 0 = multi-child), which served as the independent variable. Next, to capture parents' relative preferences for deficit-based over strength-based educational products, we calculated the difference in the number of hours per week each child spent on curriculum-based tutorials versus competition-based tutorials; this served as the dependent variable. A larger value of this variable represents a greater relative preference for deficit-based over strength-based educational products.

Results and Discussion

The data are nested such that we have information at both the child level (e.g., parents' choice of educational products for each child) and the household level (e.g., whether the family has a single child or multiple children). To accommodate the nature of the data, we first merged the household-level variables to the child-level observation; the latter was the unit of analysis in our main model. In other words, we counted multiple children within a family as separate cases. In addition, we clustered the standard error at the household level to account for any unobserved correlations among children within the same household.

Main model. To test our basic hypothesis (H_1), we performed a OLS regression analysis. To control for important observed factors relevant to our research question, we systematically incorporated control variables at various levels, including the child, parent, and parent-child levels (please refer to Web Appendix C for a full list of these items). The child-level variables included children's demographics, educational background, and daily behaviors. The parent-level variables consisted of parents' demographics, individual well-being, and subjective beliefs. Finally, the parent-child level variables included parents' time and financial investment in their children. We found that being the only child rather than one of multiple children had a significant positive effect on the difference in the number of hours that children spent weekly on curriculum-based tutorials versus competition-based tutorials ($\beta = .77$, SE = .27, $p = .004$; see Table 2). This means that the children from one-child families spent relatively more time per week on curriculum-based tutorials versus competition-based tutorials than did children from multi-child families. These results support our Hypothesis 1.

Table 2: Results of the Main Model

	Weekly Hour Difference (curriculum-based tutorials minus competition-based tutorials)
One Child (vs. Multiple Children)	.77***
	(.27)
Child-level Controls	Yes
Parent-level Controls	Yes
Parent-child-level Controls	Yes
Observations	4,334
R^2	.03
Adjusted R^2	.02

Notes: the value reported is non-standardized regression coefficient; the value in the parentheses indicates standard error; * $p < .1$, ** $p < .05$, *** $p < .01$

Robustness check: Causal identification. One key issue to consider in the main model is that parents who have multiple children may differ in systematic ways from parents who have only one child; this could result in endogeneity or sample selection bias. This issue may arise due to both observable and unobservable factors in our survey data. To address this concern and ensure the robustness of our findings, we took two approaches.

First, to address the problem of endogeneity caused by observed factors, we utilized the propensity score matching (PSM) technique (Rosenbaum and Rubin 1985). We first regressed whether a child belonged to a one-child family or to a multi-child family on the control variables mentioned earlier. Using these estimates, we then predicted the probability of a child belonging to a one-child or multi-child family, irrespective of their actual background (i.e., whether the child is from a one-child or multi-child family in real life). Based on this predicted probability, we matched one child from a one-child family with multiple children from a multi-child family who had a similar predicted probability. Instead of solely including observed factors as control variables, this matching process creates pairs of children from one-child families and multi-child families that are comparable along these observed factors (i.e., the abovementioned control variables).

The PSM technique was employed using the package MatchIt in R. Specifically, we matched one child from a one-child family with two children from a multi-child family, considering that multi-child families have a greater number of children compared to one-child families. To ensure that each observation appeared only once in the final sample, we conducted the matching process without replacement. Additionally, we set the caliper to .001, the maximum propensity score difference allowed. The estimate derived from the matched

sample is consistent with our main model (β = 1.02, SE = .38, p = .007; see Web Appendix C), suggesting that our findings are robust against potential issues of endogeneity and sample selection bias resulting from observed factors.

Second, to mitigate the problem of endogeneity caused by unobserved factors, we implemented the Heckman correction technique using instrumental variables (Heckman 1979). The Heckman correction involves two stages of estimation. In the first stage, we estimated a model regarding whether a family included one child or multiple children. Using the estimate from the first stage, we calculated the inverse Mills ratio and plugged it into the second-stage model.

For the identification of the Heckman correction, an instrumental variable should be included in the first-stage model. A valid instrumental variable should meet the requirements of relevance and exclusion. Relevance means that the instrumental variable should have a significant impact on a family's decision regarding the number of children they choose to have. Exclusion means that the instrumental variable should not be directly related to parents' preferences for educational products. Our study used financial penalty data from Bao et al. (2023), who examined how the strictness of one-child policy implementation affected child abandonment and abduction in China. They measured strictness based on the financial penalties imposed on families that exceeded the birth limit. Our analysis of the data presented in Bao et al. (2023) revealed that the financial penalty has a significant impact on family birth decisions (see Web Appendix C). Specifically, in provinces with higher penalties, families are more likely to have only one child, demonstrating satisfaction with the relevance requirement. The exclusion requirement cannot be directly examined but can be theoretically

supported. As suggested by Bao et al. (2023), the amount of the fine penalty is primarily determined by the provincial government. The enforcement outcome of the one-child policy serves as an important indicator for evaluating and promoting local officials. Therefore, the magnitude of the financial penalty is partially influenced by the differing political ambitions of local leaders. This decision-making process is logically unrelated to parents' preferences for educational products at the individual family level. By applying this method, we obtained an estimate that is consistent with our main model (β = .73, SE = .27, p = .006; see Web Appendix C).

Robustness check: Alternative model specifications. We also conducted tests using different model specifications. First, given the nested nature of the survey data, we aggregated the observations at the child level to the household level by calculating the average across children within the same household. The estimated effect is similar in magnitude to that in our main model (β = .68, SE = .29, p = .018; see Web Appendix C). Second, instead of using the difference in hours per week spent by each child on curriculum-based versus competition-based tutorials as the dependent variable, we used the hours each child spent per week on curriculum-based (competition-based) tutorials as the dependent variable and the hours each child spent per week on competition-based (curriculum-based) tutorials as a control variable. We found that the number of children has an impact on the hours spent per week on curriculum-based tutorials (β = .77, SE = .27, p = .004) but that it does not have an effect on the hours spent per week on competition-based tutorials (β = -.01, SE = .03, p = .716; see Web Appendix C). Third, we conducted an additional analysis by breaking down parents' tutorial decision-making into two stages: (1) deciding whether the

child will participate in tutorials and (2) the duration of participation. This enabled us to account for observations in which the children did not participate in any tutorials. We found that belonging to a one-child (vs. multi-child) family significantly increases the likelihood that a child will participate in curriculum-based tutorials and the duration of such tutorials, whereas it does not impact parents' decision-making regarding competition-based tutorials (see Web Appendix C).

Study 1, with data collected in a large-scale national survey, zoomed into the relationship between the number of children in a family and parents' relative preferences for different types of educational products. Our results yielded initial support for our basic hypothesis that when parents have one child (vs. multiple children), they have a stronger relative preference for deficit-based over strength-based educational products. This effect persists when a series of important variables at the child, parent, and parent-child levels are controlled for. More importantly, we used PSM and Heckman correction techniques to address the problem of endogeneity or sample selection bias caused by observed and unobserved factors.

Study 2: Field Study

To offer stronger ecological validity, Study 2 tests the proposed effect of the number of children in a family on parents' relative preferences for educational products using an incentive-compatible measure in a field setting. Specifically, we collaborated with a Chinese primary school to examine parents' real gift choices. Study 2 measured the number of children in a family. The study was preregistered at https://aspredicted.org/phfm-ps8p.pdf.

Methods

The primary school we partnered with regularly administers surveys to parents. At the time of our study, the school planned to invite all parents whose children were in grades three through six to complete a short survey. In collaboration with the school, we were allowed to measure parents' relative preferences for educational products at the end of the survey by offering a real gift choice between two types of parenting books. Of the 952 parents who were invited, 544 (418 female; M_{age} = 39.81) completed the survey. In the ostensibly irrelevant survey, parents answered questions about their evaluations and expectations of the school's celebration activities regarding traditional festivals; they also indicated their gender, age, and how many children they currently had. No other information was provided by the parents. According to their self-reports, 187 parents had only one child, 330 parents had two children, 24 parents had three children, and 3 parents had four children.

After completing the survey, the parents were informed that in appreciation of their participation in the survey, they would have a chance to receive a book as a gift. Participants then revealed their preferences, in a binary choice between a book titled *Where Are the Strong Points: How to Find and Develop Child's Strengths and Advantages* (i.e., a "strength-based" book) and a book titled *A Place to Correct Problems: How to Understand and Fix Child's Weaknesses and Disadvantages* (i.e., a "deficit-based" book). Afterward, we sent book gifts to 20 randomly chosen parents.

Results and Discussion

Among one-child parents, 30.5% chose a deficit-based book. In contrast, 21.6% of multi-child parents indicated that they would prefer to receive a deficit-based book as a gift. A Chi-square test showed that as compared with multi-child parents, one-child parents were more

likely to choose a deficit-based book over a strength-based book (b = .47, SE = .20, Wald's χ^2 = 5.21, p = .022, OR = 1.59), consistent with our core hypothesis (H_1).

Using an incentive-compatible measure in a real-world setting, Study 2 found that compared with multi-child parents, one-child parents indicated a stronger relative preference for a deficit-based book over a strength-based book. The results of the first two studies, both of which measured the number of children in a family, provide real-world evidence supporting the proposed relationship between the number of children and parents' preferences for educational products, thus boosting the external validity of the findings.

We also conducted a pre-registered posttest (https://aspredicted.org/rc56-k75p.pdf; see Web Appendix B for details) for Study 2. The purpose of this posttest was twofold. First, we were interested in whether parents with multiple children differ in personality from those with one child. Therefore, we measured parents' Big Five personality traits. Second, we wanted to address an alternative explanation for the observed findings. Based on previous research suggesting one-child stereotypes, one alternative explanation could be that parents with one child anticipate more potential problems for their only child than parents with multiple children do for their children. To examine this possibility, we directly measured parents' beliefs about their children's weaknesses by asking them specifically how many weaknesses they thought their children had. The results of independent samples t-tests revealed no significant differences between one-child parents and multi-child parents in self-reported Big Five personality traits (ps > .193) and in beliefs about their children's weaknesses (p = .948). These non-significant results suggest that one-child parents and multi-child parents had similar personality traits in the current sample, and that the beliefs

regarding children's weaknesses could not explain the observed effect. However, we recognize the potential issues associated with our measure of children's weaknesses. For instance, it is uncertain whether participants truly counted the number of weaknesses their children had. Future research could explore this issue using more accurate measures.

Study 3: A Behavioral Measure with Marketing Relevance

Study 3 has two goals. First, it intends to demonstrate the proposed effect by manipulating the number of children in a family. Second, this study seeks to highlight the marketing implications of the findings by measuring parents' preferences for educational products using a behavioral measure relevant to marketers. Specifically, we are interested in participants' actual selection of advertisement to view (Bellman et al. 2021; Chen, An, and Yang 2016; Woolley and Shrif 2022). We predict that as compared to multi-child parents, one-child parents are more likely to choose to view an advertisement for deficit-based (vs. strength-based) educational products. This study adopted a two-cell (number of children: one-child vs. multi-child) between-subjects design.

Methods

Six hundred and one U.S. residents[1] (320 female; M_{age} = 30.48) who had no child at the time of the study were recruited from Prolific for a nominal payment. Participants were randomly assigned to either the one-child or the multi-child condition.

To manipulate the number of children, we instructed participants to imagine having either one child or three children in the future. They were then asked to write down their

[1] We followed Wight et al. (2024) to target a larger cell size in this study because it involves a behavioral measure.

parenting philosophy. This manipulation was borrowed from previous research on parenting behavior in the marketing field (e.g., Durante et al. 2015; Nikiforidis et al. 2018). Based on the assigned condition, participants were presented with two school options for their imagined one child or three children, along with a brief description of each school's educational philosophy. The Springdale School's philosophy focuses on finding and addressing a child's weaknesses, while the Laurelwood School's philosophy focuses on identifying and developing a child's strengths. Participants were then asked to choose which school's advertisement they would like to view for a duration of 20 seconds. Once they indicated their binary choice, they were redirected to the advertisement for their selected school. Finally, participants reported their gender and age, and then were debriefed.

Results and Discussion

In the one-child condition, 14.4% of participants chose to view the advertisement for the school with a deficit-based philosophy; the number in the multi-child condition was 9.0%. As expected, participants in the one-child condition were more inclined to view an advertisement of a school with a deficit-based (vs. strength-based) philosophy than those in the multi-child condition (b = .53, SE = .26, Wald's $\chi^2 = 4.05$, $p = .044$, OR = 1.69). Complementing Studies 1 and 2, we manipulated the number of children in Study 3. Using a behavioral measure (i.e., viewing an advertisement), Study 3 demonstrated that compared to parents with multiple children, parents with one child display a relatively stronger preference for deficit-based over strength-based products.

Study 4: Measuring Preferences for Deficit-based and Strength-based Educational

Products Separately

Since parental resources are limited (Downey 1995; Sewell and Shah 1968), parents must decide how to allocate their resources between addressing children's deficits and developing their strengths. Hence, most studies in the present research concentrate on choosing between deficit-based and strength-based educational products. Nonetheless, it is reasonable to question whether parents can realistically address children's deficits and develop their strengths simultaneously. To find out, Study 4 involves measuring parents' preferences for deficit-based and strength-based educational products separately. This approach can also help determine whether the proposed effect stems from the deficit-based side, the strength-based side, or both. Study 4 employs a 2 (number of children: one-child vs. multi-child; between-subjects) × 2 (educational product: deficit-based vs. strength-based; within-subjects) mixed design.

Methods

Four hundred and one U.S. residents (196 female; M_{age} = 34.81) who had no child at the time of study were recruited from Prolific for a nominal payment. They were randomly assigned to either the one-child or multi-child condition.

Participants assigned to the one-child (multi-child) condition were instructed to imagine themselves as the parents of one child (three children). They were told that their children excelled in one area while struggling in another and that, as parents, they could consider purchasing deficit-based educational products to address children's deficits and strength-based educational products to develop their strengths. Participants were then asked to rate their likelihood of purchasing strength-based educational products on a one-item, 7-point

scale and to rate their likelihood of purchasing deficit-based educational products on a similar scale. Finally, all participants disclosed their desired number of children throughout their lives, along with their gender and age.

Results and Discussion

A repeated measures ANOVA revealed a marginally significant main effect of the number of children ($F(1, 399) = 3.13$, $p = .078$, $\eta_p^2 = .01$), a significant main effect of educational product type ($F(1, 399) = 42.72$, $p < .001$, $\eta_p^2 = .10$), and a significant two-way interaction ($F(1, 399) = 4.53$, $p = .034$, $\eta_p^2 = .01$). This significant interaction illustrates a difference in relative preferences for deficit-based over strength-based educational products between one-child and multi-child parents, aligning with the results of previous studies. Further decomposing this interaction, participants in the one-child condition (M = 5.19, SD = 1.54) exhibited a greater preference for deficit-based educational products than did those in the multi-child condition (M = 4.79, SD = 1.75; $F(1, 399) = 6.02$, $p = .015$, $\eta_p^2 = .02$). Yet, there was no difference between one-child (M = 5.65, SD = 1.30) and multi-child parents (M = 5.69, SD = 1.22; $F < 1$, $p = .761$) in preferences for strength-based educational products, suggesting that the effect of the number of children on parents' preferences for educational products is driven by the change in preferences for deficit-based educational products, corroborating the findings of Study 1.

In Study 4, we asked participants in the multi-child condition to make a decision for three children in aggregate. Could this effect be applied to each child in a multi-child family? To answer this question, we conducted Supplementary Study 1 (see Web Appendix D) in which we asked participants in the multi-child condition to indicate their preferences for each child separately. We found that participants in the one-child condition had a stronger relative preference for deficit-based over strength-based educational products for their only child than

those in the multi-child condition did for each child. The results of this supplementary study show that our findings can be applied to the spending decisions made for each child in multi-child families.

Study 5: Mediating Role of Parenting Regulatory Focus

The primary purpose of Study 5 is to shed light on the proposed mechanism by measuring the key process variable—parenting regulatory focus. We predict that as compared to multi-child parents, one-child parents adopt a stronger parenting prevention focus toward their children, which in turn impacts their preferences for educational products. This study again employed a two-cell (number of children: one-child vs. multi-child) between-subjects design.

Methods

We recruited 402 (211 female; M_{age} = 33.89) participants who had no child at the time of study from Connect. They were randomly assigned to either the one-child condition or the multi-child condition.

We used the same method that was used in Study 4 to manipulate the number of children. Next, following the scale used in prior literature to measure parents' preferences for educational products (Chen, Wang, and Zhang 2024; Jung and Mittal 2021), we asked participants to indicate their relative preferences between two workshops on an eight-point bipolar scale (i.e., "As a parent of only one child [three children], which workshop will you prefer to register for your only child [three children]?"), with 1 indicating a preference for the deficit-based workshop and 8 indicating a preference for the strength-based workshop. Specifically, the deficit-based workshop can help remedy children's deficiencies, ensuring

that children will not suffer because of them, while the strength-based workshop can help develop children's talents, ensuring that children will excel in respective areas.

Next, we measured parenting regulatory focus with six items on an eight-point bipolar scale (adapted from Andre et al. 2019; $\alpha = .86$; see Web Appendix E for the full scale). Finally, we measured how many children participants wanted to have throughout their lives and their socioeconomic status (Yoon and Kim 2018), in addition to asking demographic questions, including gender, age, ethnicity, household income, and educational background.

Results and Discussion

As predicted, participants assigned to the one-child condition indicated a stronger relative preference for the deficit-based workshop over the strength-based workshop (reverse coded; M = 4.51, SD = 2.37) than did those assigned to the multi-child condition (reverse coded; M = 3.99, SD = 2.11; t(400) = 2.36, $p = .019$, d = .24). In addition, participants in the one-child condition reported a stronger parenting prevention focus (reverse coded; M = 2.80, SD = 1.35) than did those in the multi-child condition (reverse coded; M = 2.53, SD = 1.24; t(400) = 2.12, $p = .035$, d = .21). More importantly, a mediation analysis with 10,000 bootstrapping resamples (Hayes and Preacher 2014; model 4) confirmed that the effect of the number of children on relative preferences was mediated by parenting prevention focus (b = .19, SE = .10; 95% CI: .02 to .39). Consistent with the findings of previous studies, the results again reveal that one-child parents show a higher relative preference for deficit-based over strength-based educational products. Moreover, this observed effect is mediated by parenting prevention focus, confirming our proposed underlying mechanism (H_2).

Study 6: Manipulating Parenting Regulatory Focus

Study 6 aims to provide further support for the underlying role of parenting regulatory

focus by directly manipulating parenting prevention focus. If the heightened relative preferences of one-child parents for deficit-based over strength-based educational products can be explained at least partially by their level of parenting prevention focus, then instructing parents to adopt a parenting prevention focus should diminish the proposed effect. To test this, Study 6 adopted a 2 (parenting prevention focus manipulation: present vs. absent) × 2 (number of children: one-child vs. multi-child) between-subjects design. This study was preregistered at https://aspredicted.org/n54h-8dpz.pdf.

Methods

Eight hundred (474 female; M_{age} = 45.39) U.S. residents who had at least one child were recruited from Prolific. Participants were randomly assigned to one of the four conditions.

As in Study 5, participants were instructed to imagine themselves as the parents of one child or three children. To activate a parenting prevention focus, participants in the two parenting-prevention-focus-presence conditions read the following statement when engaging in the imagination task[2]: "Parents generally have different parenting goals. One crucial goal is for parents to prioritize the obligations and duties that their child may fall short of." In contrast, the above statement was absent in the two parenting-prevention-focus-absence conditions. Next, all participants indicated their relative preferences between the two workshops on the same eight-point bipolar scale as in Study 5. We also collected data on the number of children participants wished to have throughout their lives, as well as participants' gender and age.

Results and Discussion

[2] A pretest showed that the manipulation of parenting prevention focus did not impact participants' ease of understanding, level of involvement, and level of interest (see Web Appendix B).

A two-way ANOVA analyzing parents' relative preferences unveiled significant main effects of parenting prevention focus manipulation ($F(1, 796) = 10.38$, $p = .001$, $\eta_p^2 = .01$) and number of children ($F(1, 796) = 8.49$, $p = .004$, $\eta_p^2 = .01$), along with a significant interaction effect between these two factors ($F(1, 796) = 5.97$, $p = .015$, $\eta_p^2 = .01$). Planned contrasts indicated that without activating parenting prevention focus, participants with one child (reverse coded; M = 4.78, SD = 2.57) showed a stronger relative preference for the deficit-based workshop over the strength-based workshop compared to those with multiple children (reverse coded; M = 3.82, SD = 2.43; $F(1, 796) = 14.34$, $p < .001$, $\eta_p^2 = .02$), consistent with the results of prior studies. However, when the parenting prevention focus manipulation was activated, there was no significant difference in the participants' relative preferences for the two types of workshops between the one-child (reverse coded; M = 4.91, SD = 2.54) and multi-child conditions (reverse coded; M = 4.83, SD = 2.51; $F < 1$, $p = .739$).

In Study 6, we manipulated the proposed parenting regulatory focus mechanism by instructing participants to adopt a parenting prevention focus. As expected, the observed relationship between the number of children and parents' preferences for educational products was diminished when participants adopted a parenting prevention focus. To further support the role of parenting regulatory focus in this relationship, we conducted Supplementary Study 2 (see Web Appendix D). This study used a 2 (parenting regulatory focus manipulation: consistent vs. inconsistent) × 2 (number of children: one-child vs. multi-child) between-subjects design. In this study, we removed the wording "fall short of" used in the manipulation of parenting prevention focus in Study 6 to mitigate any potential demand effect. We replicated the main effect and also found that when one-child parents adopted a

parenting promotion focus, their relative preferences for deficit-based over strength-based educational products decreased, while multi-child parents' relative preferences for deficit-based over strength-based educational products increased when they adopted a parenting prevention focus. By directly manipulating parenting regulatory focus, Study 6 and Supplementary Study 2 offer consistent evidence for the parenting-regulatory-focus mechanism.

Study 7: The Moderating Role of Parents' Negative Perfectionism

Study 7 aims to investigate the moderating role of parents' negative perfectionism. As discussed earlier, we predict that the proposed relationship between the number of children and parents' relative preferences for educational products will occur when parents have a relatively low level of negative perfectionism, while the relationship will be diminished when parents have a relatively high level of negative perfectionism. To test this moderation effect, Study 7 employed a two-cell (one-child vs. multi-child) between-subjects design, with negative perfectionism being measured.

Methods

Four hundred (259 female; M_{age} = 29.06) Chinese participants recruited from Credamo, a Chinese online research panel, participated in this study. They were randomly assigned to either the one-child condition or the multi-child condition.

First, we employed the same method used in Studies 4-6 to manipulate the number of children. Participants were then presented with advertisements for two schools and asked to choose between them for their children. Both schools offered a similar quality education but

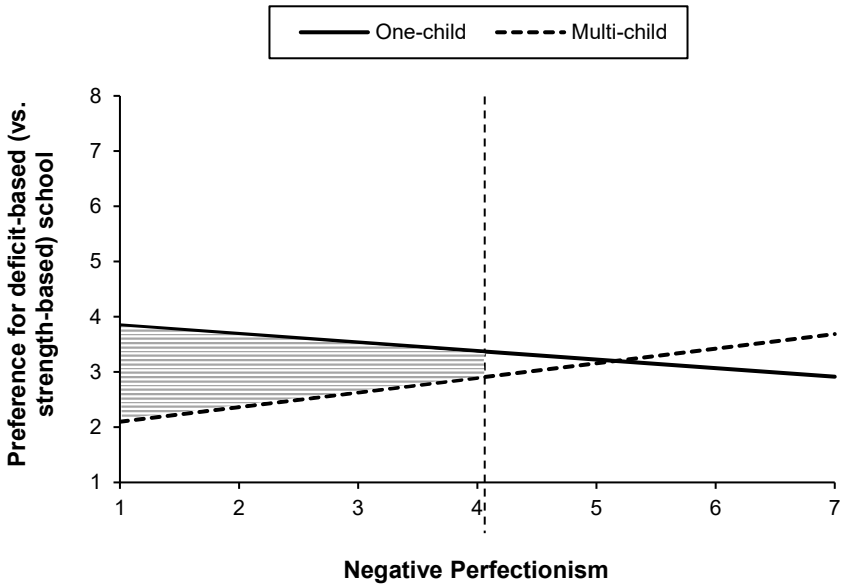
differed in their educational philosophies; one focused on addressing children's weaknesses, while the other emphasized nurturing their strengths. After viewing the advertisements, participants indicated their relative preference for school on an eight-point bipolar scale, with 1 indicating the choice of the deficit-based school and 8 indicating the choice of the strength-based school. Next, we measured participants' negative perfectionism using five items (α = .81; adapted from Frost et al. 1990; see Web Appendix E). Two sample items were "I feel guilty or ashamed if I do less than perfectly" and "when I am doing something, I cannot relax until it's perfect." Finally, we collected participants' gender and age.

Results and Discussion

We first investigated the main effect of the number of children on parents' preferences for educational products. As expected, participants in the one-child condition (reverse coded; M = 3.38, SD = 2.41) expressed a greater relative preference for the school with a deficit-based (vs. strength-based) educational philosophy than did those in the multi-child condition (M = 2.87, SD = 2.03; t(398) = 2.29, p = .022, d = .23). We then conducted a linear regression analysis on the preferences for educational products with the number of children (1 = one-child, 0 = multi-child), the level of negative perfectionism, and their interaction. The results revealed that both the number of children (b = 2.17, SE = .76, t = 2.87, p = .004) and negative perfectionism (b = .26, SE = .13, t = 1.99, p = .047) had significant effects on preferences for educational products. More importantly, there was a significant interaction between the two factors (b = -.42, SE = .18, t = -2.30, p = .022), indicating that the relationship between the number of children and preferences for educational products varied depending on the level of negative perfectionism. A floodlight analysis using the Johnson–

Neyman technique (Hayes and Preacher 2014; Johnson and Neyman 1936) identified a Johnson-Neyman point for negative perfectionism at a value of 4.11 (see Figure 2). Specifically, the proposed effect was observed among participants with negative perfectionism scores lower than 4.11, representing 51.8% of our participants.

Figure 2: The Moderating Effect of Negative Perfectionism



Study 7 found that, as compared to multi-child parents, one-child parents had a higher relative inclination to choose deficit-based over strength-based educational products, but only when parents had a relatively low level of negative perfectionism. When their level of negative perfectionism was relatively high, the relationship was attenuated. These findings suggest that negative perfectionism plays a significant role in the relationship between the number of children and parents' preferences for educational products, providing further support for the parenting-regulatory-focus mechanism.

To ensure the moderator's independence from the independent variable, we conducted additional analyses and posttests. First, no difference in participants' level of negative perfectionism was observed between the two conditions in Study 7 ($M_{one\text{-}child}$ = 4.00, SD =

1.25 vs. $M_{multi\text{-}child}$ = 3.91, SD = 1.18; $t < 1$, $p = .491$). Second, two posttests, one with British parents and the other with Chinese parents, revealed no significant differences in negative perfectionism levels between parents with only one child and those with multiple children (*p*s > .509; see Web Appendix B).

General Discussion

As family structure, and especially the number of children per household, has changed significantly in recent decades across the globe, how parents' parenting behavior and related consumption patterns evolve accordingly has become a vital research question awaiting empirical investigation. The current work examines this critical yet underexplored question in a marketing-related context: how the number of children in a family impacts parents' relative preferences for deficit-based over strength-based educational products?

Using a mixed-method approach, including secondary data analysis, field study, and online experiments, seven main studies and four supplementary studies examined how the number of children in a family influences parents' preferences for educational products. The first two studies, which measured the number of children, identified a correlational relationship between the number of children and parents' relative preferences. The five studies that followed created hypothetical scenarios in which the number of children was manipulated. By doing so, we were able to provide suggestive evidence for a causal effect of the number of children on parents' relative preferences for different types of educational products. More importantly, Studies 5 and 6, with mediation and process-by-moderation approaches respectively, demonstrated that parenting regulatory focus plays a role in the

relationship between the number of children and parents' preferences for educational products. Reassuringly, the seven main studies yielded consistent results using different dependent measures in both real (Studies 1 and 2) and hypothetical contexts (Studies 3-7) and with both measured (Studies 1 and 2) and manipulated (Studies 3-7) number of children. In addition, our effect existed not only when we measured multi-child parents' preferences in aggregate (Studies 2-7) but also when we measured their preferences for each child separately (Study 1 and Supplementary Study 1). Moreover, we analyzed a rich set of control variables at different levels (i.e., child, parent, and parent-child levels) across different studies, demonstrating the robustness of our findings.

Theoretical Implications

The current research contributes to the existing literature in several ways. Recognizing the importance of family dynamics in consumers' decision-making, marketing scholars have explored the influences of child-related factors on parents' spending decisions (e.g., Li, Haws, and Griskevicius 2019; Liang, Jiang, and Cotte 2019; Nikiforidis et al. 2018). However, given that family size is a critical component of family structure, it is surprising that, to date, marketing research has not gone further to explore how the number of children in a family impacts parenting behavior. On this front, the current research contributes to the marketing literature on family dynamics by examining the influence of the number of children in a family on parents' spending decisions. Meanwhile, prior literature in other fields (e.g., psychology, economics, and sociology) has long been fascinated by whether having siblings impacts children's developmental outcomes (e.g., Chen and Goldsmith 1991; Liu, Munakata, and Onuoha 2005), while largely ignoring its influence on parenting behavior. In

this sense, the current research complements the literature in other fields by showing how the number of children impacts parents' decision-making regarding children's education.

The current research also adds to the literature on parents' preferences for educational products. Despite growing research attention to the education market, only a limited number of marketing studies (e.g., Chen, Wang, and Zhang 2024; Jung and Mittal 2021) have examined parents' preferences for different types of educational products. Adding to this stream of research, we investigate the influence of a factor that is linked to family structure on parents' preferences for different types of educational products.

Past research has identified numerous factors that can shape individuals' regulatory focus (e.g., Fei, You, and Yang 2020; Park and Baumeister 2015). For example, being socially excluded leads to a prevention focus (Park and Baumeister 2015). Our research expands the existing understanding of regulatory focus by examining the role of parenting regulatory focus (e.g., Andre et al. 2019; Eiser, Eiser, and Greco 2002; Zhou et al. 2022) instead of general regulatory focus, and by identifying the number of children in a family as a driver of parenting regulatory focus.

Practical Implications

Education is the foundation of individual well-being and societal development (Sulaiman 2016). Therefore, it is important for marketers, educators, and policymakers to understand how parents' preferences for different types of educational products are shaped and to take action accordingly. By uncovering the relationship between the number of children that parents have and parents' preferences for educational products, our findings generate critical implications for various stakeholders.

First, as educational products usually fall into either the deficit-based or the strength-based category, our findings can be used to enhance the effectiveness of marketing activities in the educational product sector. Specifically, our work informs marketers that they should target parents for different types of educational products based on the number of children that parents have. This information could be gained through various methods, such as obtaining information about memberships, online search history, and purchase records. When selling deficit-based educational products, targeting one-child (vs. multi-child) parents increases the likelihood of successful sales outcomes. In contrast, when selling strength-based educational products, sales outcomes may remain the same regardless of whether one-child or multi-child parents are targeted. In addition, marketing practitioners can attempt to capitalize on different methods to alter parents' relative preferences for deficit-based (vs. strength-based) educational products. Our findings imply that by activating a parenting prevention (promotion) focus, parents with multiple children (one child) are more (less) likely to choose deficit-based (vs. strength-based) educational products. These strategies can be implemented by modifying the content of marketing communications, such as advertisements. Moreover, the current research suggests that the observed effect disappears when parents have a high level of negative perfectionism. To address this issue, marketers could distribute customer surveys, a practice recommended by the National Association of Realtors and has been adopted by brands such as Vanguard (He 2016), to identify parents with a high level of negative perfectionism. Using indirect indicators of negative perfectionism to segment the target market is also advisable. For example, consumers who display a high level of neuroticism, a low level of agreeableness, and certain mental or behavioral characteristics

(e.g., anxiety or eating disorders) are more likely to have high levels of negative perfectionism (Egan, Piek, and Dyck 2015; Roohafza et al. 2010; Terry-Short et al. 1995).

The current findings also have important implications for educators and policymakers. Since many countries have been implementing family-related policies to regulate and guide child-bearing behaviors (Gauthier 1996), it has become crucial for educators and governments to customize offerings within the education sector to better cater to the varying preferences of families based on their number of offspring. In addition to parents' preferences, educators and policymakers should also take into account macro-level educational goals and attempt to find ways to reconcile any potential conflict between parents' preferences and these objectives. For instance, if the aim of education is to cultivate well-rounded individuals, then the heightened preference of one-child parents for deficit-based educational products supports this objective. Accordingly, educators and policymakers might concentrate on promoting deficit-based education among parents with multiple children. Alternatively, if the educational objective is to nurture specialized individuals, then educators and policymakers should prioritize their attention to one-child parents over those with multiple children because the relatively stronger preference of multi-child parents for strength-focused educational products is already aligned with the educational goal.

Limitations and Future Research Directions

Binary effect versus linear effect. The focus of the current research has been to compare parents with only one child to those with multiple children. However, it is also worth considering whether there are any differences among multi-child families. Beyond the binary classification, would parents with more children be less prevention-focused and thus have a

lower relative preference for deficit-based over strength-based educational products than parents who have a lower number of children among multi-child parents? To test this possibility, we analyzed Studies 1 and 2, in which the number of children was measured. In Study 1, we observed a significant difference between parents with two children (M = 2.15) and those with three children (M = 1.20; p = .002), meaning that compared with three children, parents with two children had a stronger relative preference for deficit-based over strength-based educational products. However, we did not find any difference between parents with two children (M = 2.15) and those with four or more children (M = 1.39; p = .184) or between parents with three children (M = 1.20) and those with four or more children (M = 1.39; p = .800). In Study 2, there was no significant difference between two-child parents (21.8%) and three-child parents[3] (20.8%; p = .910) in their choice of the deficit-based book gift. Given the limited number of families with more than two children in Studies 1 and 2, which might render comparisons involving such families less meaningful, it would be valuable for future research to explore this issue in greater depth.

Causality. By conducting experimental studies where we manipulated the number of children, the current research indicated that there was a potential causal relationship between the number of children in a family and parents' preferences for educational products. We also employed techniques such as PSM and Heckman correction with instrumental variables to address the issue of causality in Study 1. Nevertheless, there may still be concerns regarding the possibility of reversed causality, especially in regard to the first two studies. For instance, could parents who are more prevention-focused be more likely to have only one child instead

[3] Out of all the parents surveyed, only three indicated that they have four children. This limited sample size hindered us from comparing four-child parents with other parents.

of multiple children? In Study 6, we found that manipulation of prevention focus did not have a significant impact on the number of children participants reported wanting to have (parenting-prevention-focus-manipulation-absence conditions vs. parenting-prevention-focus-manipulation-presence conditions: $p = .527$), suggesting that reversed causality may not be an issue in the observed relationship. However, it is crucial to interpret the identified causal link between child number and parents' preferences for educational products with caution. More systematic investigations into causality are needed in the future.

The role of parents' background. Undoubtedly, parents' background plays a crucial role in their decision-making regarding the number of children they have and their preferences for educational products. In Study 1, we carefully examined the role of parents' background by incorporating various variables related to both parents and parent-child dynamics. By considering these factors as covariates and employing techniques such as PSM and Heckman correction, we found that the observed effect was not driven by differences in parents' backgrounds. In addition, the posttest of Study 2 did not reveal any differences in Big Five personality traits between parents with only one child and parents with multiple children. Although one-child parents and multi-child parents may differ in their backgrounds, the relationship between the number of children and parents' preferences for educational products should still exist, regardless of the potential influences of parents' background. In a similar vein, while the proposed effect has been replicated across both Eastern and Western societies, it is valid to question the role of culture in the proposed effect, considering the substantial influence of culture on educational philosophy and parenting behavior. To delve into this cultural aspect, we conducted Supplementary Study 3 (see Web Appendix D), which

examined whether parents' power distance belief and self-construal, two popular cultural factors, could moderate the observed effect. However, neither of these factors had a moderating effect (*p*s > .410). Given the primary focus of the current research, we did not concentrate our efforts on examining the role of parents' background in the observed effect. However, future research could adopt a dyadic approach factoring in both the number of children in a family and parents' background.

Mechanism. It is possible that parents with multiple children are motivated to differentiate each child, leading them to view strength-based educational products as a means of fostering each child's uniqueness. However, the findings of Studies 1 and 4 suggest that one-child parents' stronger relative preferences for deficit-based over strength-based educational products are mainly driven by a difference in their preferences for deficit-based educational products. Compared to one-child parents, multi-child parents do not exhibit a stronger preference for strength-based educational products; this reduces the likelihood of this alternative explanation pertaining to multi-child parents' motivation to differentiate among their children. In addition, one might argue that multi-child parents have a lower preference for deficit-based educational products, as they have limited resources to allocate to each child and thus may be less attracted to fixing their children's deficits, which possibly requires more effort from children. However, our additional data (see Web Appendix B) do not support the belief that fixing children's deficits is more effortful than advancing their strengths, thus making this alternative explanation less possible. Although Studies 5 and 6 provide convergent evidence for the proposed parenting regulatory focus mechanism through mediation and process-by-moderation approaches, it is important to recognize that the

proposed relationship between the number of children in a family and parents' relative preferences for different types of educational products could be multiply determined. Future research can explore other possible explanations. Additionally, one limitation concerning the proposed mechanism is that the mediator is somewhat close to the dependent variable in terms of their conceptualizations and measures, which was observed in both the mediation and moderation studies. Therefore, it would be beneficial for future research to delve into what happens in the link between the number of children and parenting regulatory focus.

Scope of the effect. Some may also wonder the scope of the proposed effect. Is it applicable to leisure activities or sports as well? To answer this question, we gathered new data to investigate the proposed effect in the sports context (see Supplementary Study 4 in Web Appendix D). The results revealed no difference between parents of one child and parents of multiple children, suggesting that the proposed effect did not manifest itself in the realm of sports. We speculate that this could be due to parents being less likely to perceive being not good at sports/leisure activities as a deficit necessitating correction, unlike poor academic performance or behavioral problems. The problems that parents are most concerned about regarding children, as indicated in the prior literature (Chow and Zhao 1996), include accidents, illness, poor academic performance, and behavioral problems. This does not include sports and leisure activities, consistent with our insignificant results in the sports context. Parents are more inclined to link academic performance and behavioral problems to their children's future success than leisure activities or sports, potentially resulting in a lack of effect in these contexts (Kapur and Javed 2013). Despite insignificant results, it would be worthwhile for future research to explore the scope of our effect.

Another aspect that warrants attention is whether the number of children has an effect on parents' general regulatory focus. Specifically, could having only one child, as opposed to multiple children, affect parents' decision-making across various domains beyond parenting? While there may be a relationship between parents' general regulatory focus and their regulatory focus in parenting, any assertions about the effect of the number of children on general regulatory focus should be made with caution, pending future investigation.

Other possible research questions. We hope our research serves as a starting point that stimulates interesting research on a number of related topics. First, to cultivate well-roundedness, children typically need to focus on both their strengths and their deficits. However, recent work in the area of positive psychology has advocated emphasizing individual strengths, which has been suggested in numerous studies to enhance overall well-being and mental health (Quinlan, Swain, and Vella-Brodrick 2012; Schutte and Malouf 2019). If the number of children in a family has a significant impact on parents' preferences for educational products, then parents' educational decisions could have long-term effects on their children's development and well-being. It would be beneficial for future research to more deeply and broadly explore the implications of this question. Second, although the current research focuses on parents' preferences for educational products, it is quite conceivable that the number of children in a family could impact other aspects of parents' behaviors. For example, as one-child (vs. multi-child) parents have a stronger parenting prevention focus, they may be more sensitive to advertisements that easily elicit viewers' feelings of fear and be more likely to seek preventive healthcare for their children. Third, previous literature in other fields has investigated the influence of having siblings on

children's developmental outcomes, such as academic achievement (Weitz and Wilkinson 1957), personality (Cameron et al. 2013), and creativity (Yang et al. 2017). Thus, other than examining how the number of children affects parenting behaviors, future research could also explore whether having siblings influences consumers' own behavior.

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