Choice overload among children: How set size affects children's perceived choice quality

Thesis for the degree of "Doctor of Philosophy"

by

Hilla Schupak

Submitted to the Senate of the Hebrew University of Jerusalem

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This work was carried out under the supervision of

Prof. Eyal Pe’er

Abstract

Parents and caregivers often offer children various choice opportunities. For example, children may be asked to choose their breakfast cereals from the few options in their home kitchen or from a wide assortment at the supermarket. The size of a choice set may influence the child's choice quality and how satisfied they will feel from their choice in two opposing ways. On one hand, choosing from many options may enhance the child's chances to find their optimal alternative. On the other hand, larger sets can also reduce post-choice satisfaction if they lead to *choice overload*. Such choice overload has, until now, mainly been studied among adults and its occurrence was primarily attributed to either a) increased cognitive demands of larger setts, or b) increased feelings of regret from the (more) unchosen options. These drivers of the choice overload effect – cognitive ability and feelings of regret – have been found to evolve during childhood years, suggesting that children's reactions to various set sizes may also oscillate as they grow older and experience cognitive and emotional development. Although children face many decision tasks from a very young age, the question of how cognitive ability and regret interact with the size of choice set to affect their perceived choice-quality has remained unrequited.

Providing choice opportunities is a prevalent expression of parental autonomy-supportive behavior that has been strongly recommended by many educational experts. According to the Self-determination theory, the child's sense of autonomy and competency are two of the crucial components of healthy psychological development. However, if a child feels overwhelmed by a choice set, or frustrated with the difficulty of the choosing experience, the excessive choice provision might hinder their sense of autonomy and competency. Hence, providing choice might not necessarily lead to enhancing the child's sense of autonomy and competence. The child's subjective experience from the choice situation could prove to determine whether the choice provision would be beneficial to them or not.

Studying the effects of choice set size on children's choice experience and choice quality may broaden and deepen our understanding of children's decision-making processes, and could also promote a more educated use of choice provision. The way set size affects children's choice quality may vary due to relevant age-related developments. The more capable children are, the fewer negative influences are expected, and hence the offered choice opportunities may actually be empowering for them. However, children are not always free to choose according to their abilities, rather they face choice opportunities that are often designed by their caregivers. Caregivers' lay beliefs concerning the child's ability to cope with a large

choice set, along with situational stress-enhancing factors, were found to influence caregivers' autonomy-supportive behaviors and choice provision amongst them. These factors may affect caregivers' preferences regarding the choice set they would offer and thus, may have considerable influence on the child's final choice quality. A good match between the offered choice and the child's relevant abilities would enhance the chances that the choosing experience would be empowering for the child. The current research aimed to explore both the ability of children to cope with varied set sizes and caregivers' considerations and beliefs to the provision of large choice sets, also under time pressure conditions.

To examine the effect of set size on children's post-choice satisfaction, a valid measure for children's subjective choice quality first had to be developed and validated. While valid tools for children's inner states are common in medicine (e.g., for pain assessment) and psychiatry (e.g., for anxiety intensity assessment), the research on children's decision-making and education mostly relied on observations or caregivers' reports. The current study's first goal was to design and evaluate a post-choice satisfaction measure that could be used in the subsequent research. In Chapter 1, I report on a study in which I developed and evaluated both a behavioral (willingness to exchange) and a self-report (visual analogue scale) measure for young children's perceived choice-quality, and examined the measures' validity among the different age groups.

These measures enabled me to examine the main goal of my research, which was to study children's ability to choose satisfactorily from varied set sizes. In Chapter 2, I report on a large-scale study in which children from three age groups were asked to choose a prize from assortments of various sizes. Preschoolers showed a choice overload effect – manifested as lower satisfaction when choosing from larger sets – but only if their cognitive ability was average or lower relative to their peers. First graders' reactions to set sizes were similar to those of preschoolers, but the negative effects of the larger set sizes were not significant. Fourth graders, in contrast, showed an opposite effect, reporting higher satisfaction as set size increased. Because the ability to feel regret is known to evolve only after preschool age, these results challenge the regret-based explanation for the choice overload phenomenon. These results also support a cognitive-based explanation for choice overload. The negative influence of larger set size among preschoolers did not occur if the child's cognitive inhibition ability was high, and fourth graders (who are typically more cognitively mature than preschoolers) were even positively affected by increases in set size. This suggests that increases in cognitive demands play a key role in the mechanism underlying the choice overload phenomenon.

The final goal of my research was to evaluate caregivers' beliefs in children's ability to satisfactorily choose from large choice sets and their effects on caregivers' choice-provision preferences. In Chapter 3, I report on two studies showing that most caregivers hold a belief that larger set sizes would, on average, lead to longer deliberation time across all age groups, but do not expect set size to affect children's post-choice satisfaction. Caregivers generally recommended giving children the opportunity to choose, but also rigidly limited their recommendations to relatively small set size options. Exploring the origin of their rather narrow choice set recommendation I unraveled a major influence of time pressure on caregivers' recommendations - caregivers tended to prefer the larger choice set for older children - but only when there were no time constraints. Under time pressure, however, caregivers tended to offer the same set size, regardless of the child's age.

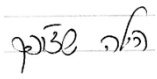
The overall findings of this research contribute to the understanding of children's decision-making abilities and show how set size affects children's choice quality. The evidence for varied effects of set size on children's choice quality across age groups further emphasizes the importance of well-adapted choosing situations. This research also contributes to the accumulative evidence that young children may validly report their own inner states and provides a valid measurement for children's perceived choice quality. Using this measure may promote the more general goal of exploring children's sensitivity to many other choice features, and further specify the recommendations for well-adapted choice opportunities. However, the central role of time pressure on parental choice opportunities provision suggests that a better understanding of children's abilities might not necessarily promote actual well-adapted choice provision. I thus advocate and recommend further efforts into understanding the circumstances under which caregivers could genuinely offer their children well-adapted choice opportunities that would promote children's sense of autonomy and competence.

Being integrated with other considerations regards choice provision, my research findings may promote some practical issues such as assisting parents and educators that wish to better fit choice situations to their children. From a policy perspective, this research suggests that children's vulnerability to choice set size should also take into account when designing consumer protection policies. The current research offers insights for both parental behavior and children's performance in the common daily situation of choosing from varied choice sets. Exploring children's choosing situations from these two perspectives, parental behavior and children's relevant abilities, could thus help promote children's current behavior and well-being, as well as their healthy development towards becoming autonomous adults.

A Letter of Contribution

This dissertation is written in the form of a compilation of articles (unpublished. The articles will be submitted for publication in academic journals). All the chapters were written by the student Hilla Schupak under the supervision and guidance of prof. Eyal Pe'er.

Hilla Schupak (student)



Prof. Eyal Pe'er (supervisor)

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Introduction

Children are decision-makers from a very young age. They are often asked by their caregivers to express their desires and preferences in various contexts. For example, early observations on parent-child purchase interactions in stores revealed that parents frequently ask their children to articulate their preferences (for breakfast cereals, clothing, etc.), and usually yield to their children's requests (Atkin, 1978; Darian, 1998; Gaumer & Arnone, 2009). Moreover, providing an allowance to children grants them considerable autonomy and ample opportunities to express their wants, needs, and desires. As novice consumers, children usually make their own independent purchases before they are five years old (McNeal, 1992; 2007; Valkenburg & Cantor, 2001). Teachers also tend to offer choice in educational settings, for example when choosing an essay topic from a given list, a peer to work with on a project, or a reward for achieving an educational goal (e.g., Flowerday & Schraw, 2000; Hoffmann, Huff, Patterson & Nietfeld, 2009; Padmadewi, 2016; Patall, Cooper & Wynn, 2010; Stefanou, Perencevich, DiCinto, & Turner, 2004).

Providing choice opportunities is a common expression of caregivers' tendency to adopt autonomy-supportive behaviors (Grolnick 2012). Children's sense of autonomy and competence were found to be essential to their healthy psychological development (Ryan & Deci, 2000). However, the beneficial influence of choice provision only occurs when the choice set is well-adapted to the chooser's abilities (Katz & Assor, 2007). In cases where children face choice sets that are overwhelming and beyond their cognitive abilities, or disappointing and reflect low expectations from their abilities to cope with the task, children may not benefit from the choosing situation, and it may even hinder their sense of autonomy and competence (Patall, 2012). Thus, the child's subjective evaluation of their choice quality is important for beneficial use of choice provision to empower children.

Various choice set features may be relevant to children's choice situations and influence their choice quality. One specific such set feature is the number of options in the choice set. In western cultures of abundance, daily decisions involve an extensive and ever-increasing number of options (e.g., Schwartz, 2004). For example, in 2012 in the United States, one could choose from almost 5,000 different kinds of breakfast cereal—as compared to only 340 options in the late 1990s (Aichner & Coletti, 2013). Children are also exposed to extensive choice sets in supermarkets, toy stores, libraries, and sometimes even in their own closets. Although many options in the choice set may enhance the chance of finding an ideal preferences match (e.g., Gao, & Simonson, 2016; Koelemeijer & Oppewal, 1999), this profusion of options was also

found to have several negative influences on decision-makers, called "choice overload" (Iyengar & Lepper, 2000). Adults have been found to express weaker preference strength, lower post-choice satisfaction, or higher regret, and sometimes even avoid choosing when choosing from larger (vs. smaller) choice sets (for a review see Chernev, Böckenholt & Goodman, 2015). However, the existence of choice overload effects among adults is debatable, and often appears to be of a small magnitude or moderated by many factors such as the alignability of the options, expertise in the decision domain, etc. (Scheibehenne, Greifeneder, & Todd, 2010).

Exploring the influences of choice set size on choice quality across childhood years may promote our ability to adapt choice sets to children, and further promote their sense of autonomy and competence. However, children usually do not decide for themselves over how many alternatives would they deliberate, but rather their choosing opportunities are set by their caregivers who decide whether, when and to what extent to provide choice (Burtt, 2003). Thus, their caregivers' preferences regarding choice provision hold a considerable impact on children's choice quality. To the extent to which caregivers are providing adequate choice, children would gain a positive and empowering choosing experience. Understanding the determinants to caregivers' choice provision preferences is thus important, and may shed light on the actual exposure of children to various choosing situations that may influence their choice quality.

The current research aimed to explore the role of extensive choice sets in children's perceived choice quality, and their caregivers' choice provision preferences. Although this research holds a developmental perspective of children's decision-making, that development was not explored directly and hence the developmental course of children's decision-making skills is beyond the scope of the current research. Rather, the ability to perform a satisfying decision was tested in several developmentally distinguished age groups to indicate children's sensitivity to set size. To allow focusing on children's own evaluations of their choice quality, the first goal of this research was to design children-adapted measurements for choice quality and to evaluate the ability of young children to validly express their satisfaction from their choices. The second goal of this research was to identify the effects of options profusion on children's ability to perform a satisfactory choice, in various age groups. I study the effects of set sizes on choice quality across childhood years attempting to establish guidelines for beneficially and empowering choice experiences. The third question I address regards adults' beliefs of children's ability to perform a satisfactory choice from extensive set sizes, and the

determinants that lead parents' decision to provide these kinds of choosing experiences to children.

Measuring children's choice quality

Many decisions do not involve an objectively dominant alternative or an objectively correct decision, and the quality of choice is rather subjective and dependent on the extent to which it meets the decision-maker's preferences (Dijksterhuis & Nordgren, 2006). To measure the influences of set size on children's perceived choice quality, a reliable and valid instrument is needed. Surprisingly, there is currently no adapted and validated measure for post-choice satisfaction or other such subjective choice quality among children. This is puzzling because children seem to be capable of accurately reporting their own feelings and inner-states from a very young age, when using suitable tools (e.g., Durbin, 2010; López-Pérez & Wilson, 2015).

The direct use of self-report with young children is not common and researchers often prefer to use their caregivers as informants (Lagattuta, Sayfan, & Bamford, 2012). However, it is of high importance, especially when inner states are being measured. Adults were found to report their children's inner states in a biased manner, and their reports often correlate with neither objective measures nor children's self-reports (e.g., Korat, 2009; Lagattuta et al., 2012; Peters, 2004). Developing such a tool would contribute to the accumulative evidence of young children's ability to articulate their inner states validly by designing and testing children-adapted measurements for perceived choice quality.

Taking the child's subjective perception of their own decisions may be of high relevance for many choice situations, expanding the literature on children's decision-making abilities that focuses on more objective criteria to evaluate choice quality, such as tracking the decision strategy used by the chooser (Bereby-Meyer, Assor, & Katz, 2004; Wartella, Wackman, Ward, Shamir, & Alexander 1979), or the manner and extent to which the chooser collected information before choosing (Katz, Bereby-Meyer, Assor, & Danziger, 2010; Winsler, Naglieri, & Manfra, 2006). This subjective perspective is central for the evaluation of many actual daily decisions, where no objective best option is available in the choice-set (Dijksterhuis & Nordgren, 2006). More specifically, these measurements may be used to expand our understanding of children's sensitivity to varied choice circumstances such as choice-set features (e.g., size, order of presentation, etc.), decision-framing, time pressure, reversibility of choice, and many other choice-related factors.

The effects of set size on choice quality - Choice overload

Research with adults has pointed to regret and cognitive demands as two major accounts that can be used to explain the choice overload phenomenon (Iyengar & Lepper, 2000;

Scheibehenne, Greifeneder, & Todd, 2010; Schwartz et al., 2002). Both these explanations describe the negative influences of larger choice sets as stemming from lower choice quality. The cognitive demands account argues that the lower choice quality stems from heightened prone to make mistakes and suboptimal choices when choosing from larger choice-sets (e.g., Diehl, 2005; Hanoch, Wood, Barnes, Liu & Rice, 2011). Larger sets include additional options that the chooser needs to take into consideration, and hence create a more complex task and heighten cognitive demands (Haynes, 2009; Reutskaja & Hogarthe, 2009). However, decision-makers tend to prefer avoiding cognitively demanding situations (Kool, McGuire, Rosen, & Botvinick, 2010). One common way to lower cognitive load is by applying simpler heuristic rules of choice rather than rational considerations of the options, which may lead to sub-optimal performance (Payne, Bettman, & Johnson, 1993). Another explanation for poorer decisions when choosing from larger choice-sets is that elevating cognitive load may trigger a more impulsive decision-making process (Hinson, Jameson, & Whitney, 2003). The more extreme expression of that desire to avoid cognitive overload is by the choice deferral. The chooser decision to defer choice reflects the frustrating and demotivating influences of extensive choice sets by simply avoiding engaging with the high demanding choice task (Iyengar, Huberman & Jiang, 2004; Iyengar & Lepper, 2000). A choice deferral may also be judged as a poor decision in circumstances where any choice would have been beneficial for the chooser, for example, when not choosing a retirement plan or a medical drug plan (Hanoch, et al., 2011; Iyengar et al. 2004).

The regret-based account may either focus on the decision outcome or the choosing process to explain lower choice quality in larger choice sets. Outcome regret refers to choice overload as stemming from the necessity to forego more options in larger choice sets, thus the chooser's doubts regarding choosing the best option increase with the number of non-chosen options (Sagi & Friedland, 2007; Schwartz et al., 2002). Another regret-based explanation is that the choosers evaluate their choice process as insufficient. Larger choice-sets may make it more difficult to consider all attributes of every option, and evoke the feeling of rushing the decision or not applying appropriate and sufficient consideration processes (Inbar, Botti, & Hanko, 2011; Irons & Hepburn, 2007). Both these origins of regret reflect the chooser's insecurity of having made the best decision and thus may explain lower post-choice satisfaction. Moreover, decision-makers were found to consider anticipated regret along their decision process (Schwartz & Ward, 2004; Simonson, 1992) and higher expectations for regret may explain choice deferral.

Children's reactions to set size

Just like adults, children may face extensive choice sets in supermarkets, toy stores, classrooms and even at home, though they differ from adults in many decision-making-related abilities and skills. Specifically, the central explanations for the choice overload effects, cognitive ability and regret, both dramatically evolve throughout childhood. From the cognitive ability perspective, while deliberating over a choice-set, preschoolers typically consider only one attribute of the presented items and usually a perceptual one such as size or shape rather than other relevant ones such as quality or price (John, 1999; Maimaran & Salant, 2015). Decision-making strategies at this age group are simple and usually neglect important characteristics of the task (Capon & Kuhn, 1980; Wartella et al., 1979). Moreover, younger children do not master cognitive inhibitory control and may thus choose more impulsively (Davidson, Amso, Anderson, & Diamond, 2006). In contrast, school-age children typically compare alternatives on several attributes (Capon & Kuhn, 1980) and learn to focus on the attributes relevant to their decision (Davidson, 1991b). They search for information more strategically (Winsler et al., 2006) and can adapt their decision strategy to the task's demands (Bereby-Meyer et al., 2004; Davidson, 1991a; Katz et al., 2010). These major developments in decision-making skills may form various manifestations of set size influences in varied age groups, due to the differences in decision-related abilities.

Another account for the choice overload effect is regret. Children do not experience regret in early childhood. Preschoolers are typically not yet capable of feeling regret, because they are unable to compare hypothetical outcomes, or alternatives to the actual situation (Amsel & Smalley, 2000; O'Connor, McCormack & Feeney, 2012; Riggs & Peterson, 2000). It is interesting thus to explore whether this particular age group, who didn't acquire yet the ability to feel regret, would experience choice overload when choosing from an extensive choice set. It is also interesting to track the effect of set size in various age groups, such as school-age children who typically already experience regret.

Exploring the effects of set size on choice quality among children may raise varied manifestations of influences among varied age groups because the hypothesized mechanisms (i.e., cognitive demands or heightened regret) significantly change and evolve during childhood years. The cognitive burden stemming from an increase in the number of options is expected to be heavier on children because they are more cognitively bounded, and that is expected to be more severe as they are younger (e.g., John, 1999). On the other hand, young children are typically incapable of feeling regret (O'Connor et al., 2012), and hence may not feel sorrow for the loss of the unchosen options (Amsel & Smalley, 2000), or critically reflect on their choice

process (Guttentag & Ferrell, 2004). These choice-related developments in children yield conflicting expectations regarding the choice overload effect. If the negative effect stems from the cognitive burden, then younger children may be more vulnerable to it, but if the negative effect of set size stems from feelings of regret, then the older children would be more vulnerable. Thus, exploring this special population that is in the journey of acquiring and honing these abilities provides an opportunity to confront the alternative explanations of cognitive burden and regret and may thus suggest some theoretical insights for the more mature appearance of the choice overload phenomenon among adults.

The findings from such investigation may also have practical implications, to form the basis for guidelines regarding the optimal range of a number of alternatives adults should offer children of different age groups to avoid the negative repercussions of set sizes that might be too big for them to handle. It could be of use to educators, in planning the range of available classroom environments and the activities offered; to parents seeking to promote their children's development of independent choice-making capabilities; and to policy-makers, to help them protect children from commercial exploitation in shopping and other choices- and decision-making situations (Ali, Blades, Oates & Blumberg, 2009; Oates, Blades & Gunter, 2002). Identifying an optimal choice range as an attempt to avoid frustrating choice situations may be of high importance in some instances. For example, one potential negative repercussion is lower satisfaction; in classroom terms, such negative influence of the choice set might reduce motivation and engagement with the task, and eventually lead to lower achievements (Patall, Cooper & Robinson, 2008).

The role of caregivers

Children's natural environment may frequently offer opportunities to choose. However, their actual degree of autonomy to choose is set by their parents and educators (Burtt, 2003; Mullin, 2014). Caregivers were indeed found to bound the choice set size before allowing children to choose from it in common daily choosing situations (Flowerday & Schraw, 2000; Tinson, & Nancarrow, 2007). Adult caregivers play a crucial role in children's exposure to choice opportunities, deciding if, when, and to what extent would children be entitled to choose. Providing choice opportunities is important and researchers have strongly recommended that adults adopt this behavior, among other autonomy-supportive behaviors (Grolnick, 2012; Jousseme, Landry, & Koestner, 2008). Providing choice also allows children to practice their skills and may significantly improve their abilities, and hence contribute to their preparation for adulthood (Diamond & Lee, 2011).

However, merely providing an opportunity to choose, might not be enough, by itself, to empower children and enhance their sense of autonomy. A set of choices that is maladapted to the child's ability to choose, may have the opposite effect (Katz & Assor, 2007; Patall, 2012). Thus, introducing the child to a set that reflects higher or lower competency than the child actually possesses (i.e., is too simple or too complex) may lead to frustration, disappointment or feelings of incompetency (Katz & Assor, 2007). In terms of set size, an assortment is expected to allow a beneficial and empowering choice experience if it comprises of a number of options that are in the child's ability to choose from, hence not too many options (overwhelming), but also not too few (disappointing).

Beyond being the authority that decides when children are entitled to choose, parents and educators also construct and organize the set of choices. The fact that parents and educators design children's choice-sets put them, knowingly or not, in the role of choice architects. Choice architects are those who are responsible for the way a decision or a choice set is introduced to the chooser (Thaler & Sunstein, 2008). Even if unaware of this role, it is reasonable to assume that caregivers are likely to share "formal" choice architects' desire to make complex decisions easier and beneficial for the chooser (Selinger & Whyte, 2010; Thaler, Sunstein, & Balz, 2013).

One common decision that caregivers take as choice architects concern the number of options they would introduce to the child (e.g., Tinson, & Nancarrow, 2007). Two major considerations were previously suggested to influence the extent to which caregivers would embrace autonomy-supportive behaviors versus controlling behaviors, these are perceived child's ability and perceived pressure (Grolnick, Gurland, DeCourcey, & Jacob, 2002; Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017). Investigating adults' perceptions and beliefs of how children of varied age groups could perform a satisfactory choice from large choice sets may contribute to the understanding of their tendency to provide these choice opportunities. This investigation would allow revealing whether or not caregivers believe that set size has potential influences on children's choice quality, and whether these beliefs are adaptive to child's age and perceived ability to choose. It is also interesting to see whether and how would their recommendations of ideal set size in varied choice contexts reflects these beliefs.

Moreover, the weight of the other suggested determinant for choice-provision - parental pressure - should also be examined because many daily circumstances of choosing involve some pressure. For example, in morning routines (e.g., choosing clothes, breakfast cereals, etc.), or during class (i.e., choosing class activity), time pressure increases. In public places (e.g., in a store, supermarket, shopping mall) social pressure increases. If the presence of

external pressuring factors is crucial to adults' choice provision, then in many daily situations, children might be granted fewer choice opportunities and a smaller number of options than what they can handle. Contrasting these two determinants for autonomy provision (i.e., perceived child's ability and parental pressure) may reveal the relative importance of each determinant to caregivers' tendency to provide autonomy. Assessing the dominance of autonomy-depletion factors to caregivers' choice-provision is crucial, because adopting controlling behaviors by either parents or teachers, and preventing adequate choice opportunities as one expression of it, has been found to negatively affect children's motivation and engagement for learning, their enjoyment from learning, and also reduced actual achievements (Grolnick & Pomerantz, 2009; Katz & Assor, 2007; Patall, 2012; Reeve, 2009). Another potential harm of the lack of appropriate choice opportunities is the decrease in practicing decision-making skills in general and in the specific (but rather common) aspect of choosing from extensive choice sets. Practicing executive function skills (e.g., inhibition of impulsive response) was found to significantly improve children's performance (Diamond & Lee, 2011). Thus, to the extent to which practice may improve decision-making skills, caregivers should strive to allow considerable choosing options, and presumably also from a young age, where the consequences of poor decisions are relatively small.

Exploring caregivers' beliefs about children's ability to choose from large choice sets may shed light on caregivers' considerations of the decision to provide choice. The anticipated findings may reveal which characteristics of the chooser and the choice situation are relevant to that decision. Moreover, studying the relative importance of these varied factors on parental choice-provision preferences may contribute to the understanding of parenting and teaching behaviors, and their origins. From a more practical perspective, it may allow more accurate interventions in cases where caregivers provide inadequate autonomy or overwhelming and frustrating choice opportunities.

Novelty and contribution

My research is novel in its perspective of children's decision making because it does not test whether or not children choose an objectively "correct" option (Wartella et al., 1979), applying a certain choice strategy (Bereby-Meyer et al., 2004; Winsler et al., 2006), or consume their chosen option (Maimaran, 2017). Rather, it focuses on children's own evaluation of their choice quality. It also provides multiple perspectives for the common situation of children confronting extensive choice sets, the child's and the caregiver's perspectives. The anticipated findings from the current research may promote our understanding of children's decision-making process and its' sensitivity to the specific aspect of set size. Over the course of cognitive

development, each cognitive ability has its own onset and honing stages. Research on children's decision-making processes should explore and define the matches between task demands and the developmental state of the relevant abilities. Revealing children's sensitivity to set size may also promote the theoretical discussion concerning paternalistic regulations, emphasizing the scope and magnitude of larger choice sets in this vulnerable population. This research may also shed light on the determinants for parental autonomy-supportive behaviors, and their relative importance to the specific decision to provide choice opportunities.

I also present and discuss the potential practical implications of the expected findings. Practical implications of the expected findings may serve teachers and parents, guiding them through the path of exposing young children to choosing tasks that would enhance their sense of competence and autonomy. Matching the choice set to the child's developmental stage may allow a more accurate use of choice provision and may enhance its utilization. It may also promote efficient consumer protection recommendations, avoiding frustrating and maladapted choice situations and environments by designing decision environments that would facilitate optimal choice. Marketers and vendors may also be interested in using these findings to better appreciate the limits of young customers' ability, to effectively customize their product portfolio and store design to their targeted audience. Additionally, the understanding of the circumstances under which children experience more controlling behaviors may promote more accurate interventions and parent consulting, to promote more autonomy-supportive behaviors.

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Chapter 1 - Measuring subjective choice quality among children

Abstract

Perceived quality of choice is a common choice-related outcome that is often being measured among adults, for example by self-reported post-choice satisfaction, or observed switching behaviors. Although children face many decision tasks from a young age, no adapted validated measure for their perceived choice quality is currently available. The current study was designed to evaluate and compare a behavioral and a self-report measure for perceived choice quality among young children. Preschoolers and first graders ranked colors from most to least favorite, and then received a random-colored item. They then reported their satisfaction with the received item on one of three VASs (Visual Analogue Scales) and were offered to exchange their random item. One VAS was highly and significantly correlated to prior preferences in both age groups. However, children's willingness to exchange seems to be more indicative for first graders than for preschoolers. A valid measurement of children's perceived choice quality may promote our understanding of the factors that influence children's decision-making process from a subjective, rather than normative, point of view. The understanding of the subjective outcome is important for adapting choice-sets to children's developmental stage, which may enhance their ability to make a satisfactory choice and hence, reinforce a sense of competence, in the field of decision making. Looking at the other side of the coin, a good understanding of the factors that influence children's decision-making process may allow caregivers, educators and, policy-makers to better protect them by adapting their natural environments to their abilities and hence, avoiding frustrating them or even exploiting their boundaries.

Introduction

Child-rearing involves many decisions that diverge over their importance (e.g., choosing school vs. choosing a book), frequency (e.g., daily groceries vs. family car), consequences (e.g., health, immediate mood, finance), etc. These decisions also differ with regard to the decision maker. Some decisions are exclusively in the hands of the caregivers, while others are granted to children. Caregivers provide children with various levels of autonomy, dependent on their perception of the child's ability to choose and their beliefs. Hence, some children are allowed to choose more often, while other children are subjected to more controlling attitudes where their caregivers frequently choose for them. However, many decisions do not involve an objectively dominant alternative or an objective correct decision, and the quality of choice is rather subjective, and dependent on the extent to which it meets the decision-maker's preferences (Dijksterhuis & Nordgren, 2006). For example, when shopping for a new toy, schoolbag, clothing, or ice cream, the preferences of the chooser are central to the evaluation of the chosen option, because no obvious best alternative is available. In these domains of decisions, whether the chooser is the child or the adult, the quality of the decision should be evaluated (at least additionally) in light of the child's preferences.

One way to operationalize decision quality among adults is post-choice satisfaction (Dijksterhuis & Van Olden, 2006; Gao, Zhang, Wang, & Ba, 2012; Yüksel & Yüksel, 2008). Satisfaction from the chosen option is expected to be higher for subjectively-perceived better decisions than for less desirable ones. A common way to measure post choice satisfaction is via self-report, where the chooser's satisfaction from the chosen option is ranked over a single or several direct questions (Chernev, Böckenholt, & Goodman, 2015; Dijksterhuis & Van Olden, 2006). Other ways to evaluate the decision-quality are measuring post-choice regret (Sagi & Friedland, 2007), willingness to exchange the chosen item (Chernev, 2003; Lin & Wu, 2006), and willingness to accept (money) for the chosen item (Dijksterhuis & Van Olden, 2006). A recent meta-analysis suggests that the measures of post-choice satisfaction, post-choice regret and, willingness to exchange the chosen item, are strongly correlated and may even be used interchangeably (Chernev et al., 2015).

The variety of operationalizations for subjective decision quality among adults indicates its importance. After deliberating and deciding over a set with no objective dominant alternative, experiencing feelings of satisfaction or regret may provide the chooser feedback. Choosers may benefit from decision-quality feedback because it promotes their ability to hone and calibrate future deliberations according to it. Nevertheless, these feelings (satisfaction and regret) and

behaviors (willingness to exchange, or money demanded in exchange for the chosen option), when interpreted as feedback or a measure of choice quality, also allow a better theoretical understanding of the decision-making process, and the effects of various factors on this process and its outcomes. For example, consumers' sensitivity to the number of alternatives in the choice set is usually measured via the aforementioned terms. Adults were found to be less satisfied when choosing from a larger (vs. smaller) set of choice in some instances (Iyengar & Lepper, 2000), and experienced more feelings of regret in other instances (Inbar, Botti, & Hanko, 2011; Sagi & Friedland, 2007). Another corpus of studies used these measurements to test the impact of attention on the deliberation process. Participants were more satisfied from-, and asked for more money for a poster they chose if they were deliberating unconsciously over the set of posters, than when they were instructed to analyze their deliberation or when deliberation time was prevented from them (Dijksterhuis & Van Olden, 2006).

Children naturally face many opportunities to choose and express their preferences. In some of these instances, children are allowed to choose for themselves, while in others adults will choose for them, or a joint decision would be made. Whether the choice is made solely by the child or not, the extent to which the child's needs and wants are satisfied by the chosen option should be considered when evaluating the quality of choice, for at least two reasons. First, as argued concerning adults, feedback on choice quality is important information that allows a more accurate understanding of the receiver/chooser preferences, needs, wants and even limitations. Hence, monitoring satisfaction from children's own choices or choices made for them may lead to better matched choices in the future. Second, young children do not yet master emotional and behavioral self-regulation techniques, hence a dissatisfying choice may increase feelings of frustration and disappointment, and perhaps even challenge children's behavioral control (Carlson & Wang, 2007).

The theoretical contribution of evaluating children's satisfaction from their chosen option may sharpen our understanding of a range of factors that may influence the process. Beginning with the character of the chooser (e.g., age, cognitive ability) through the features of the choice set (e.g., number of options), and circumstances (e.g., time pressure, reversibility of choice), to the choice contexts (e.g., food, toys, clothes). Understanding the influence of these factors on children's subjective perception of choice quality may also promote more practical aspects such as designing decision environments that would facilitate detecting a satisfactory choice, customer protection from circumstances that yield subjectively poor choices, educational goals aimed to practice and improve the ability to choose in a satisfactory manner, adapting regulations and policies to prevent manipulative influences on the decision-maker, etc.

In contrast to the variety of measurements for adults' subjective choice-quality (Chernev et al., 2015; Dijksterhuis & Van Olden, 2006), no such reliable and valid measure for children is currently in use. However, relying solely on adults' reports of children's feelings and abilities (e.g., cognitive, emotional) may not always reflect a reliable picture. Parents' and teachers' reports on their children abilities and feelings are sometimes found to be biased, with comparison to objective measures, professional assessments and the children's self-reports (Lagattuta, Sayfan, & Bamford, 2012; Lahikainen, Kraav, Kirmanen, & Taimalu, 2006; López-Pérez & Wilson, 2015). Moreover, children seem to be capable of accurately reporting their own feelings and inner-state from a very young age, when using suitable tools (Durbin, 2010; López-Pérez & Wilson, 2015). Thus, the current study was conducted to identify and validate a measure for (young) children's satisfaction with their choices.

Out of the variety of measurements that are designated for adults, some may not be suitable or adapted for children. More specifically, a common measure among adults is post-choice regret (Chernev et al., 2015; Inbar et al., 2011; Sagi & Friedland, 2007). However, to experience regret, the child needs to simultaneously hold in mind both the actual option and the unchosen option. This is a high cognitive demand, and studies report on the occurrence of feelings of regret only at 6-7 years-old (Amsel & Smalley, 2000; O'Connor, McCormack & Feeney, 2012). Another measurement that is less suitable for children is the willingness to accept (Dijksterhuis & Van Olden, 2006). Although some evidence suggests that young children understand that money is different from other objects, and can use as a cue for being in a market (vs. communal) situation (Gasiorowska, et al., 2016), young children cannot perceive the symbolic use of money, or the factors on which goods are being evaluated, and hence using terms of money may be of no significant meaning for them (Webley, 2005). However, self-report for post-choice satisfaction, and the willingness to exchange were adopted from the adults' measurements and the current experiment was designed to evaluate the validity of these behavioral (willingness to exchange) and self-report (via scale) measures for post-choice satisfaction in children:

A) *Visual-Analogue Scale (VAS).* Most 4-7 years-old children do not read fluently, and thus cannot fill out a questionnaire by themselves. However, several VASs have been developed for cases where introspective information is needed, such as in the field of pain monitoring and the research of emotion (Lagattuta et al., 2012; Le May et al., 2018). To monitor young children's pain, several VASs have been developed, using percentage diagrams, color scales or pictures demonstrating facial expressions. Facial expressions scales (pictures or drawings) were found to be both preferred by children and to provide the most accurate psychometric data (for

a review see Tomlinson, Von Baeyer, Stingson & Sung, 2010). These findings are also in line with the notion that three-year-olds are capable of accurately reporting a wide range of emotions (Durbin, 2010); and that children can also successfully identify a variety of facial expressions at a very young age (Widden & Russell, 2003). Because preschoolers are generally more accurate in reporting their feelings for drawn faces than for pictures (MacDonald, Kirkpatrick & Sullivan, 1996) all the VASs used in the present research were comprised of drawings. Additionally, one form of facial VAS was tested in a small previous pilot study (further detailed in chapter 2). This VAS consisted of a four facial-drawing scale. The results indicated a ceiling effect with more than 80% of the sample reporting the happiest smiley. Thus, for children it is important to develop and test broader forms of facial VAS for satisfaction.

B) *Willingness to Exchange (WTE).* A chooser's WTE their chosen item is commonly used to assess the subjective choice quality (Chernev, 2003; Lin & Wu, 2006). The logic is simple: as participants' confidence in their choice increases, so too their tendency to exchange the item in question decreases (Chernev, 2003). A similar procedure was used with children, in order to explore the endowment effect in young age groups (Harbaugh, Krause & Vesterlund, 2001). Thus, in addition to the above scales (VAS), it is important to examine whether WTE could be also used to assess children's post-choice satisfaction.

The purpose of the current study was to examine optional adaptations of choice quality measurements (i.e., satisfaction) for young children. The validation process included computing correlations between deliberated prior-preferences (color-liking-ranking) and satisfaction with random-colored received items. A valid VAS would significantly correlate with children's prior-preference, reflecting higher satisfaction for received items of preferred colors. Children's WTE their received item should also be changed significantly according to prior-preference. Children who randomly received an item that is higher on prior-preference, should be less willing to exchange it. Moreover, valid VAS would correlate with children's willingness to exchange, as usually found among adults (Chernev et al., 2015). This expectation stems not only from prior findings but also from the assumption that higher satisfaction from the received items should accompany a lower exchange rate. Furthermore, children that have decided to exchange their randomly-received item, were asked to indicate their satisfaction with their chosen item. Hence, if WTE is a valid measure that implies children's choice quality, satisfaction from the chosen item should be higher than satisfaction from the random-received item, for those who decided to exchange.

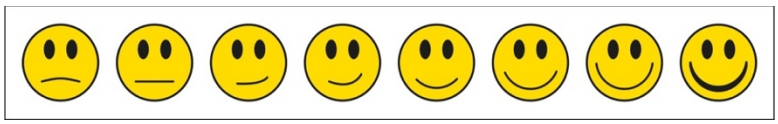
Study 1 – Validating measurements for children's choice quality

Method

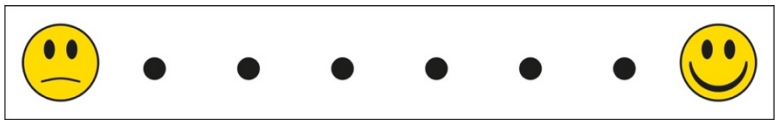
Participants. One-hundred and sixteen children (45 girls, 69 boys, two missing – not recorded) participated in the study. They included 57 preschoolers, ages ranging from 49 to 61 months (M=54.93, SD=3.35), and 59 first graders, ages ranging from 74 to 94 months (M=81.07, SD=5.04).

Design and procedure. The experimenter invited the children, individually, into a separate room. During a short session, they were asked to rank a set of colored squares from most to least favorite (colors ranked were: black, blue, yellow, green, pink, light blue, purple and red). Though eight colors may sound a lot, common and validated methods in the field of children's color preferences may even present more extensive color sets (e.g., Pitchford & Mullen, 2005). Moreover, as in these methods, the experimenter guided the children through the ranking process. After ranking the colors, children were asked to close their eyes and take one item from a box, which contained an assortment of items, identical in all attributes but color (e.g., different-colored markers/ different-colored bouncing balls etc.). Children then indicated their satisfaction with the received item using one (randomly allocated) of the scales (see Figure 1). After ranking their satisfaction, the experimenter offered the option of exchanging the received item for another item in the box, of their choice. This procedure was repeated twice with each child, each time with a different set of items.

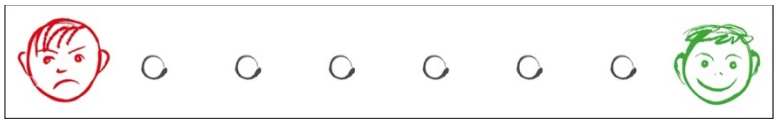
Figure 1. *Optional VASs*



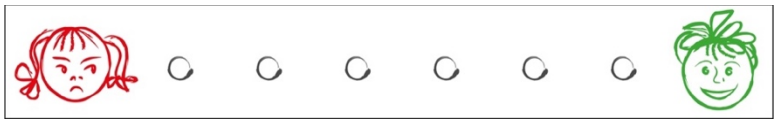
Scale 1



Scale 2



Scale 3a



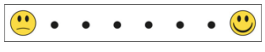
Scale 3b

In addition to validating the aforementioned measurements, I used the current study as a pilot to pre-test a cognitive measure for a subsequent planned study. The cognitive measure was executed after the child completed the two trials. The experimenter suggested the child to play Simon says. The experimenter first explained the game rules, and then practiced each command type (action and inhibition) together with the child. If the child failed to respond properly, the experimenter repeated the rule and then tried again the same type of command. The practice was followed by the task itself including ten commands, with the experimenter performing all commands and an observer coding the child's responses as right (1), wrong (0) or corrected (0.5). After 10 game-commands the experimenter thanked the children and escorted them back to class. The whole procedure did not exceed 10 minutes for any of the children.

Results

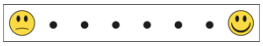
Visual Analogue Scales (VAS)—Approximately 40 children were randomly allocated to each one of the three VAS scales (as detailed in Table 1). As described above, each child ranked colors from most to least favorite, and then received a random-colored item. Children tended to rank relatively high satisfaction; in a scale of 8 ranks children satisfaction ratings were $M = 6.55$ ($SD = 2.26$), *Median* = 8.00, for the first received item and, $M = 5.98$ ($SD = 2.60$), *Median* = 7.00 for the second item. Preschoolers tended to indicate higher levels of satisfaction than first-graders. According to Levine's test for equality of variances the variances of preschoolers and first-graders were significantly different in both trials ($F = 6.56$, $p = 0.01$; $F = 7.97$, $p = 0.06$ for the first and second trials respectively). At the first trial preschoolers' mean satisfaction was $M = 6.95$ ($SD = 2.00$), and first graders mean ratings were $M = 6.17$ ($SD = 2.44$). This difference was not significant, $t\,(110.79) = 1.87$, $p = 0.06$. The same tendency for higher satisfaction among the younger children was found for the second trial as well, with mean satisfaction ratings $M = 6.54$ ($SD = 2.30$) and, $M = 5.46$ ($SD = 2.78$) for preschoolers and first graders respectively. This difference was statistically significant, $t\,(111.06) = 2.27$, $p = 0.03$.

Table 1. *Distribution of participants in the various conditions*

VAS	Detailed smiley	Drawing ends	Smiley ends
Age group			
Preschool	20	18	19
First grade	20	20	19
Overall	40	38	38

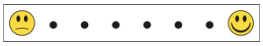
Tables 2 and 3 shows the correlation between children's declared prior-preference (color-ranking) and satisfaction ratings for each VAS in each one of the two trials. Correlation were expected to be negative due to opposite ranking order, with most favorable color ranked in 1st place, whereas highest satisfaction was the scale highest level (8). Preschoolers' indications of satisfaction were not significantly correlated to prior-preference in none of the VAS at the second trial. However, for the first trial their indications produced strong and significant correlations. Considering both age groups over the first trial, the "Smiley ends" VAS (Scale 2) was best correlated with color-ranking (see Table 2). Table 4 details the regression coefficients when predicting satisfaction from the child's prior preference, across both trials.

Table 2. *Pearson correlations between prior color preferences and satisfaction from the first Item*

VAS / Age group	Detailed smiley 	Drawing ends 	Smiley ends 
Preschool	-0.23	-0.47*	-0.49*
First grade	-0.76**	-0.32	-0.59**
Overall	-0.57**	-0.31	-0.54*

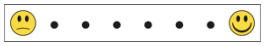
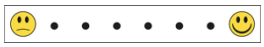
* $p < 0.05$; ** $p < 0.001$

Table 3. *Pearson correlations between prior color preferences and satisfaction from the second Item*

VAS / Age group	Detailed smiley 	Drawing ends 	Smiley ends 
Preschool	-0.27	-0.002	-0.06
First grade	-0.39	-0.46*	-0.74**
Overall	-0.37*	-0.30	-0.36**

* $p < 0.05$; ** $p < 0.001$

Table 4. *Regression coefficients of the relation between prior color preference and satisfaction from the received item across both trials*

Age group	VAS	Beta Coeff.	t
Preschool		-0.25	-1.56
		-0.11	-0.65
		-0.22	-1.34
First grade		-0.58	-4.25**
		-0.41	-2.78**
		-0.65	-5.09**

** $p < 0.001$

Willingness to exchange (WTE)—A great majority of the children were willing to exchange the random item they have received. WTE rates were 79% and 64% for the first and second trials respectively. On each trial, preschoolers tended to exchange more than first-graders. On the first trial 86% of the preschoolers exchanged their received item, while only 73% of the first-graders did so. Using the chi-square test, this gap was found not significant, X^2 (1, 116) = 3.02, $p = 0.08$. However, the exchange rate gap between preschoolers and first-graders was significant for the second received item X^2 (1,116) = 4.12, $p = 0.04$, where 75% of the preschoolers decided to exchange, compared to only 58% of the first-graders.

To test whether the interaction between child's age and trial number significantly predicts WTE I used a binary regression with child's age, trial number and their interaction as predictors, and WTE as the dependent variable. Each of the variables were significantly predictors for WTE ($p = 0.008$, 0.027 and, 0.01 for age, trial and interaction, respectively). However, when tested together as a model, the effect of trial number and the interaction effect had no significant contribution to WTE predictions beyond the child's age. Table 5 further details the regression coefficients of the model.

Table 5. *Logistic regression for predicting WTE by child's age and trial number*

Predictor	*B*	*S.E*	*Wald*	*df*	*sig*	*Exp(B)*
Child's age	0.82	0.41	4.04	1	0.04	2.26
Trial number	0.68	0.39	2.99	1	0.08	1.98
Interaction	0.09	0.63	0.00	1	0.99	1.01

To validate children's WTE through computing correlation with their declared prior-preferences, I first created a dichotomous variable consisting of only two levels – preferred color (for top 3 ranked colors) and non-preferred color (bottom 3 ranked color). The two intermediate ranks were omitted to create a clear difference between these categories. Aggregating the prior-preferences scale into only two categories allowed minimizing small cells in the analysis. As can be seen in Figure 2a, the results from the first trial indicated that preschoolers had a general high tendency to exchange, whether they have received an item of preferred or non-preferred color. The exchange-rate difference was not significant, X^2 (1,43) = 3.48, p = 0.06. Among first-graders a larger gap was found in the decision to exchange between those who received an item of preferred or nonpreferred color, X^2 (1,41) = 7.57, p = 0.01.

Similar results were demonstrated for the second trial and can be seen in Figure 2b. Preschoolers and first graders tended to exchange more if they have received an item of non-preferred color than if they have received a preferred-color item. These differences were significant in both age groups; X^2 (1, 42) = 9.33, p = 0.002 for preschoolers and, X^2 (1, 45) = 7.70, p = 0.01.

Figure 2a. *WTE according to color-ranking of the given-item's color (1st trial)*

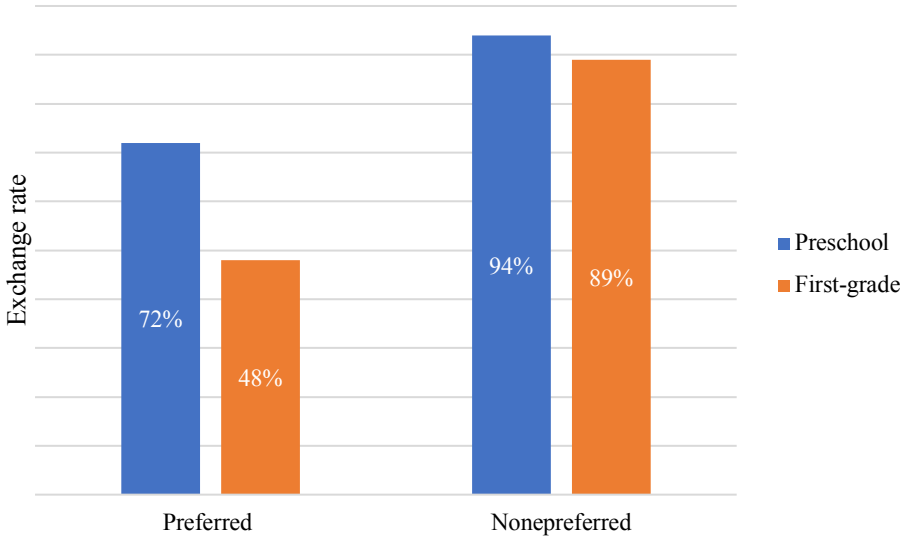
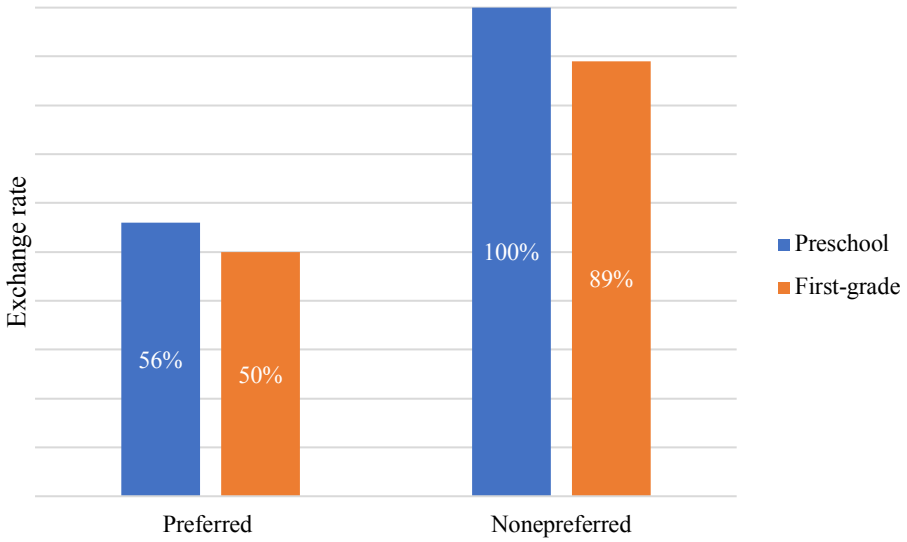


Figure 2b. *WTE according to color-ranking of the given-item's color (2nd trial)*



Next, I examined whether these two measurements, self-reported satisfaction and WTE, are convergent. A binary regression for predicting WTE by satisfaction ratings across trials revealed a significant prediction of WTE, but only among first graders. Among preschooler's satisfaction ratings did not significantly predicted child's WTE. The regression coefficients further detailed in Table 6. To further explore the relations between WTE and satisfaction ratings, the satisfaction scale was recoded into a dichotomous variable with two satisfaction levels – satisfied (3 top satisfaction ratings) and, dissatisfied (3 bottom satisfaction ratings). The intermediate levels were omitted in order to create a clear differentiation between the categories. Though both age groups tended to exchange more if they were dissatisfied, a chi-square test revealed significant differentiation between satisfied and dissatisfied exchange rates only among first graders, in both trials, X^2 (1, 54) = 5.82, p = 0.02 and, X^2 (1, 53) = 14.34, $p < 0.001$ for first and second trials respectively. Preschoolers different rate of exchange among satisfied versus dissatisfied children was much smaller in both the first, X^2 (1, 55) = 1.15, p = 0.28 and the second, X^2 (1, 54) = 0.51, p = 0.47 trials. See Figures 3a and 3b for the first and second trials, respectively.

Table 6. *Logistic regression for predicting WTE by satisfaction ratings*

Child's age	*B*	*S.E*	*Wald*	*df*	*sig*	*Exp(B)*
Preschool	-0.17	0.15	1.31	1	0.25	0.85
First-grade	-0.70	0.19	14.39	1	0.00	0.50

Figure 3a. *WTE according to satisfaction ratings (1st trial)*

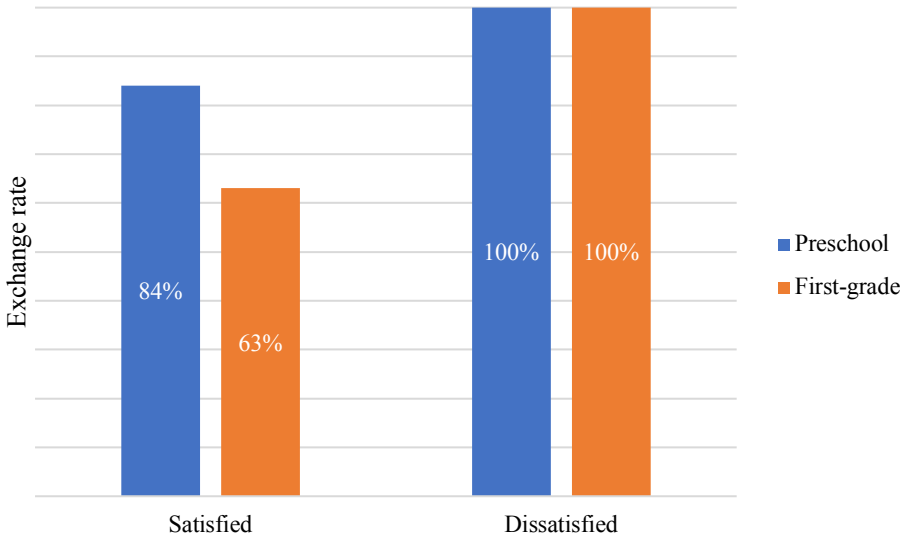
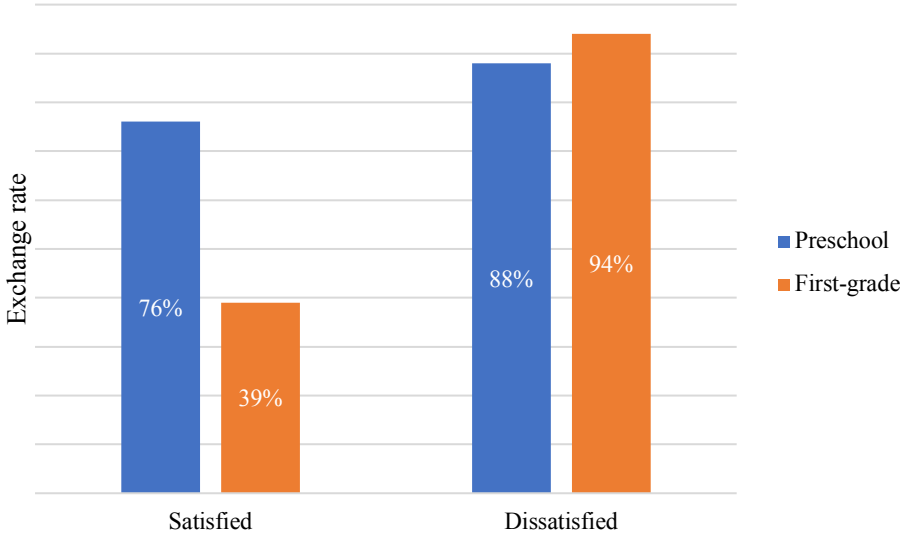


Figure 3b. *WTE according to satisfaction ratings (2nd trial)*



One last way to validate children's WTE as a measurement for choice-quality is by comparing satisfaction ratings before and after exchanging the received item. Hence, the following analysis was conducted only for those children who decided to exchange the randomly-received item. A t-test for paired samples revealed a significant improve in satisfaction after exchanging only for first-graders t (42) = -4.08, $p < 0.001$ for the first trial and, t (33) = -7.22, $p < 0.001$ for the second trial. The mean difference is expected to be negative because the lower satisfaction entered first (pre-exchange). However, preschoolers did not seem to improve their satisfaction after exchanging their random-received item, t (46) = 1.82, $p = 0.08$ for the first

trial and, t (40) = 0.22, p = 0.83. Figures 4a and 4b further detail the improvement in satisfaction after exchanging for the first and second trial respectively.

Figure 4a. *Satisfaction ratings before and after exchanging the received item (1st trial)*

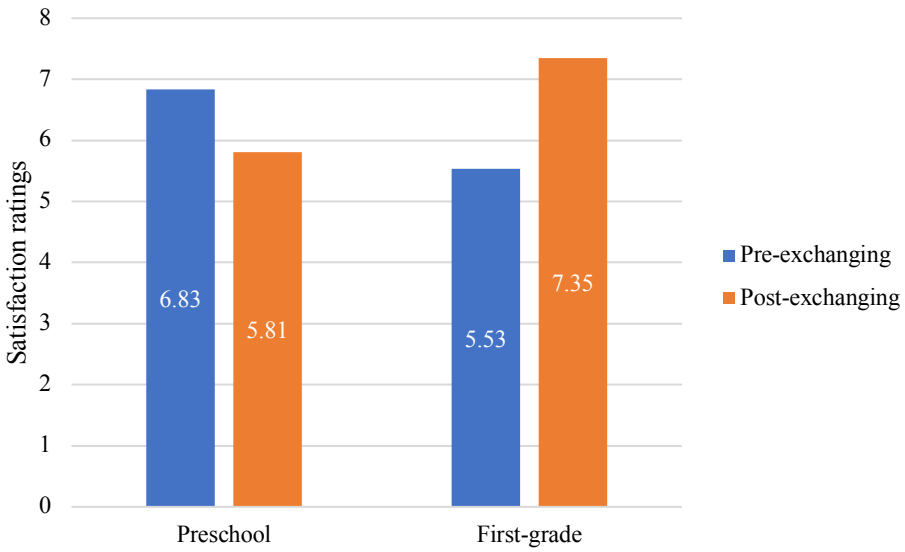
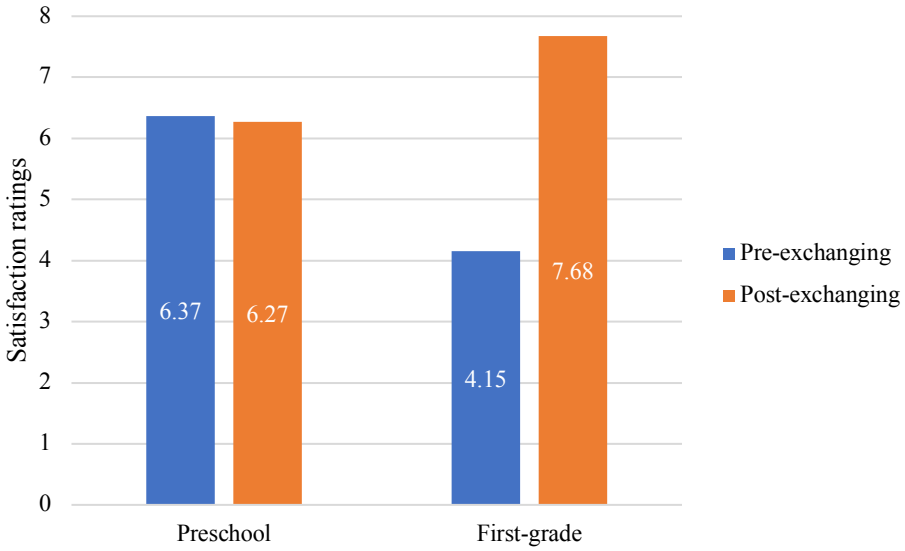


Figure 4b. *Satisfaction ratings before and after exchanging the received item (2nd trial)*



To summarize, the results indicated that among first graders both choice quality measurements, post-choice satisfaction via VAS (scale 2), and the child WTE, are valid and seems to reliably indicate child's subjective perception of choice-quality, whether the choice was made for them (randomly received item) or by them (chosen item). The results are more complicated with regards to preschoolers, where satisfaction self-report and WTE both strongly

correlated with prior-preference, but not with each other. Moreover, there was no improvement in their satisfaction rating after exchanging, which may doubt each of the two measurements' validity in this age group.

Discussion

In the current study children indicated their color-preferences and then received a random-colored item. They then reported their satisfaction with the received item on one of the three VAS that were tested. Overall, for preschoolers the first trial produced stronger correlations than the second trial. Due to their young age this may be interpreted as an indication of their attention abilities, or of fatigue. Observing the first trial correlations indicated that Scale 2 (see Figure 1) was highly and significantly correlated to prior preferences in most conditions (trials and age groups) and therefore is recommended for use to measure post-choice satisfaction from 4 years of age. However, the inconsistencies across trials may suggest that a more comprehensive examination of varied sets of items over more experimental trials would be helpful to determine the scales' reliability and validity.

The ability of young children to report their feelings in a valid manner is not surprising and was previously found in study fields where children's introspective reports are essential, mainly medicine and psychiatry (e.g., Drendel, Kelly, & Ali, 2011; Luby, Belden, Sullivan, & Spitznagel, 2007). When children are the patients, and the treatment focuses on their well-being, then their own reports are essential for the process. In these fields of pediatric care, researchers have found ways to adapt their inquiries to their young patients. However, the strong evidence of children's ability to accurately report their inner-state may also be used in other, less acute, domains. Applying the use of children's self-report to the field of decision-making may promote our understanding of the process by monitoring children's reports in response to changes in the set structure or choice-environment.

Moreover, in medicine, monitoring children's pain is also used to hone the child's own sensitivity and awareness to the changes in their inner-feelings, such as intensity and location of the pain (Drendel et al., 2011; Von Baeyer, 2009). If frequent monitoring of inner-feelings leads to more sensitive awareness to it, perhaps it may also be used in the field of decision-making. Heightening children's sensitivity to the outcomes of their choices by asking them to report their satisfaction from their choice may promote their ability to perform satisfactory decisions. If we consider decision-making as an important goal for the grown-up independent child – then it is desirable to improve the ability to decide and choose.

Children's willingness to exchange was high in the first trial, with 79% of the sample deciding to exchange their received item. On the second trial, lower rates (64%) of exchanges occurred. This reduction may not be interpreted in terms of liking the set of items, because the different sets (bouncing balls, markers, etc.) were randomly introduced as first or second trials. However, the lower exchange rates may reflect a better understanding of the decision to exchange, and a more careful decision-making process. During the first trial, after choosing an item the experimenter inserted the chosen item into a gift-bag and wrote the child's name on it. Perhaps the gained experience from the first trial made the decision look more final and real and hence led to a more considerate decision on the second trial. This interpretation is in line with some findings that indicate the ability of young children to update their decisions according to gained experience, or additional information (Harbaugh, Krause, & Vesterlund, 2007; Schlottmann & Wilkening, 2011).

The measure of WTE was found to be indicative for the first graders. Exchanging an item indicates lower preference strength towards it, which may be interpreted as dissatisfaction from it, and/or a belief that a better and more satisfying option is available (Chernev, 2003; Lin & Wu, 2006). Indeed, first graders tended to exchange more if they received a non-preferred color or reported to be dissatisfied. Furthermore, while considering whether to exchange or not, children held their received item and looked at the set of options. They were thus probably aware of the available options. First graders that chose to exchange their received item were indeed significantly more satisfied after exchanging. Among adults, consumers' switching behavior was found to be related to dissatisfaction and to consumers' belief of utility improving from switching (Chernev, 2003; Srivastava & Sharma, 2013). Hence, the finding of improvement in children's satisfaction after exchanging their received item was expected and thus validated both the satisfaction self-report and the WTE measurements.

However, WTE produced less coherent results for preschoolers. While they did tend to exchange more when they received a non-preferred color, there was no significant difference in the exchange rate between satisfied and dissatisfied children. Also, their satisfaction was not improved after exchanging their random item for an item of their choice. These results might indicate that preschoolers approached the decision task playfully, and without fully understanding the meaning of the decision to exchange. During childhood, exchanging items (i.e., marbles, stickers, cards etc.) is often being treated as a social function (i.e., bonding the trading children), reported as sometimes done just for fun, and being less popular only at around 11 years of age (Webley, 1996; 2005). Moreover, the understanding of complex economic terms such as trade is slowly acquired in these years, and young children especially do not fully

grasp the meaning of them and are prone to exchange goods in quite bad-economically deals (Gentner, 1975; Webley, 2005). Thus, perhaps it is not surprising that preschoolers fail to use the opportunity to exchange the randomly received item with a more satisfying option. Another possible explanation for the lack of correlation between WTE and satisfaction among preschoolers is that preschoolers were relatively very satisfied, and show less variance in satisfaction ratings. This may imply a ceiling effect for satisfaction, not allowing enough variance to yield a significant correlation.

In the current study I tested two common measures for choice quality that are often used to evaluate adults' post choice satisfaction. While among adults these measures were found to be highly correlated, and were even offered to be used interchangeably (Chernev et al., 2015), the results of the current study suggest that this may only be appropriate from first-grade, where the results were coherent across all measures, and not with younger children.

A part of the process of validating children's WTE included aggregating the prior-preferences and VAS scales into only two categories, and eliminating the mid-scale ranks. While these recoding of the scales allowed minimizing small cells in the analysis, it also reduced the variance, and thus the sensitivity, that the whole scale produced. The loss of variance in these measurements may have influenced the analysis, and hence the results may indicate a modest estimate of the WTE validity. A larger sample may allow a more sensitive analysis of the correlation between these scales and children's WTE, and perhaps a more conclusive result in regard to preschoolers. Nonetheless, in terms of satisfaction and preference, the mid-scale ranks are not diagnostic and may be more accurately interpreted as indifference than any of these concepts of satisfaction and preference. Hence, the loss of variance is mainly addressed to the aggregation of the scales' edges, and not to the omission of the mid-scale ranks, which may allow better differentiation of children's prior preference and satisfaction.

Another limitation of the current study is the assortments of items. Children ranked their color preference over 8 different colors (colors ranked were: black, blue, yellow, green, pink, light blue, purple and red), while the assortment consisted of only six items for each trial. Moreover, though children ranked their preference to black color (and some also ranked it as their most favorite color) – none of the items were black. Hence, children that randomly received an item of their second or even third preferred-color, may have no better option in the assortment to exchange with. Children saw the available options before deciding whether to exchange their received item, and thus perhaps unwillingness to exchange was also affected by the evaluation of the attractiveness of the other options, and not exclusively from prior-preference match of the random received item.

During the session of color-ranking, the research staff noticed that some first-graders tried to peek over the experimenter's shoulder, attempting to have a look at their color ranked scale that was laid on a rear table (facing down). Though it may only be treated as anecdotal information, it may also raise questions in regard to the ranking procedure. Perhaps children try to see their color-ranking because they were not sure of it. Maybe they were trying to be consistent with their own prior-ranking. Another option is that they tried to reassure their feelings with their received item. The procedure included only one session of color ranking hence, the reliability of ranking stability could not be tested. Perhaps a second trial of color ranking would have produced different rankings. Another explanation may be that first-graders have a greater understanding and awareness to the impression of self-consistency (Mussen & Eisenberg, 2001). Because this notion (of peeking) was only observed among first graders, for whom the measurements yielded strong validity, the speculation about consistency that emerges at this age may better suit the results. However, further examination of children's sensitivity to their own consistency with declared prior-preference would be interesting.

Despite its limitations, this study offers validated measurement/s (depending on age group) for young children's subjectively-perceived choice quality. These measurements may be used to expand our understanding of children's sensitivity to varied choice-circumstances such as choice-set features, time pressure, reversibility of choice, and many other choice-related factors. Expanding the understanding of the factor that may enhance or reduce satisfaction or exchanging rates of young children, allow a more accurate grasp of both their decision-making process and the developmental path to the mature decision-making process, as reflected in adults' behavior.

Monitoring children's sensitivity to varied factors of the decision environment may promote efficient consumer protection recommendations, based on avoidance from frustrating and maladapted choice situations and environments. Policy-makers may consider evidence-based interventions for situational factors that may negatively influence children's ability to perform a satisfactory decision. They may better guide businesses that address children by suggesting an adapted environmental condition such as store size, salient of price, number of categories etc. It may also appeal to teachers and parents, guiding them through the path of exposing young children to choosing tasks that would enhance their sense of competence and autonomy (Katz, & Assor, 2007).

Future research thus, may develop in two directions. First, keep honing measures of satisfaction among children. Conceptual replication of the use of the suggested measures over different items for example, may strengthen the validity of these measures. In the current study I used toys/prizes that varied only by color, but it would be interesting to test these measurements

for preference for food, clothing, books, classroom activities etc. These choice contexts are different in the alignability of attributes (Herrmann, Heitmann, Morgan, Henneberg, & Landwehr, 2009). Complex alignability may be especially more difficult for young children, thus may reduce their ability to be consistent and weakening the ability to monitor their preferences and satisfaction. Moreover, I have offered and tested two optional operationalizations for children's satisfaction, but there are additional potential operationalizations to consider and test. For example, child engagement with the chosen item (see Maimaran, 2017) or amount of consumption, could also be tested to validly reflect children's satisfaction.

The second direction for future research is to use these measures to explore children's decision behavior and preferences. If satisfaction reflects the subjective quality of the decision procedure and/or outcome, then it may be used to hone the understanding of them. For example, post-choice satisfaction measures may be used to examine which choice circumstances and features are more effectively allowing children to perform a good decision. Moreover, they may be applied to recognize factors that children are highly sensitive, or rather indifferent to them. Another important use of these measurements for future studies is differentiating age groups over these factors, in the path of decision-making development across childhood.

The ability to validly monitor children as young as 4 years-old with respect to changing in choice settings may open a door for a better understanding of many childhood decisions that cannot be interpreted with a normative evaluation of choice quality. Many daily childhood choice-situations are preference-dependent choices, and thus their decision process and outcome should be evaluated with respect to the chooser preferences. Moreover, understanding children's sensitivity to choice-setting features along childhood development, where each stage is more sophisticated and less cognitively bounded than the previous, may hone our understanding of the more mature expression of sensitivity to choice-set features among adults.

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Chapter 2 - Set size matters

Abstract

Like adults, children make choices on a daily basis, and from various sizes of choice sets. Choosing from many options can influence perceived choice quality (e.g., satisfaction) in two distinctly different ways. On one hand, a wider assortment should increase the likelihood of preference matching, and thus enhance perceived choice quality. On the other hand, having too many choices can sometimes create an overload that decreases perceived choice quality. The effects of choice overload that have been found among adults were mainly attributed to increased cognitive demands and greater feelings of regret. Children's reactions to various set sizes are important because the pivotal factors that influence the choice overload phenomena—namely cognitive ability and the sense of regret—evolve during childhood. Hence, children may reveal different reactions at different stages of cognitive and emotional development. In the current study, children from three age groups were asked to choose a prize from assortments of various sizes. I then measured their perceived choice-quality (i.e. post-choice satisfaction and willingness to exchange) and asked children to complete a cognitive inhibition test. The results indicate that preschoolers experienced a choice overload effect if their cognitive ability was average-low relative to their peers; fourth graders showed the opposite effect, with higher satisfaction as set size increased; first graders showed a mixed reaction to set size. These results suggest that increases in cognitive demands constitute a key component of the mechanism underlying choice overload effects, at least among children. Furthermore, because regret is cognitively unlikely among preschoolers, these findings also suggest that regret might not adequately explain choice overload effects. According to these results, younger children should not be exposed to more than a handful of options, while older children may enjoy greater assortments. Parents, educators and consumer protection recommendations may use these findings to better protect and adapt choice opportunities to the choosing child, to maximize the beneficial effects of choice provision and avoiding the frustrating ones.

Introduction

Our daily lives are filled with an ever-increasing range of options to choose from (Schwartz, 2004). For example, in 2012 in the United States, one could choose from almost 5,000 different kinds of breakfast cereal—as compared to only 340 options in the late 1990s and 160 options in the early 1970s. Similar trends were documented for shoes, cars, and other products (Aichner & Coletti, 2013; Cox & Alm, 1998). This profusion of options has been said to affect individuals' choices and post-choice satisfaction in two opposing directions: The positive effect, described by the "more is better" principle, as derived from standard economic theory, states that the probability of satisfaction with one's choice is a function of the number of options available in a choice set. Thus, when set size increases, the likelihood that one will find what one desires also increases (e.g., Oppewal & Koelmeijer, 2005). On the other hand, assortment size has sometimes been found to create a negative effect, also known as "choice overload," leading to lower post-choice satisfaction when choosing from an extensive array of options (Chernev, 2003a; Iyengar & Lepper, 2000; Scheibehenne, Greifeneder & Todd, 2010).

Despite extensive research on adults' sensitivity to set size, the effect of set size on children's decision-making processes has remained relatively understudied. Studies that have addressed this issue did not investigate how set size directly influences post-choice satisfaction. In a study that examined the influence of set size and memory aids on children's information-gathering processes, young children demonstrated sensitivity to set size by gathering less information about their options when four (vs. two) options were displayed (Katz, Bereby-Meyer, Assor & Danziger, 2010). Another study assessed the subjective experience of children when faced with an extensive (vs. narrow) set of choices, revealing a dual effect of set size among preschool children: while large assortments were preferred over small ones, they were found to generate less engagement with the chosen item (Maimaran, 2017). Engagement may be regarded as a proxy for choice satisfaction, but it may also reflect interest or involvement. The fact that few studies have considered the effects of set size on children's post-choice satisfaction is puzzling, given that children are expected to make choices from a very young age (e.g., McNeal, 1992; Valkenburg & Cantor, 2001). Choosing a breakfast cereal, what to wear, which class activity to choose, which subject to write an essay on, or which extracurricular program to take, for example, are all decisions that can typically entail a wide range of options.

Moreover, according to Self-Determination Theory (Deci & Ryan, 1985; 2000) and several supporting studies (e.g., Deci, Vallerand, Pelltier & Ryan, 1991; Patall et al., 2010; Stefanou, Perencevich, DiCinto, & Turner, 2004), it is well established that allowing choice can

empower children's sense of autonomy, heighten their intrinsic motivation, and improve their achievements and even their sense of well-being. According to the Self-Determination Theory, autonomy is one of the key psychological needs that should be met in order to increase one's sense of self-determination. Although providing opportunities for choice is an obvious way to afford autonomy, it may not always lead to positive outcomes (Katz & Assor, 2007; Patall, 2012; Reeve, Nix & Hamm, 2003). In order for such opportunities to be beneficial, the choice set and environment should be designed in ways that empower the child's sense of competence; thus, tasks like choosing from a given choice set should be neither too complex nor too easy (Katz & Assor, 2007; Patall, Cooper & Robinson, 2008).

Children often encounter choice sets in educational settings. For example, they sometimes choose an assay topic from a given list, a peer to work with on a project or a reward for achieving an educational goal (e.g., Hoffmann, Huff, Patterson & Nietfeld, 2009; Padmadewi, 2016; Patall, Cooper & Wynn, 2010). Another example is the assortment of games and toys provided in some classrooms to help students concentrate (e.g., stress-relief toys or other tactile games), especially in special education or integrated classrooms (Friedlander, 2009; Moyes, 2010). Although these rewards and toys may not always be educational in and of themselves, they are often used in educational contexts and for educational goals. I argue that in all of these contexts, whether the choice is between strictly educational items (e.g., activities, classes, tasks) or educationally-supportive items (e.g., toys, rewards, food) the provision of choice by itself might not be enough to help the child. Instead, the task of choosing should be adapted to the child, and educators should consider the number of options that they offer to their specific group of children. A child that is rewarded for meeting an educational goal but is offered a set of rewards that is too large or too small might feel frustrated and incompetent, diluting or even negating the desired effect of the reward. Thus, research is needed in order to identify the optimal range of assortment size for children at different developmental stages in order to identify and explore when and why might children experience choice overload.

Theoretical background

I discuss relevant theories and findings to explore the explanations that has offered to explain the choice overload phenomenon and their relevance to childhood developments. Identifying the core developments that may be responsible to set size effects would allow choosing age groups that would reveal a good description of the choice overload phenomenon across childhood.

Explanations for the choice overload phenomenon among adults

In the related research among adults, two main explanations have been put forward to describe when and why choice overload might occur: an emotional and a cognitive one. The emotional account focuses on the negative emotions, mainly regret, that may arise after choosing from an extensive assortment of options (e.g., Chernev, Böckenholt, & Goodman, 2015; Inbar, Botti, & Hanko, 2011; Iron & Hepburn, 2007; Sagi & Friedland, 2007). Regret can be understood as the consequence of choice overload (Chernev et al., 2015), in relation to post-choice feelings regarding the chosen item. Moreover, anticipated regret is an influential component in decision-making processes (Schwartz & Ward, 2004; Simonson, 1992). Regret, it is assumed, drives the choice overload effect because choosing from a larger assortment inherently involves a greater number of options that must be foregone—and thus increased doubt about whether the chosen alternative was indeed the best choice.

The second dominant explanation focuses on the cognitive processes involved in making choices, arguing that an increase in assortment size creates a more complex task and thus puts greater cognitive demands upon the chooser, resulting in choice deferral or avoidance (Dhar, 1997; Iyengar & Lepper, 2000). In these cases, individuals may apply a (suboptimal) heuristic decision rule in an attempt to minimize the cognitive demands created by the large choice assortment (Payne, Bettman, & Johnson, 1993). While adopting a suitable heuristic reduces task complexity, it can also lead to poorer decision-making and it may lower confidence in one's final decision (Chernev, 2003b; Diehl, 2005).

Extensive research to date has attempted to differentiate between the positive and negative effects of choice set size. This body of research mainly explores how each of the effects (i.e., positive or negative) are manifested under various conditions. For example, people can experience choice overload when choosing for themselves, but experience it to a lesser extent when choosing for others (Polman, 2012). When choosing from a narrow assortment, people allow themselves to indulge in non-utilitarian, pleasurable options, while tending towards more easy-to-justify (i.e., utilitarian) products when faced with many options (Sela, Berger & Liu, 2009). When choosing visually (e.g., from images), a large number of options heightens task complexity, compared to choosing from textual descriptions (Townsend & Kahn, 2013). Despite extant findings about which circumstances increase the likelihood of positive or negative effects from assortment size, it appears that the processes underlying the coexistence of these conflicting effects have yet to be fully understood (Benoit & Miller, 2017; Chernev et al., 2015).

Examining set size effects among children can have particular theoretical value because the pivotal abilities presumed to be connected to the task of choosing from few versus many

options emerge and evolve during childhood years (e.g., Bereby-Meyer, Assor, & Katz, 2004; Davidson, Amso, Anderson, & Diamond, 2006; Gregan-Paxton & Roedder, 1997; John, 1999; Winsler, Naglier, & Manfra, 2006). Specifically, research with adults has identified the role played by regret and cognitive demands in choice (Chernev, 2003b; Chernev et al., 2015; Choi & Fishbach, 2011; Inbar et al., 2011; Kool, McGuire, Rosen, & Botvinick, 2010). Both regret and cognitive ability evolve throughout childhood. Thus, a closer examination of the developmental patterns involved in regret and cognitive ability could help identify important choice-related phases for each ability. Identifying these phases might also promote a better understanding of when and why would children be susceptible to choice overload. Moreover, such an examination could help test the abovementioned two competing explanations, and perhaps also facilitate a clearer understanding of their importance in adults. In the following section, I review the development of regret and cognitive control as choice-related abilities with a potential impact on the effects of set size, and outline their predicted effects at different ages.

Development of choice-related abilities in childhood

Regret. Considered an emotional state, regret usually manifests at about 6 to 7 years of age (Amsel & Smalley, 2000). In one study, younger children remained as happy about the prize they had chosen even after the experimenter showed them a more attractive prize. In contrast, 6- and 7-year-olds expressed regret for not having chosen the more attractive prize (O'Connor, McCormack & Feeney, 2012). However, regret is not a congenital feeling; rather, it is a complex ability, connected to earlier developmental milestones that must first evolve before a child can become capable of experiencing and expressing regret (O'Connor et al., 2012). One such ability is counterfactual thinking—the ability to articulate the hypothetical outcomes of different choices (Riggs & Peterson, 2000). The preliminary capability for counterfactual thinking appears at approximately 5 years of age. For example, when asked about a scenario in which a child took a different route home and got into an accident along the way, 7-year-olds (as well as adults) said the child should feel worse about the accident, compared to a child who went on his usual route home but also had an accident. 5-year-olds, on the other hand, said that both children should feel the same (Guttentag & Ferrell, 2004). This finding suggests that 5-year-olds are unable to conceptualize the notion of regret, at least from the perspective of what the route-changing child may have felt. In another experiment, preschoolers stated (like adults) that they would have been happier to receive a winning card (after selecting a losing card); but, unlike adults who expressed regret for choosing the losing card, they were still as happy with their chosen card, demonstrating counterfactual thinking, but no regret (Amsel & Smalley, 2000). This indicates a capability for counterfactual thinking, but without the emotional engagement of regret. These findings

strengthen research assumptions that young children (under age 6) are not capable of feeling regret.

The course in which regret develops suggests that choice overload effects, if they do exist among children, may be contingent upon the child's age and developmental stage. Moreover, if regret is indeed the basis of the choice overload effect, then young decision-makers should be influenced differently by set size, contingent upon their developmental stage and ability to feel regret. More specifically, I would expect that young children (under the age of 5) would not manifest any decrease in post-choice satisfaction regarding larger sets, because they are not capable of either counterfactual thinking or the subsequent feeling of regret. In contrast, at around the age of 7, children may begin to experience a decrease in post-choice satisfaction with regard to larger sets of choice. Lastly, older children (aged 10 and older), already fully capable of feeling regret, can be expected to exhibit choice overload at a significant degree.

Cognitive Inhibitory Control. Another central explanation for choice overload among adults focuses on the increased cognitive demands that accompany choices from larger sets. As mentioned earlier, adults often approach complex decisions by applying decision-making rules that simplify their choice by limiting the amount of information they gather or the manner in which they process it (Payne et al., 1993). One central ability required for this process is inhibition—an executive function that allows an individual to suppress an immediate response in favor of a more desirable one (Williams, Ponesse, Schachar, Logan & Tannock, 1999). Inhibition prompts cognitive flexibility—which, among other abilities, assists the decision maker in determining how to go about making the decision (Davidson et al., 2006; Del Missier, Mäntylä & De Bruin, 2012).

However, the cognitive system of a child differs from that of an adult in many ways. Consequently, it is not possible to directly apply this explanation to children without first considering the developmental extent of their cognitive abilities. Following Piaget's seminal work on the development of cognition among children (Piaget, 1964), a large body of research has evolved around his conclusions, explicating the differences in a child's cognitive system, across developmental stages, from that of an adult. When faced with an extensive choice assortment, several cognitive abilities become crucially important, given their role in reducing the cognitive demands of the task and ultimately helping one make the optimal choice—a sequence often followed by adults and adolescents. These cognitive abilities include the capacity to gather relevant information in an effective manner, the ability to inhibit the impulse of immediate response, the mastering of various decision-making strategies, and the capacity for cognitive flexibility that would allow one to select the most appropriate choice strategy in each

situation. However, it seems that when preschool-aged children are required to make a choice, most only consider one attribute of the object at a time. Moreover, they focus mainly on perceptual attributes, such as size or shape, and pay less attention to other relevant attributes such as quality or price (John, 1999; Maimaran & Salant, 2015). Decision-making strategies at this stage are comparatively basic, and often do not consider important characteristics of the task. Choosing randomly or choosing according to a dominant attribute (regardless of the importance of this attribute) demonstrate the deployment of such basic strategies (Capon & Kuhn, 1980; Wartella, Wackman, Ward, Shamir & Alexander, 1979). For example, one study asked children to choose a sweet for a friend from a selection of options that had been drawn on cards, upon which the set of ingredients in each sweet (e.g., chocolate, raisins) were also shown. Children were informed about their friend's preferences. Preschool children chose the card that contained the largest number of ingredients, and not the card that matched the friend's preferences best, demonstrating their attraction to dominant perceptual attributes (Wartella et al., 1979).

In their early elementary-school years, children begin to compare alternatives for more than one attribute (Capon & Kuhn, 1980) and become more strategic when searching for information (Winsler et al., 2006). Children also learn to focus on the attributes relevant to the decision at hand (Davidson, 1991b) and to adapt decision-making strategies to the demands of the task—albeit not always correctly (Bereby-Meyer et al., 2004; Davidson, 1991a; Katz et al., 2010). This constitutes a major development in the ability of children to make informed choices.

Accordingly, children deploy several decision-making strategies at this age, but usually only when explicitly directed to do so (John, 1999)—implying some degree of flexibility but not full self-control. For example, in the aforementioned experiment about sweets and their ingredients, 8- and 9-year-olds applied more sophisticated strategies compared to their younger counterparts. However, there was no evidence that the older children applied more complex strategies, such as considering the relative importance of each attribute (Wartella et al., 1979). In a different study, 7- and 8-year-olds showed evidence for cognitive flexibility while searching for information, seeking less information as the difficulty of the task increased (Katz et al., 2010). These findings also indicate that children in this age group are indeed sensitive to cognitive task demands. With regards to choosing from an assortment of different sizes, larger sets require a greater ability to suppress immediate or impulsive responses, in order to allow for sufficient consideration of the alternatives. Hence, one would expect younger children's satisfaction to be negatively affected by larger assortments.

In later childhood and adolescence, the cognitive gap between children and adults diminishes considerably. At this stage, the main changes are expressed by enhancing existing

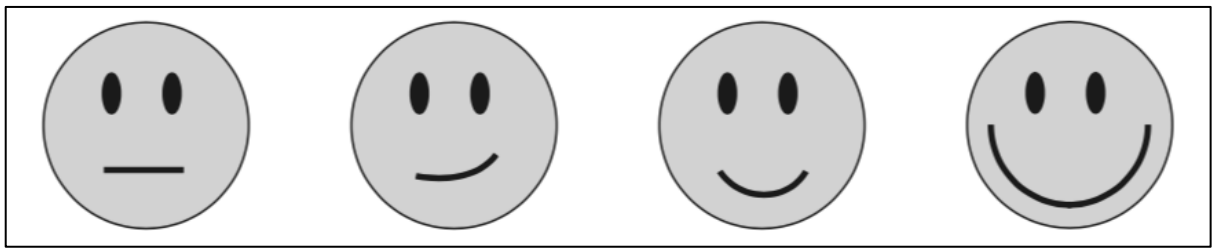
abilities rather than developing new abilities (John, 1999). To try and assess the ability to apply decision-making strategies across different age groups, researchers administered a task through which they were able to infer the strategy deployed by the child. The task was then given to two age groups (8-9 and 12-13 year-olds). The younger children performed significantly worse than the adolescents. Moreover, older children used strategies more appropriately (Bereby-Meyer et al., 2004). The ability to flexibly choose one's decision rule should limit the negative effect of larger set sizes, because the implication is that the child possesses the ability to control his or her approach to the task. Hence, one can reasonably assume that among older children, this effect will be reduced and perhaps disappear, allowing older children to negotiate larger assortments with a greater degree of confidence—and elide the potential negative effects inherent in choice.

As a preliminary exploration of the assumption that children may be negatively affected by larger choice sets I carried out a pilot study with kindergartners, as further described below. At the kindergarteners' developmental stage, the ability to experience regret is not established yet (Amsel & Smalley, 2000) thus, if the origin of a negative effect of set size is heightened feeling of regret, then this age group should not be vulnerable to set size. However, decision rules may be quite random (Wartella, et al., 1979) and impulsive (Davidson et al., 2006) at that stage, and a larger choice set would make it less probable to randomly or impulsively choose a satisfying alternative. Hence, if the origin of the negative effect of set size stems from the chooser's cognitive ability to cope with the choice task, kindergarteners would be vulnerable to set size.

Pilot study

A sample of 66 children was recruited from kindergartens in two central cities in Israel. Children's age ranged from 4.5 years to 6.5 years. Age information per child was not recorded. About half the sample were girls (n=36). After getting the consent of the class' staff, the children's parents and the children themselves, each child was invited to a separate room in the class. Children were randomly allocated to a choice set comprised of either 6 (small set) or 24 (large set) finger puppets. Deliberation time was measured. After children decided which puppet they choose, they reported their post-choice satisfaction, via four-level visual analogue scale (see Figure 1). To make sure they are able to distinguish the different levels of satisfaction represented in the scale, they were first asked to arrange them in ascending order, and only then to indicate which satisfaction level best represents their feeling. Children had no difficulty arranging the smileys correctly.

Figure 1. *Visual analogue scale for satisfaction self-report*



The time that children spent while deliberating over their options was significantly longer for the extended set of choice M_{sec} = 31.23, SD = 4.05 than for the narrow set M_{sec} = 17.28, SD = 4.01, $F(1,62) = 5.86$. $p = 0.02$. Yet, the average deliberating time spent per each item was significantly longer for the narrow choice-set M_{sec} = 2.88, SD = 0.43 vs. M_{sec} = 1.30, SD = 0.43, $F(1,62) = 6.77$, $p = 0.01$. These results are in line with the notion that the time added for deliberating over more options is expected to be marginally diminished, rather than linear (Hick, 1952; Proctor & Schneider, 2018). It is also supporting previous findings that demonstrated adaptive information search among young children, where children gathered less information when more options were introduced (Katz et al., 2010).

Set size did not affect children's post-choice satisfaction $F(1,62) = 0.28$, $p = 0.60$. Children were satisfied with their chosen puppets whether choosing from 6 or 24 puppets. The lack of differences in satisfaction between small and large choice-sets may indicate that young children are indifferent to set size. Yet another explanation stems from the variance of children's self-reported satisfaction. While the optional scale ranged from 1 to 4, no child indicated they were unsatisfied (=1), only 2 children indicated minor satisfaction, and 82% of the sample indicated the highest level of satisfaction. The average satisfaction was $M = 3.79$, $SD = 0.48$. This ceiling effect suggests that this scale is too narrow and thus may not allow reveal actual differences. However, children's post-choice satisfaction was significantly and negatively correlated with deliberation time per puppet $r = -0.25$, indicating that as children deliberated longer per option, they indicated lower post-choice satisfaction from their chosen puppet. This correlation is in line with findings with adults that suggest that longer deliberation time may reflect higher choice uncertainty (Hick, 1952; Kiani, Corthell, & Shadlen, 2014; Proctor & Schneider, 2018).

This pilot study highlighted several important aspects to consider before an additional investigation of the effect of set size on children's subjective choice quality. First, as further detailed in the previous chapter (Chapter 1), the satisfaction scale should be wider, to allow more levels of modest satisfaction, and avoid the ceiling effect. Second, in addition to self-reported

satisfaction and willingness to exchange, deliberation time may also be used to (inversely) indicate choice quality. Lastly, treating children from 4.5 to 6.5 years old as one developmental group may be wrong. Observing these children choose has left an impression of a highly heterogeneous group. Children considerably developed during early childhood, and thus, age groups should be selected more carefully to allow further differentiation based on the task-relevant developments.

The current study

The cognitive developments described above suggest that young decision-makers may be influenced differently by set size, as compared to older children or adults. If choice overload is due to increased cognitive demands, then young children should be most vulnerable to it, given their relatively low ability to cope with a high cognitive load. As described earlier, young children have a limited ability to inhibit immediate response, to search for and gather information, and to ignore irrelevant information; consequently, they are able to master relatively few decision-making strategies. In contrast, from around the age of 7, one can expect to see an ability to negotiate the complicated cognitive demands involved in choosing from a larger assortment of options. Lastly, older children (10 years and older) may not be negatively affected by the increased complexity of a task's cognitive demands due to their more sophisticated capacities to search for, gather, and process information, and also due to their more developed executive functions, which allow them to determine for themselves how to choose.

Mapping the choice overload effect over the course of childhood can contribute to a broader understanding of children's decision-making capabilities and the psychological factors that underlie the development of these capabilities. If we consider making choices and decisions crucial capabilities for adults, it seems logical to engage with the factors that guide children along the developmental path that leads to acquiring and honing these abilities. The anticipated findings of this research study may also highlight practical implications for a broader class of interested parties. The research findings could be of use to educators, in planning the range of available classroom environments and the activities offered; to parents seeking to promote their children's development of independent choice-making capabilities; and to policy makers, to help them protect children from commercial exploitation in shopping and other choice- and decision-making situations.

Study 2 – The effects of set size on children's choice quality

Method

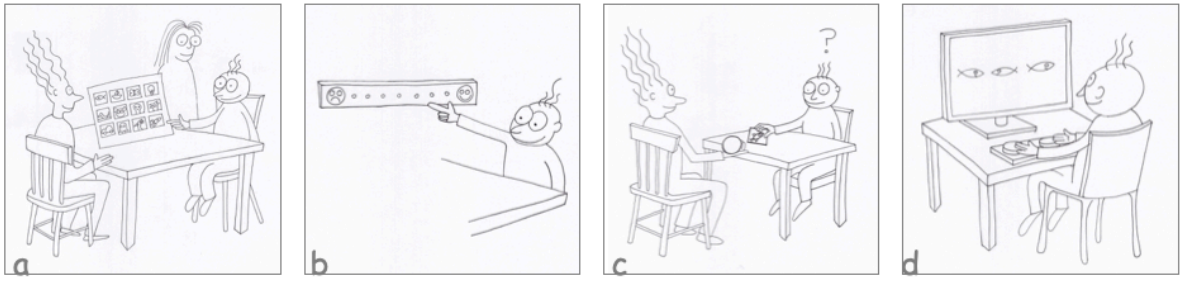
Participants. A sample of 442 children was recruited for this experiment (229 girls, 208 boys, 5 missing data – not recorded), following a sampling rule of approximately 40 participants per planned experimental cell. The children were recruited from preschools and elementary schools in several different cities and regional councils in Israel. The youngest participant was 4.5 years old (54 months) and the oldest was 11 years old (132 months). I sampled 111 preschoolers (M_{age}=60 months; SD=3.4), 180 first graders (M_{age}=85; SD=3.8), and 151 fourth graders (M_{age}=121; SD=3.6). Ethical approval was obtained from the Israeli Ministry of Education, and I obtained parental consent for all the children who took part in the study. All participating children received a toy of their choosing (from the experimental assortment) to thank them for their participation in the study. In order to avoid researcher bias, the study was administered with the help of several research assistants, who were trained using a structured procedure protocol.

Design. The study comprised three age groups. In each, the number of alternatives was randomly manipulated between "few" and "many" in the following manner: Preschoolers were asked to choose from either 3 ("few") items vs. 6 or 12 ("many") items. Referring 6 options as "many" with preschoolers was previously done by another study (Maimaran, 2017). First graders were asked to choose from either 3 or 6 ("few") items vs. 12 or 18 ("many") items; based on the expectation for higher cognitive ability and choosing experience around early elementary school years (e.g., John, 1999; Winsler et al., 2006) and fourth graders were asked to choose from either 6 ("few") items vs. 12 or 18 ("many") items. The 18-item condition was not used with the preschooler group because it is generally assumed that 12 items already constitutes an overwhelming selection for this age group and challenges their information-processing capabilities (John, 1999; Wartella et al., 1979). For the converse reasons, I did not present fourth graders with the smallest set of three items. Consequently, I had ten experimental conditions, differing in age and set sizes. In line with the pre-conditions specified for the choice overload effect (Chernev, 2003b; Scheibehenne et al., 2010), sets of choices contained various items and did not contain either an obvious dominant option or any popular brand names, so as to minimize the possible effect of prior preferences.

Procedure. Coordinating with school staff, the experimenters entered the chosen classrooms and, one-by-one, invited each child who had consented to participate in the study to join them in the room being used for the experiment. The child was randomly allocated to an

assortment size, and the set of items was then presented to the child. An observer measured the duration between the moment the set of items was revealed and when the child expressed their choice of an item. The child was then asked to indicate his or her satisfaction with the chosen item using a visual-analog scale (see Materials), which I had developed in a pre-test (see Study 1). Another item was then offered to the child, who was asked if they would like to exchange it for the chosen item. In cases where the child chose to exchange their chosen item for the alternative item, they were again asked to indicate their post-choice satisfaction. After completing this part of the study, the children completed an age-specific cognitive task (see Materials). They were then given their chosen item, thanked, and escorted back to their classroom. Figure 2 illustrates the procedure followed with each child. None of the children objected to the research procedure. One parent expressed some concern, which was resolved in conversation with the first author.

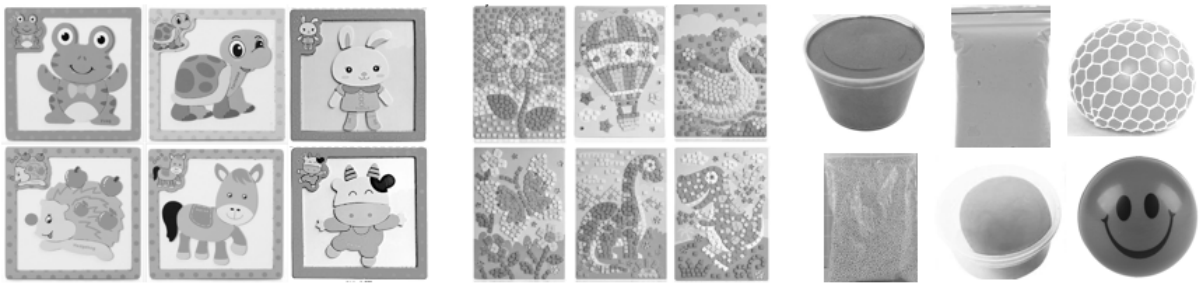
Figure 2. *Illustration of the study procedure*



Materials and Measurements. Constructing the choice set: Several major considerations guided us while constructing the choice sets. In line with previous analyses that revealed pre-conditions to the emergence of the choice overload effect, I selected items for which the children would not be likely to have strong prior preference, such as with familiar brands (Chernev, 2003b; Scheibehenne et al., 2010). I did, however, try to construct a set that simulated choices actually encountered by children on a daily basis. Although many children's products are gender-oriented (e.g., Auster & Mansbach, 2012), it was also important to find sets in which all of the options were unisex, so that no option would be immediately eliminated from the child's consideration set. Obviously, I also looked for sets of choices that would be both appealing and age-appropriate for the participants. And finally, each set had to contain a wide enough assortment of different but equivalent items in order to create an extensive-choice condition (Iyengar & Lepper, 2000). I ended up with three different assortments of age-appropriate fine-motor activities: puzzles, mosaic crafts, and elastic/tactile toys (see Figure 3). Each age group

was offered an age-appropriate assortment of items (as detailed above). Each assortment consisted of 20 different items, and the choice set presented to each child contained a random subset (3, 6, 12, or 18 items) from the whole assortment.

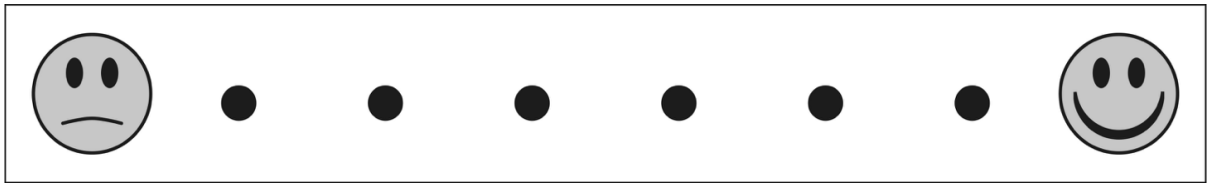
Figure 3. *Examples of six items set for each age group*



Preschool - Puzzles | First-grade – Mosaic craft | Fourth-grade – Elastic/squeeze toys

Measurements for perceived choice quality: Several measurements were used to assess children's perceived choice quality from their choice. The first indicator was a post-choice satisfaction self-report scale, using an eight-level facial Visual Analogue Scale (see Figure 4), which was developed and empirically tested for reliability and validity in a pre-test that included 116 children and contrasted several possible measures (see Study 1). The scale that was chosen demonstrated strong correlations with prior preferences that the children had expressed during the study, for both preschoolers (r = 0.49) and first graders (r = 0.59), indicating significant validity for both age groups. The second indicator used in the present study was behavioral, namely, the child's willingness to exchange their chosen item (Chernev, 2003b; Lin & Wu, 2006). In addition, I measured the duration between introducing the choice set and the child's expression of their choice. I used all of these measurements despite findings suggesting that they may be highly correlated (Chernev et al., 2015), because this notion was reached from research with adults; my pre-test indicated that these measurements operate differently for children.

Figure 4. *Facial Visual Analogue Scale (VAS)*



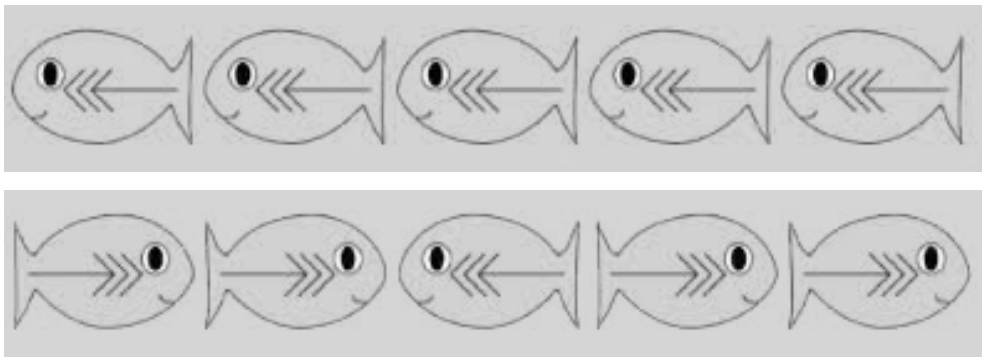
The last measurement was designed to gauge the children's cognitive levels, specifically focusing on cognitive inhibition. For preschoolers, I used the game of "Simon says," which has

been used with young children to measure inhibitory control (Carlson & Wang, 2007; Strommen, 1973). After explaining the rules of the task, the experimenter practiced each command type (action and inhibition) together with the child. If the child did not respond correctly, the experimenter repeated the rule, then tried the same type of command again. This practice was followed by the task itself, which included ten commands. The experimenter performed all of the commands, and an observer coded the child's responses as right (1), wrong (0), or corrected midway by the child (0.5).

Using the sample described in Study 1 (N = 116 preschoolers and first-graders), I pre-tested this game to assure that it is sensitive enough to indicate developmental level in the relevant age groups. First-graders' mean score for Simon says was M = 9.13 (SD = 1.24), whereas preschoolers' mean score was only 6.38 (SD = 1.88). The gap in inhibition was significant as expected F (1,113) = 86.51, $p < 0.001$. However, the game was tested for the purpose of differentiating for inhibition ability within each age group. A simple regression was used to test whether inhibition, as reflected from Simon says, may be predicted by the child's age, in each age group separately. Among preschoolers the regression model was significant, F (1,55) = 26.34, $p < 0.001$, $R^2 = 0.32$. The regression coefficient (b = 0.32, 95% CI [0.19, 0.44]) indicates that children's score on Simon says increased by 0.3 point for each month of age in this age group. Yet the picture was quite different for first-graders. A simple regression revealed that within this age group the child's age is not a significant predictor of Simon says score, F (1, 56) = 3.20, p = 0.08, R^2 = 0.05. Simon says performance strongly reflected the cognitive development in preschools, but not in first grade, where most of the children scored high results.

Thus, for the older children, the first and fourth graders, I used a computerized Stroop-like task to indicate their inhibition abilities. In this task, I isolated one of three indicators from the Attention Network Test (ANT), manipulating the congruency of directions in a task involving five fish in a horizontal row (Fan, McCandliss, Sommer, Raz & Posner, 2002; Rueda, Posner & Rothbart, 2005). In each trial, a row of five fish were shown on the screen and the child indicated the direction of the center fish, using the marked keys on the keyboard. In some trials, the fish were all facing the same direction (congruent stimuli; see Figure 5); in others, the neighboring fish faced the opposite direction (incongruent stimuli; see Figure 5). A practice block was followed by a 32-trial block. Response time was measured; the gap between response times for congruent and incongruent stimuli was calculated and used as the measure of cognitive inhibition.

Figure 5. *Cognitive task's stimuli (congruent-top, incongruent-bottom)*



Note: The correct response for both stimuli is clicking the left button

Results

Examining each age group separately, I assessed whether the children displayed a choice overload effect, as expressed by a reduced post-choice satisfaction for larger choice sets[1], and whether this effect was moderated by their cognitive inhibitory ability. I first report on each age group separately.

Pre-schoolers. First, as a manipulation check, I compared response times between set size conditions, because duration before expressing choice was expected to be sensitive to task complexity. Table 1 presents preschooler's deliberation time (in seconds) by set size. As expected, ANOVA showed that response times (logged) increased as the number of items in the set increased, F (2,108) = 4.25, p = 0.017. Post-hoc tests revealed that this effect stemmed mainly from the difference in response time between the sets of 3 vs. 12 items (M_{diff} = -0.22, SE = 0.08, p = 0.01, R^2 = 0.07). Table 2 presents means and standard deviations for satisfaction ratings in each set size, by age group. As can be seen in Table 1, the preschoolers' satisfaction was highest in the smallest set size, which consisted of only three items. However, this difference was not statistically significant with regard to satisfaction for all set sizes in the age group, F (2,105) = 1.1, p = 0.34, before introducing cognitive ability as a moderator. No significant gender differences in any of the three age groups was found (Fs < 1).

[1] I only tested the data for linear regression. Other relations between set size and satisfaction are also possible, but because I used a categorical independent variable (with only 3 or 4 levels, depends on age group), I had insufficient data points to create any other significant curve.

Table 1. *Preschooler's mean (SD) deliberation times by set size*

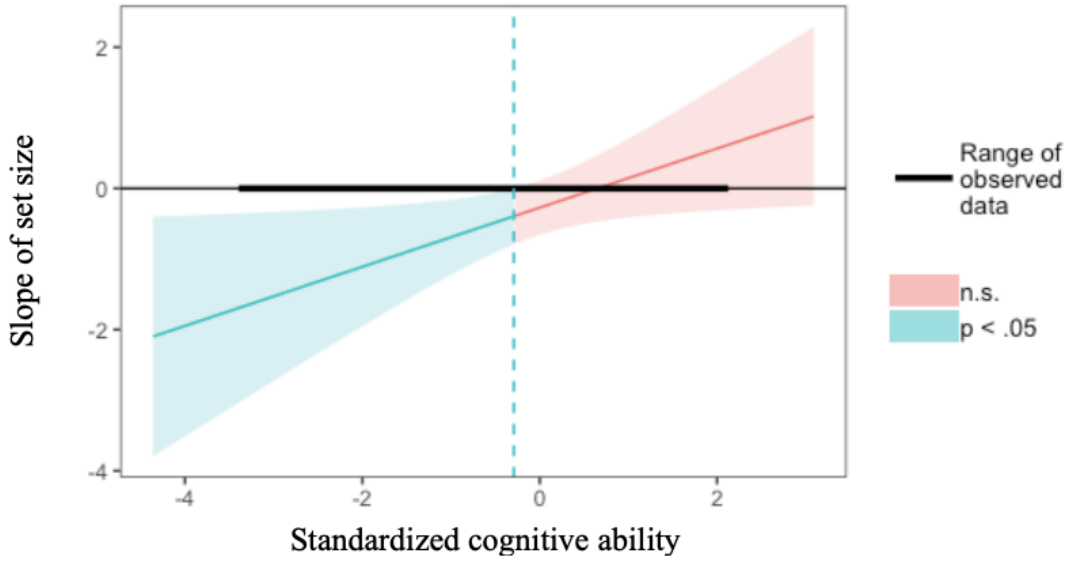
No. of items	*M (seconds)*	*SD*
3 items	6.13	4.95
6 items	6.34	3.59
12 items	8.73	5.62

Table 2. *Means (and SDs) of standardized post-choice satisfaction by age group and set size.*

	Preschool (n=111)	First grade (n=179)	Fourth grade (n=150)
3 Items	0.15 (0.49)	0.02 (0.90)	-
6 Items	-0.14 (1.25)	0.14 (0.91)	-0.28 (1.16)
12 Items	-0.03 (1.13)	-0.19 (1.20)	0.13 (0.84)
18 Items	-	0.03 (0.98)	0.12 (0.96)

I then tested whether cognitive ability moderated the effect of choice set size on post-choice satisfaction. As previously explained, for this age group I treated the condition of 3 items as "few items"; the 6- and 12-item conditions were combined and referred to as "many items," in order to ensure high statistical power. The overall moderated regression model was significant, F (3, 105) = 4.34, p = 0.01, R^2 = 0.11, and cognitive ability showed a significant main effect, b = 0.24, t (105) = 2.62, p = 0.01. Critically, the interaction between set size and cognitive ability was significant, b = 0.42, t (105) = 2.17, p = 0.03, indicating that set size had different effects at different levels of cognitive ability. To further understand the extent of cognitive ability as a moderator, I used the Johnson-Neyman technique (Hayes, 2017). Because the moderator is a continuous variable, this technique allowed us to identify the threshold value(s) above or below which the interaction effect becomes statistically significant. As can be seen in Figure 6, I found that the effect of set size on post-choice satisfaction was significant when cognitive ability was relatively low (Z = -0.29 or lower), a range which included 52% of the sample.

Figure 6. *Post-choice satisfaction as a function of set size at values of cognitive ability*



To summarize, these findings indicate that preschoolers can experience choice overload when faced with a relatively large assortment (e.g., 6 or 12 items), especially if their cognitive inhibitory ability is around and below average.

First graders. Table 3 presents first-grader's deliberation time (in seconds) by set size. ANOVA revealed that response times (logged) increased as the number of items in the set increased, F (3, 176) = 5.84, $p < 0.01$. Post-hoc tests showed significant differences between the conditions of 3 and 6 items (M_{diff} = -0.14, SE = 0.05, $p = 0.03$), and also between 3 and 18 items (M_{diff} = -0.21, SE = 0.05, $p < 0.01$), but not the others. As can be seen in Table 1, there were no significant differences in the satisfaction rate of first graders between set sizes, F (3,172) = 0.88, $p = 0.45$.

Table 3. *First-grader's mean (SD) deliberation times by set size*

No. of items	*M (seconds)*	*SD*
3 items	7.27	6.77
6 items	9.06	4.84
12 items	8.92	4.70
18 items	11.01	8.25

I then tested whether cognitive ability moderated the effect of choice set size on post-choice satisfaction. As explained earlier, for this age group I combined the condition of 3 items with 6 items and treated them as "few items," while the 12- and 18-items conditions were combined and referred to as "many items." The overall moderated regression model was not

significant, F (3, 173) = 0.44, p = 0.72, nor did I find any main effect, t (173)= -1.10, p = 0.27, or interaction, t (173) = -0.31, p = 0.76, between set size and cognitive ability. To summarize, I found no evidence for a negative (choice overload) or positive ("more is better") effect of set size on post-choice satisfaction among first graders, at any level of cognitive ability.

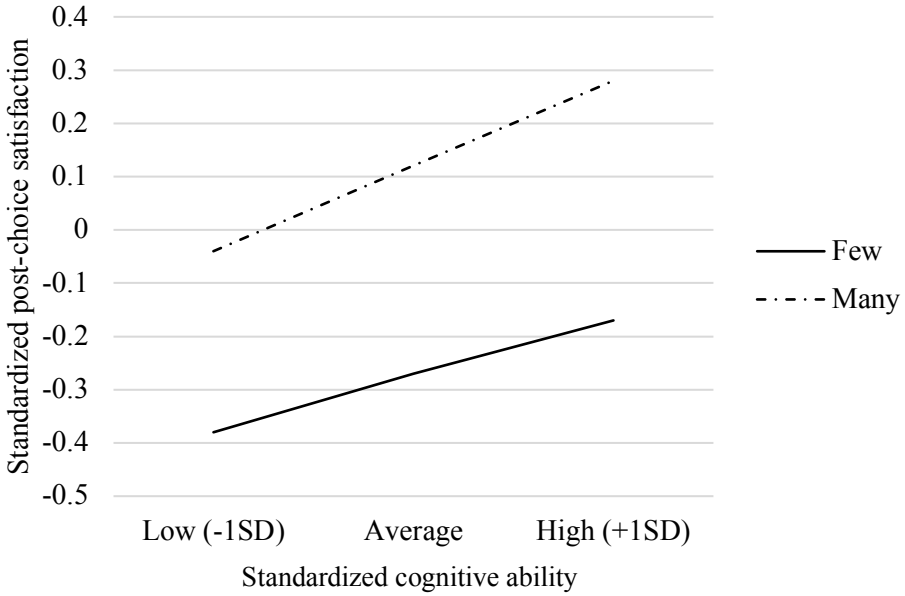
Fourth Graders. Table 4 presents fourth-grader's deliberation time (in seconds) by set size. In this age group, ANOVA revealed that response times (logged) were not significantly affected by the number of items in the set, F (2,147) = 2.71, p = 0.07. However, satisfaction levels among the fourth graders were higher with the larger set sizes, which had 12 or 18 items (see Table 2). This main effect was of medium size and statistically significant (Cohen's d = 0.41, 95% CI [0.06, 0.76]). I then used a regression to test whether cognitive ability moderated the effect of set size on post-choice satisfaction. As explained earlier, for this age group I treated the condition of 6 items as "few"; the 12- and 18-item conditions were combined and referred to as "many." The overall moderated regression model was significant, F (3, 146) = 3.02, p = 0.03, R^2 = 0.06, and set size showed a significant main effect, b = 0.39, t (146) = 2.24, p = 0.03. However, the interaction of cognitive ability with set size was not significant. The conditional effect of set size on post-choice satisfaction at values of cognitive ability, as shown in Figure 7, reveals that when cognitive ability was around the average, an increase in set size led to an increase in post-choice satisfaction, b = 0.39, t (146) = 2.24, p = 0.03. However, for other values of cognitive ability, the moderation was not significant. The Johnson-Neyman[2] analysis showed that the effect of set size and post-choice satisfaction was significant when cognitive ability was not very high or very low, relatively speaking (between Z = -0.39 to Z = 0.54)—a range which included 48% of the sample.

Table 4. *Fourth-grader's mean (SD) deliberation times by set size*

No. of items	*M (seconds)*	*SD*
6 items	21.80	19.48
12 items	28.82	32.05
18 items	32.75	54.39

[2] I used the Johnson-Neyman technique, even though the moderation was not significant, because it was marginally significant and there was a significant main effect to set size. However, we present and interpret this result with caution.

Figure 7. *Post-choice satisfaction as a function of set size at values of cognitive ability*



To summarize: fourth graders showed, in general, a positive effect of set size on post-choice satisfaction ("more is better"), especially when cognitive inhibitory ability was not, in a relative sense, either significantly higher or lower than the group as a whole (i.e., when it was around the average).

Exchange rates and post-hoc satisfaction

As described earlier, children in all groups were given the option to exchange their chosen item for a new item after making their initial choice. I regarded this as an additional behavioral measure, testing the effects of set size on choice satisfaction. The results of Chi-square test indicate that children's willingness to exchange their chosen item did not differ significantly between set sizes, for any of the age groups (x^2 (1) = 0.37, 0.02, 0.37; p = 0.54, 0.89, 0.55, for preschoolers, first graders and fourth graders, respectively). However, there were some differences between age groups, in both the tendency to choose to exchange and whether that exchange was ultimately beneficial for the chooser, in terms of improving their satisfaction ratings. As Table 2 shows, preschoolers tended to exchange more often; however, this did not necessarily improve their satisfaction. First graders also tended to exchange their chosen item, and did demonstrate an increase in satisfaction ratings. Most fourth graders declined to exchange their original chosen item for another.

Table 2. *Percentages of willingness to exchange (WTE) and means (SDs) of satisfaction rating difference (before minus after exchanging)*

	Preschool		First Grade		Fourth Grade	
	WTE	Satisfaction Difference	WTE	Satisfaction Difference	WTE	Satisfaction Difference
Few Items	62%	-0.68 (2.12)	46%	0.36 (0.96)	7%	1 (0)
Many Items	56%	-0.31 (1.84)	47%	0.22 (0.89)	10%	0.63 (1.30)

Summarizing across all the analyses: with the preschool children, cognitive ability was found to moderate the effect of set size on post-choice satisfaction; a decrease in post-choice satisfaction in larger sets was found only with those children with relatively low cognitive ability. In contrast, fourth graders showed the opposite effect, with higher ratings of satisfaction as set size increased. I did not find clear significant effects among first graders.

Discussion

Despite extensive research on choice overload among adults (Chernev et al., 2015; Scheibehenne et al., 2010), and despite the fact that children are asked to make various decisions from different set sizes on a daily basis, research has largely overlooked children's reactions to varying set sizes (but Katz et al., 2010; Maimaran, 2017). The current study aimed to determine whether set size influences children's choice quality (i.e., post-choice satisfaction); and if so, whether and how that effect manifests in different age groups. I chose the age groups carefully, in order to test the role of the two main developmental abilities that are considered to underlie this effect among adults, namely regret and cognitive ability (Chernev, 2003b; Chernev et al., 2015; Choi & Fishbach, 2011; Inbar et al., 2011). The current sample allowed for a differentiation between regret and cognitive ability (i.e., inhibitory control), given that both are acquired and subsequently evolve in the age ranges that anchored the current study (O'Connor et al., 2012; Rueda et al., 2005).

I hypothesized that if regret acts as the principal mechanism underlying the negative influence of set size on post-choice satisfaction, then preschoolers—who are typically unable to conceptualize the concept of regret—would be mostly indifferent to set size; but that first and fourth graders would be negatively affected by larger assortments. However, if the reason for the negative impact lies in cognitive demands, then preschoolers would be the most vulnerable group, and first and fourth graders—who are capable of negotiating higher loads of information—would be less influenced by set size. The results partially confirmed my

hypotheses: preschoolers were negatively influenced by set size, experiencing lower satisfaction in the large (vs. small) set of choices. This result suggests that regret is not the most crucial component, at least for preschool children, in the experience of choice overload. In contrast, the effect of larger assortment size on post-choice satisfaction was positive among older children—a group capable of both feeling regret and of mastering inhibitory control. This pattern of results suggests that inhibitory control is a more likely explanation for the choice overload effect among children, because the older children were less vulnerable to extending the choice set than the younger children. Yet, it is also possible that the mechanism changes within childhood years so that finding a negative effect among young children, that cannot be explained by the feeling of regret, does not rule out the option that regret would explain the effect of set size on choice quality among other age groups.

The intermediate age group, first graders, was chosen mainly to illuminate the differences between early and late childhood. Although first graders did demonstrate a similar choice overload effect to that found among the younger group, it was not statistically significant, and it is hard to extrapolate concrete meaning from these results. The results could imply that first graders are in a liminal period between developmental stages, where extensive choice is either overwhelming (preschool) or enjoyable (fourth grade). Another possibility is that other relevant abilities are at a critical point at this age (first grade), and may be better indicators of the effect of set size on post-choice satisfaction than inhibitory control. Among other options, such abilities may include cognitive flexibility and the types of heuristic rules accessible to a child at this age (Bereby-Meyer et al., 2004; Gregan-Paxton & Roedder, 1997; Katz et al., 2010).

However, because this study was cross-sectional and not longitudinal, comparisons between age groups must be considered with the proper caveats. Another limitation lies in the fact that the gaps between the ages led us to pick different items for the different age groups, such that the set would be appropriately relevant and appealing. Nevertheless, I did try to put together assortments that offered as similar a variety as possible, though I did not test whether they were indeed similar in perceived variance between items, attractiveness to the choosers, and ease to choose from. Future research should seek to obtain a unified assortment that has the same appeal across ages, and sexes, and with no obviously dominant or familiar items. This may address the alternative explanation of the set-specific effects, and clarify the impact of the developmental stage on choice and satisfaction. Moreover, the smallest choice set that was introduced to fourth-graders was of six items. Their satisfaction for the smaller choice set was lower than for larger sets. Future research may further explore older children's decreased satisfaction when choosing from even smaller choice sets.

Fourth graders showed a significantly lower willingness to exchange their chosen item than the younger research participants (about 9%, compared with 46% and 58% in first grade and preschool, respectively). This might imply that their assortment was more appealing, or that the exchangeable item was less appealing to them, as a group, or that there was an endowment effect that did not occur with the earlier developmental stages. Previous studies indeed found evidence of an endowment effect with 6-year-olds and older children (Harbaugh, Krause & Vesterlund, 2001). With preschoolers, however, this was only found when self-focus was emphasized (Hood, Weltzien, Marsh & Kanngiesser, 2016). However, because I used a different assortment for each age group, a general higher attractiveness of the items (along with other characteristics of the set) still presents as a possible explanation for the differences in willingness to exchange. I tried to overcome this bias by focusing the analysis on within age-group comparisons and using relative, instead of absolute, rank scores. Future research should seek to use the same assortment across all age groups, and to ensure the same degree of assortment attractiveness to different age groups. This may facilitate an opportunity to discern between effects stemming from general characteristics of the choice-set.

Also noteworthy is the longer response time for fourth graders before expressing a choice, compared to the younger age groups (more than 20 seconds on average for the fourth graders, versus less than 10 seconds for all of the conditions with the younger groups). Because the age group in the current design was confounded with the set presented to the children, the gap in response times may simply reflect a-priori differences between the sets. However, other explanations should be considered and further examined in future studies. One such explanation is that the older children invested more effort in the selection task than their younger counterparts. Response time usually points to task difficulty, as it reflects the effort invested by the chooser in the task (e.g., Kool et al., 2010). However, it is unlikely that choosing from a larger assortment was easier for preschoolers than it was for the fourth graders. It is possible that preschoolers made a more impulsive choice, approaching the whole procedure in a more playful manner than the older children did (Davidson et al., 2006). This possible explanation points at other characteristics of this age group, such as limited inhibitory control and mastery of fewer decision strategies, as discussed earlier. The higher exchange rates, indicating lower strength of preference (Chernev, 2003b) with regard to the chosen item (compared to lower exchange rates in the older group), and the reduced (versus increased) satisfaction in the younger groups are also consistent with this explanation.

The current study presents some important theoretical contributions. With regard to the study of children's decision-making processes, it seems that the executive function of inhibition

control is a crucial component, an important moderator that significantly promotes the understanding of the influence of set size on satisfaction. This was the case with at least two of three age groups that were examined. A better understanding of children's decision-making processes should include identification of these pivotal abilities, and their crucial stages of development over time. Over the course of cognitive development, each cognitive ability has its own onset and honing stages. Research on children's decision-making processes should explore and define the matches between task demands and the developmental state of the relevant abilities (Katz & Assor, 2007).

Potential practical and policy implications are also abundant. First, my study could form the basis for guidelines (to be further tested and honed) regarding the number of alternatives care-givers at schools and parents should offer children of different age groups and of varying cognitive abilities, in order to enhance their sense of competence and autonomy, and to avoid the negative repercussions of set sizes that might be too big for them to handle. One potential negative repercussion is lower satisfaction, as examined in this study; in classroom terms, a choice set that is too complicated might reduce motivation and engagement with the task, and eventually lead to lower achievements (Patall et al., 2008). When a preschool teacher designs her classroom, she might find it helpful to know that fewer (e.g., 3-4) options for free play time activities are more effective than placing many options together. When an educator plans a behavioral intervention, he might be interested to know that six alternatives for a prize might be disappointing for a 10-year-old. Educational counselors can also benefit from understanding the impact of set size on different children, using this to assess and treat behavioral incidents that may be the result of ill-fitted choice sets. Recently, there has been some interest in the role of choice architecture in children's choices for healthy eating (e.g., Nørnberg, Houlby, Skov, & Peréz-Cueto, 2016). The current research extends the notion of choice architecture in children's decision-making to important situations of choice. Aside from eating habits, this can plausibly be extended to various situations ranging from the painstaking early morning deliberations of what to wear, through habitual choices of activity to undertake at different times of the day, to decisions with (ostensibly) higher stakes attached (the domain, usually, of older children) such as class selection, school projects, or which friend to invite home after school.

Another important implication of the findings of this study, and additional studies that might follow it, lies in the realm of public consumer protection. Because children are considered a vulnerable consumer group, public officials and policy makers can make use of the findings presented in this study to improve consumer protection policies, considering children's differing reactions to various choice sets. Marketers and vendors may also be interested in using these

findings to better appreciate the limits of customers' ability, in order to effectively and more precisely customize their product portfolio and store design, in line with their targeted audience. Matching the choice set to the child's developmental stage may allow a more accurate use of choice provision and may enhance its utilization, which will contribute to a choice experience that is more empowering and less daunting for children.

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Chapter 3 - Caregivers tendency to provide choice: beliefs and determinants

Abstract

Children are by nature bounded in paternalistic relationships with their caregivers. Thus, although they frequently engage in choice making, the actual degree of their autonomy to choose is set by their caregivers. Adequate autonomy provision is essential to children's healthy psychological development and choice provision is one expression of an autonomy-supportive behavior. However, providing choice might not in itself be beneficial, only if the offered choice matches the child's abilities to cope with it; otherwise, it may not promote the child's sense of autonomy and competence. Caregivers' tendency to implement autonomy-supportive behavior could be affected by several factors, including their beliefs of the child's abilities, or situational factors. The current study examined caregivers' expectations from children's performance in choice situations that differed in set size and choice context. Caregivers were found to believe that larger set sizes would lead to longer deliberation time across all age groups and did not expect set size to affect children's satisfaction with their chosen items. Caregivers were willing to provide choice to children, but rigidly limited their recommendations to set of 2-5 options only. I further explored the potential source of this limiting behavior by manipulating beliefs for children's abilities (4- vs 10-year-olds) and time pressure. Caregivers tended to prefer offering the larger choice set to the older children under no time constraints; under time pressure the chances of a 10-years-old to choose from the large choice set were lower and equal to those of a 4-years-old. This effect of time pressure on caregivers' sensitivity to children's ability and its potential implications are further discussed.

Introduction

Parents and educators often ask children to choose from a defined set of options. For example, parents may allow preschoolers to choose their breakfast cereals, or an ice cream flavor, and teachers may offer pupils to choose which activity to engage in. Parents may allow older children to choose their own new clothes, whereas teachers may offer them to choose their study topics or form of assessment (Carruth, Skinner, Moran, & Coletta, 2000; Darian, 1998; Flowerday & Schraw, 2000).

Providing choice opportunities to children is quite prevalent. Observations on parent-child purchase interactions revealed that parents frequently ask their children to articulate their preferences, and usually yield to their children's requests (Atkin, 1978; Darian, 1998; Gaumer & Arnone, 2009). Teachers also tend to implement choice provision in many classroom situations, and believe that allowing children to choose may support their development and promote learning (Flowerday & Schraw, 2000; Stefanou, Perencevich, DiCinto, & Turner, 2004). These naturally occurring opportunities encourage children to express their preferences and desires, thus supporting and enhancing children's sense of autonomy.

Autonomy provision

Ample benefits arise from autonomy provision, including enhanced motivation, higher performance and achievements, and higher levels of well-being (Lekes, Gingras, Philippe, Koestner, & Fang, 2010; Núñez & León, 2015). Autonomy provision is also regarded as essential to children's healthy development (Deci & Ryan, 2012; Ryan, Deci, & Vansteenkiste, 2016). Moreover, allowing children to practice their skills may significantly improve their abilities, including cognitive abilities such as decision making, and hence contribute to their preparation towards adulthood (Diamond & Lee, 2011). Considering the increasing role that choices and decisions take in our lives, parents and educators should probably encourage children to gain experience and practice in choosing and making decisions.

While opportunities to choose may frequently occur in children's daily environment, their actual experience of choosing is bounded by the paternalistic relationships with their caregivers. In other words, the actual degree of autonomy that is granted to children is set by their parents and educators (Burtt, 2003; Mullin, 2014). Beyond being the authority, who decides when would children be entitled to choose, parents and educators also construct and organize the set of choices. Parents have been reported to narrow down, edit and construct a shortlist of options, before introducing the choice set to their children, or during co-shopping. For example, observations in clothing stores noticed that parents were advising and persuading their children in a manner that narrowed down the choice set (Darian, 1998; Tinson, &

Nancarrow, 2007). Teachers too tend to adapt the choice-set they offer, in both content and number of options, purposefully to suit children's capacities as perceived by the teacher (Flowerday & Schraw, 2000).

Caregivers as choice architects

The fact that parents and educators design children's choice-sets define them as choice architects. Choice architecture is the design of the decision environment, and it consists of omnipresent features of the concrete choice set, as well as the more conceptual features of the decision presentation and procedure. Many of these features have been found to considerably influence decision makers. Choice architecture's considerations strives to acknowledge the chooser's cognitive abilities and limitations, and aspire to make complex decisions easier and beneficial for the chooser (Thaler, Sunstein, & Balz, 2013). Obviously, a great responsibility accompanies being a choice architect, due to the inherent power of influencing the decision maker's choice. With this prerogative, a benevolent choice architect may strive to construct a choice set that improves the ability of the chooser to recognize the option that is in the chooser's best interest (Thaler & Sunstein, 2008). The ability to fulfill that desire and adapt the choice set to the chooser relies heavily on a good understanding of the chooser's cognitive ability (Selinger & Whyte, 2010; Thaler et al., 2013). Moreover, the importance of a good choice architecture increases with the perceived choice complexity, where the decision maker may experience enhanced difficulty mapping the choice set (Thaler & Sunstein, 2008).

The number of options included in the choice-set is known to influence the decision complexity (Iyengar, Huberman, & Jiang, 2004; Payne, 1976). Children's natural opportunities to choose may include extensive choice sets, such as in toy stores, potential friends at school, libraries, supermarkets, after-school curriculum, etc. However, the number of options in children's actual choice set may be controlled by adults who may narrow it down by only introducing a limited number of options to the child (Flowerday & Schraw, 2000; Tinson, & Nancarrow, 2007).

Caregivers considerations to autonomy provision

Parents' and educators' tendency to embrace autonomy-supporting versus interfering and controlling behaviors is determined by several factors, mainly their perceptions of the child's competency (Gonida & Cortina, 2014), as well as situational factors such as social pressure (Grolnick, Gurland, DeCourcey, & Jacob, 2002; Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017). However, adults' ability to evaluate their children's abilities is questionable. Adults' reports of their perceptions of children's feelings and abilities are often not correlated

with objective measures or with children's self-reports (e.g., Korat, 2009; Lagattuta, Sayfan, & Bamford, 2012; Peters, 2004).

Though providing choice is a common way to enhance children's sense of autonomy, confronting a maladapted choice set, that requires higher or lower competency than the child actually possess, may lead to feelings of frustration or incompetence (Katz & Assor, 2007). Thus, caregivers' ability to construct a well-adapted choice set, and hence to fulfill their responsibility to promote children's sense of autonomy, is much dependent on their beliefs of children's competency.

Another factor to the extent of autonomy supporting behavior is situational in nature. Parents were found to be more controlling when they are under pressure. More specifically, parents tended to use more controlling behaviors when they felt that they were being observed and evaluated as parents, or that the child's behavior reflects on their parenting (Chamorro-Premuzic, Arteche, Furnham, & Trickot, 2009; Grolnick, et al., 2002, Wuyts, et al., 2017).

The purpose of the current study is to assess parents' and educators' beliefs in the specific aspect of children's competency to choose from varied set sizes. I explore the extent to which adults believe that children can cope with choosing tasks in various contexts and set sizes. In the absence of a solid criteria to confront these beliefs with, I examine whether these beliefs are modified with child's age (i.e., as expected due to enhanced cognitive abilities and choosing experience) and whether they are in line with previous findings as a proxy to the extent to which these beliefs are realistic. Maladapted choice sets may negatively influence the child's experience, and their sense of competence and autonomy. Thus, beliefs that do not update according to expected changes in abilities, or that contrasts prior findings of children's ability to cope with choosing tasks, may imply an obstacle to a beneficial and empowering use of choice provision.

Theoretical Background

Autonomy support is a crucial component in healthy psychological development, and is essential for optimal child-rearing (Grolnick & Farkas, 2002). One natural and common way to enhance children's sense of autonomy is by choice provision (Grolnick 2012). In the following sections I first describe the ideas of autonomy support, as well as it's beneficial outcomes on child development. Also, I describe two major influences to the extent to which adults are willing to grant choice opportunities to children; these are adults' beliefs with regards to children's ability to choose, and with regards to situational circumstances. Eventually, I describe the importance of providing adequate autonomy and the centrality of adults' beliefs with regards to children's abilities for this purpose.

Autonomy support

According to Self Determination Theory, autonomy is one of three basic psychological human needs (i.e., autonomy, competence and relatedness), which their satisfaction promotes a sense of self-determination and well-being (Ryan & Deci, 2000). Autonomy is the experience of freedom in initiating volitional behaviors (Jousseme, Landry, & Koestner, 2008; Niemiec, & Ryan, 2009). Recognized as an essential psychological need for healthy development, it has been strongly recommended that parents, educators and other caregivers adopt autonomy-supportive behaviors (Grolnick, 2012; Jousseme, Landry, & Koestner, 2008). Such behaviors include taking the child's perspective, empathic responding, providing choice, and other behaviors that reflect respect to children's desires and feelings (Grolnick, 2012).

Adults' autonomy-supporting behaviors have been found to empower children's sense of self-determination, and to have various positive effects on children (Jousseme, Landry, & Koestner, 2008; Vasquez, Patall, Fong, Corrigan, & Pine, 2016). For example, parents who were taught how to implement autonomy-supportive communication style, while helping their children do their homework, reported increased child's intrinsic motivation. Moreover, these parents' children reported more positive emotions during homework, compare to a control group (Froiland, 2011). In another study, children that were allowed to choose their own task in the classroom showed more interest, higher enjoyment and performed better in their task than those who were not given the option to choose (Patall, Cooper, & Wynn, 2010). A cross cultural study found that although Russian, compared to U.S, students reported lower granted autonomy from adults, both samples revealed positive correlations between perceived autonomy support and intrinsic motivation for school and general well-being (Chirkov & Ryan, 2001).

However, as important as autonomy may be, children are by nature bound in a paternalistic relationship with their caregivers (Mullin, 2014). Due to children limited and developing abilities, it is their caregivers' obligation to take care of them, in terms of protection, nurturing, education and more (Schapiro, 1999). Children's healthy cognitive and psychological development requires an adequate stimulation and supportive behaviors, provided by their caregivers (e.g., Deci & Ryan, 2012; Fay-Stammbach, Hawes, & Meredith, 2014). Being the authority, parents and educators hold the legitimacy to determine in which decisions children would actively take part and thus set the degree of children's autonomy (Burtt, 2003). Nevertheless, although child-rearing is paternalistic by nature, many parents also strives to raise independent, functioning and autonomous human-beings (Burtt, 2003; Mullin, 2014). Hence, parents and educators are often expected to support and promote children's

development towards these goals, by providing opportunities to choose in order to enhance children's autonomy, for example. However, caregivers can only provide an adequate stimulation if their beliefs of children's abilities are in line with children's actual abilities (Van de pol, Volman, & Beishuizen, 2010).

Factors influencing autonomy provision

Caregivers' belief in children's abilities

The extent of autonomy that is provided to children by adults is much dependent on adults' beliefs of children's competency (Grolnick, 2009). Adults' willingness to provide autonomy to children stems from their beliefs about their children's competency to positively cope with these opportunities (e.g., Grolnick, 2009; Gonida & Cortina, 2014). While parents and educators do learn about children's cognitive developments, from either personal experience or professional training, they may also be strongly influenced by their own ideas about children's competency to make informed decisions (Baiocco, D'Alessio, & Laghi., 2009; Goodnow & Collins, 1990).

Although it is reasonable to assume that parents and teachers are familiar with their children and could predict their abilities and related behaviors, parents' reported beliefs of children's abilities sometimes do not correlate with objective measures or with children's self-reports. For example, teachers' and parents' beliefs of children's abilities were found to be gender-dependent in a stereotypical manner. They believe that girls are better than boys in language abilities, while boys are perceived as stronger than girls in math (Eccles, Jacobs, & Harold, 1990; Lavy, 2008; Tomasetto, Alparone, & Cadinu, 2011). Moreover, parents tend to overestimate their children's basic abilities (i.e., language, math, etc.) and positive feelings (Korat, 2009; López-Pérez, & Wilson, 2015), yet simultaneously they have been found to underestimate their children's negative feelings or other complex abilities (Baiocco et al., 2009; Lagattuta, et al., 2012). Although teachers sometimes perceive children's abilities more accurately (Chamorro-Premuzic et al., 2009; Peters, 2004), they also tend to hold misperceptions of children's abilities (Korat & Haglili, 2007; Sorhagen, 2013; Reich, 2005). Adults' beliefs about children's competencies determine their behavior towards children, and hence realistic beliefs of children's competency are desired (Grusec, 2007). Accurate perception of children's abilities is often associated positively with children's actual competence (Miller, Manhal, & Mee, 1991; Sorhagen, 2013). Adults' realistic beliefs promotes well-adapted stimulations, and it was also found to improve the interaction between the caregiver and the child, and the child's achievements (Hunt & Paraskevopoulos, 1980; Korat & Haglili, 2007).

Situational factors

Adults' beliefs about children's competency are not the only determinant of the tendency to adopt autonomy-supportive (vs. controlling) behaviors. Some situational characteristics were also found to influence the preference to use controlling behaviors (Robichard, Roy, Ranger & Mageau, 2020). For example, when parental responsibility of the children's performance was emphasized, parents tended to use more controlling behaviors, suggesting the influence of social pressure in parental behavior (Grolnick, et al., 2002; Wuyts, et al., 2017). Pressure is often one of the suggested joint features of a wide range of situations in which parents were found to adopt more controlling (vs. autonomy supporting) behaviors. Parents may interpret the task (either spontaneously or due to a manipulation) in manners that would elevate their own sense of pressure. For example, when solving a puzzle in a lab, parents may feel time urgency, and hence be less tolerant to the child's difficulty and intrusively rush them to a solution on the expanse of providing autonomy. Another example is when parents are aware to the consequences of the child's performance. That kind of awareness has been suggested to heighten social pressure because adults' interactions with their children is being observed by others, and that may enhance the feeling that their children's success on the task may indicate on their parenting qualities – these tasks created circumstances which enhanced some kind of pressure, and the parents responded by elevating controlling behaviors (Grolnick, Price, Beiswenger, & Sauck, 2007).

Parents' and educators' tendency to implement autonomy-supportive behaviors, and choice provision amongst them, is important to the child's healthy development and well-being. Moreover, it is also important to many other, more immediate, positive influences such as an enhanced motivation to learn, engagement with tasks, sense of self-competence, and actual achievements (Vasquez et al., 2016). Choice provision is also important simply due to the fact that practice and experience are known to promote children mastery in various skills (Diamond & Lee, 2011). Thus, offering opportunities to practice and hone decision-making skills is important by itself.

However, merely providing an opportunity to choose might not by itself be enough to empower children and enhance their sense of autonomy (Katz & Assor, 2007; Patall, 2012). A set of choices that is not adapted to the child's cognitive abilities might have the opposite effect. The choice set reflects adults' beliefs of children's abilities and implies their expectations from the child. Such perceived information from adults is known to have a positive effect when it is accurate, but a negative effect when it is unrealistic (Grusec, 2007). Thus, introducing the child to a set that is too simple or too complex may lead to frustration and feelings of incompetency

(Katz & Assor, 2007). Hence, matching the choice-set to the child is an important component for a beneficial use of choice provision as an expression of autonomy support (Katz & Assor, 2007; Patall, Cooper & Robinson, 2008).

Choice Architecture

Aside from the cognitive competence that may lead the decision maker, the structure and presentation of the choice-set may also influence the final decision (Thaler et al., 2013). Parents and educators are often also the designers of children's decision-making situations during childhood years. Choice environment characteristics have significant effects on decision-makers, whether or not they are aware of it (Bruns et al., 2018; Lowenstein, Bryce, Hagmann & Rajpal, 2015). For example, when a principal designs a school's cafeteria, they must make many decisions with regards to the display of the cafeteria's products. Among other decisions, they should determine which products will be on display and where. Any such decision has alternatives (e.g., cakes or fruits near the cashier), and each alternative could yield different results on different outcomes such as the cafeteria's profit, children's health etc. (Thaler et al., 2013). Moreover, in many situations there is no neutral way to introduce the set of choices, hence the choice architect creates a certain choice environment at the expense of other possibilities, even if they are unaware of it and without paying any attention to its' consequences (Thaler & Sunstein, 2008). Cumulative findings indicate that decision makers are sensitive to various characteristics of the choice set. Interventions that manipulate these characteristics can significantly influence the decision made by the chooser, without changing the content of the choice set. Alternatives' order of presentation, categorizing, presenting a social reference point, emphasizing or simplifying information visibility, setting a default option, encouraging self-commitment, offering reminders and many other features have been extensively studied and have shown persistent effects (for a review see Münscher, Vetter, & Scheuerle, 2016).

Children's sensitivity to choice-set features

The sensitivity to the choice-set characteristics is not unique to adults. Children's sensitivity to some set features has also been demonstrated. For example, when the choice set contained an equal number of grapes (4 containers) and crackers (4 containers), only 26% of children chose grapes over crackers. However, when grapes were scarce in the choice set (2 vs. 6 crackers' containers) children tended to choose more grapes (56%) over crackers, which implies children's sensitivity to scarcity in the choice set (Maimaran & Salant, 2019). In another study, children were introduced with either 2 or 4 boxes which contained a similar item. The experimenter told them what was the item (e.g., a pencil) and allowed them to ask

questions about its' properties before they decide (e.g., color, size, etc.). Children asked more questions when choosing from 2 (vs. 4) alternatives, demonstrating an adaptable information-gathering process, where the set size is considered (Katz, Bereby-Meyer, Assor, & Danziger, 2010). Another example of the influence of set size on children's choices was demonstrated when children were offered to choose a book (or a game) from a set of either 2 or 6 books (or games). Children engaged longer (reading or playing) with their chosen item if it was chosen from the smaller set (Maimaran, 2017).

Children's sensitivity to set size

Previous findings may provide a proxy to the extent to which adults' beliefs match children's expected ability to choose from large choice-sets. For example, preschoolers were previously found to be negatively affected from larger choice sets (Maimaran, 2017). When choosing from 6 or 7 options, children engaged for a shorter time with their chosen option, compared to when choosing from only two options. Studies with older children (seven-years-old) have demonstrated the improving ability of children to efficiently adapt their choice process to the offered choice-set (Bereby-Meyer, Assor, & Katz, 2004; Katz et al., 2010). Children gathered less information and applied simpler decision rules when the number of options in the choice set increased.

In the previous study 2, I manipulated the number of alternatives offered. Children, aged 4-11 years, were asked to choose one item from either a small (3 or 6 items) or a large (12 or 18 items) assortment. As previously found, the results indicated that preschoolers were negatively influenced from large choice set, if their cognitive ability was relatively average-low (i.e. about half of the sample). Fourth graders showed the opposite effect, with higher satisfaction as set size increased, indicating their ability to negotiate with the increased task-demands. The results of the first graders sample showed a mixed reaction to set size. These results further emphasize the notion that children are sensitive to the number of alternatives that are available in the choice set. Furthermore, it implies that children are capable to choose for themselves a satisfying option out of relatively large choice set, and some of them are able to that even when they are just four-years old.

The current study was designed to explore and understand parents' and educators' beliefs of children's competence to choose in the specific aspect of set sizes, and to examine whether these beliefs are in line with the specific reactions of children to set size as observed in previous studies.

The results from such research may expand the knowledge of potentially unadjusted or unrealistic perceptions of children's abilities by their caregivers. Moreover, adults have been found to overestimate simple abilities and positive emotions, but to underestimate complex abilities and negative emotions (Baiocco, et al., 2009; Korat, 2009; Lagattuta, et al., 2012; López-Pérez, & Wilson, 2015). Exploring adults' beliefs in regard to a positive emotion (satisfaction) in the context of a complex ability (i.e., decision-making) may reveal an interesting tension due to the expected conflicting biases that accompany these different evaluations. On one hand, caregivers are expected to be positively biased in regard to children's expected satisfaction (i.e., positive emotion) from their choice, while on the other hand, they are expected to underestimate children's ability to choose (i.e., complex ability). However, because poor ability to choose should also coincide with lower satisfaction from the choice, the results may contribute to the understanding of the aforementioned evidence regarding adults biased beliefs. Moreover, by asking adults to recommend their ideal set size for each age group and choice context, this study may also allow a descriptive point of view of adults' considerations when deciding if, when and how to provide children with choice opportunities. Autonomy provision is set by adults, according to their perceptions of children's competency as well as to situational circumstances (Grolnick et al., 2007; 2009). In other words, while their ideal set size recommendations are expected to reflect their beliefs, perceived context-related circumstances may also be considered and reflected in their recommendations. Ideal set recommendations may imply the extent to which each consideration (i.e., child's ability and circumstances) dictate adults' tendency to provide choice.

In addition to the theoretical contribution, the study may also help formulate some suggestions to promote children's decision-making experience, which may hone their skills and leverage their developed ability to make decisions. The provision of adequate and appropriate autonomy and choice opportunities is essential to the healthy development of children towards autonomous and independent human beings (Ryan, et al., 2016). Understanding the principles that adults use as choice architects may shed light on which choice opportunities adults believe children should have. Acknowledging these considerations and their relative importance to choice provision may assist caregivers by encouraging them to modify their beliefs, and manage circumstances in a way that would promote adequate autonomy-provision. To the extent to which adults' beliefs and recommendations are not in line with children's expected abilities, whether that gap stems from situational factors or misperceptions of children's abilities (or the combination of both), it may negatively influence children's motivation, achievements and capabilities and, therefore, children would probably

be better off with narrow sets (Katz & Assor, 2007; Korat & Haglili, 2007). Educational policy may address gaps between children's actual abilities and the choice opportunities that are granted to them by promoting adequate choice opportunities in educational environment. Parenting consultants and teachers' professional trainings may also consider addressing this important ability by calibrating misperceptions, focusing on managing related circumstances, and encourage caregivers to grant more adequate choice opportunities.

Although adults generally tend to have misperceptions of children's actual abilities, teachers have been found to be more accurate than parents (Chamorro-Premuzic et al., 2009; Peters, 2004). Therefore, my first hypothesis is that teachers would predict children's abilities to choose from various set sizes better than parents would. More specifically, I expect teachers' evaluations, but not parents', to reflect a developmental path by estimating that the older age groups would cope better with larger set sizes. However, in the previous study 2, the results were inconclusive with regards to first graders' reaction to larger choice-sets, so it would be interesting to reveal adults' perception in regards that specific age group. Parents estimations for unobservable abilities of their children (feelings or thoughts) were found to be quite poor and positively biased (Baiocco et al., 2009; Comer & Kendall, 2004; Furnham, 2008; Lagattuta, et al., 2012). I therefore hypothesize that parents would rate children's expected satisfaction as relatively high and not negatively affected by set size.

The evaluation of more concrete and observable characteristics, however, is expected to be more calibrated, as adults have been found to be more accurate in evaluating children's motor abilities than they evaluate cognitive performance, as well as better at evaluating cognitive performance than emotional abilities (Furnham, 2008; Lagattuta, et al., 2012; López-Pérez, & Wilson, 2015; Peters, 2004). Time consumption is more concrete than emotions (i.e. satisfaction), so I expect adults' beliefs of children's deliberation time to enhance with set size, reflecting that more difficult task are also more time consuming. More specifically, estimations of children's deliberation time should increase with set size. Moreover, I hypothesized that both parents and teachers would be affected by child's gender due to stereotypical gender-role perceptions. Because decision-making does not have a strong gender-role associations, the last hypothesis is quite explorative, however, decision making often relates to problem-solving and other mathematic-based abilities (e.g., Jurdak, 2006), and therefore parents' might also rate boys' ability to cope with the task as higher than girls'.

Circumstances of choosing frequently often involve some pressure. For example, in morning routines (e.g., choosing clothes, breakfast cereals etc.), or during class (i.e., choosing class activity), time pressure increases. In public places (e.g., in a store, supermarket, shopping

mall) social pressure increases. Under these pressing conditions, parents tend to be more controlling and less autonomy supportive (Wuyts et al., 2017). Because these are the natural every-day decisions that children take part in, I hypothesize that parents and teachers would tend to recommend relatively smaller choice sets to be more suitable for children, than larger choice-sets.

To summarize, the current study aimed to explore caregivers' perceptions and beliefs of children's ability to choose from large choice sets. These beliefs are important because they influence caregivers' tendency to provide choice. I explore whether various factors such as child's age and gender, set size, and caregivers' role and experience with children affects these beliefs regards choice provision.

Study 3 - Adults beliefs of children's sensitivity to set size

Method

Participants. The sample included 352 participants (49.4% females, 45.7% males, and 4.8% other or missing data – no answer from participants, M_{age} = 47.7 years, SD = 10.74, age range = 25-70 years). Participants were included in the sample only if they indicated that they are either parents (N=255, 40% females), teachers (N=6, 85% females) or both (N=91, 85% females). The dominance of females in the teachers' sample resembles their dominance in the educational profession (OECD, 2019). Participants who were both parents and teachers, were classified as teachers due to their professional knowledge and experience. About 52% of the sample identified as secular, compared with an estimation of 45% in the general population (Israel Central Bureau of Statistics, 2019), while the remaining participants indicated some level of religiosity. Also, 67% of the sample indicated some level of academic education, compared with just 48.5% in the general population (OECD, 2019).

Participants were recruited using two methods: 1) a snowball sample using social network apps (N=156), and 2) using an Israeli online panel (N=196). Table 1 describes the characteristics of each of these samples. The participants that were recruited via social network received no payment, while the online panel participants received modest compensation.

Table 1. *Samples' characteristics*

	Social network n = 156	Online panel n = 196	Overall n = 352
Age	M = 43, SD = 7.32	M = 51, SD = 11.52	M = 48, SD = 10.74
Female	79% (n = 123)	26% (n = 51)	49% (n = 174)
Parents	51% (n = 80)	89% (n = 175)	72% (n = 255)
Percent Female	74% (n = 59)	22% (n = 39)	38% (n =98)
Teachers	49% (n = 76)	11% (n = 21)	28% (n = 98)
Percent Female	84% (n = 64)	52% (n = 12)	78% (n =76)
Secular	67% (n = 105)	40% (n = 77)	52% (n = 182)
Academic education	76% (n = 119)	61% (n = 120)	68% (n = 239)

Design and Procedure. Participants were invited to complete an online questionnaire. After a short description of the research goal, they were asked to provide consent, and whether they were parents or teachers in order to proceed to the questionnaire itself. If a participant indicated that they are not a parent or a teacher, they were thanked and excluded from the study.

Each participant first read and responded to a set of three scenarios that were randomly chosen from a pool of 36 scenarios I created. The scenarios described a child that is making a choice from a described choice set in a given context. For example: "*Daniel is a four-year old preschool boy. He is standing in front of the class's bookshelf, trying to choose a book. On the bookshelf there are 12 different books."* Four factors were manipulated between scenarios as follows: set size (few-3 items vs. many-12 items), age group (four-years-old, seven-years-old and ten-years-old), gender (boy vs. girl), and context (ice-cream, toys or books). Table 2 presents the items that were built from the combinations of these four factors. To avoid any order effects, the different scenarios were counterbalanced by implementing a Latin square design (Bradley, 1958), that allows counterbalancing both the experimental condition and the order of items. The Latin square design produced 12 fixed sets of questions, each conducted with 3 different types of scenarios (i.e., experimental conditions).

Table 2. *Examples of scenarios in the questionnaire*

Choice context	Scenario
Ice cream	*Yuval is a 7 years-old (or 4, or 10) girl (or boy). He/She sometimes accompanies his/her father while shopping for groceries. He/She like doing so because his/her father always allows him/her to pick an ice cream. Today they shop in a grocery that is located near an ice cream booth, offering 3 (or 12) flavors. He/She is allowed to choose one flavor.*
Book	*Rotem is a 4 years-old (or 7, or 10) boy (or girl). He/She is standing in front of the bookshelf in his/her preschool and is interesting to choose a book. On the shelf are 12 (or 3) different books.*
Toy	*Yahli is a 10 years-old (or 4, or 7) girl (or boy). Today he/she had an activity in class, and at the end each child was asked to choose for himself/herself one elastic toy from an assortment of 3 (or 12) elastic toys (e.g., Slime).*

For each scenario, participants were asked to indicate a) how long do they think it would take to the child to make their choice, on an 11-point scale from 0 (*few seconds)* to 10 (*many minutes*), and b) how satisfied do they expect the child would be with their chosen item, also on an 11-point scale, (0 = *not satisfied at all* and 10 = *very satisfied*).

To further explore adults' attitudes, participants also answered an additional set of four questions that directly contrasted different ages or genders of children in choosing situations. Participants were asked to answer by moving a slider, with the two described children located at its edges. The middle of the scale indicated no difference between these two children's anticipated difficulty. Participants answered one gender-comparison question, and three age-comparison items. Examples for these gender and age comparisons are presented in table 3. The edges of the scale for all these items were counterbalanced, so that each described child appeared on the right/left edge evenly across participants.

Table 3. *Examples of comparisons scenarios in the questionnaire*

Comparison	Scenario
Gender	*Imagine two 10 years-old (or 4, or 7) children, Amir* [i.e., boy's name] *and Ruth* [i.e., girls' name]*, both going with their parents for back-to-school shopping. They are choosing a new school bag. On the display shelves there are 12 schoolbags designed for boys, and 12 school bags that are designed for girls. Which of them, in your opinion, will have more difficulty choosing their school bag?*
4 vs. 7 years-old	*Imagine two boys (or girls) at the local grocery shop, Ofer* is 4 years-old *and Roi* is 7 years-old. *Each one of them wants to choose for himself a chocolate bar. On the display shelves there are 12 different chocolate bars. Which of them, in your opinion, will have more difficulty choosing their chocolate bar?*
7 vs. 10 years-old	*Imagine two girls (or boys) in a playroom, May* is 7 years-old *and Noa* is 10 years-old. *Each one of them wants to choose for herself a game. On the shelves there are 12 different games that are suitable to the age range of 6-12 years-old. Which of them, in your opinion, will have more difficulty choosing a game?*
4 vs. 10 years-old	*Imagine two girls (or boys) in a restaurant with their parents, Maayan* is 4 years-old *and Liron* is 10 years-old. *Each one of them wants to choose for herself a dish from the menu. On the menu there are 12 different kids' dishes. Which of them, in your opinion, will have more difficulty choosing a game?*

Additionally, participants were asked to state their opinion about how many options should adults offer to a child, in four different choice contexts: breakfast cereals, toys, entrees and activities. Participants indicated their opinion on a scale from 0 = *allowing no choice at all; 1 = only offer 2 options; 2 = offer 3-5 options; 3 = offer 6-10 options; 4 = offer 11-14 options;* to *5 = may even offer more than 15 options*. Each participant was randomly allocated to recommend on set sizes for one of the three age-groups.

Subsequently, participants answered several demographic questions, indicating their age, number of children (and children's age and gender), educational level, religiosity and household's income level.

Results

First, I describe the effect of set size and children's age and gender on adults' estimations of children's post-choice satisfaction and next, on estimations of children's deliberation time. Then, I describe the analyses for age and gender comparisons with regards to the difficulty to choose, and eventually, I report adults' perceptions of ideal set size.

In order to control for the respondents' experience with children, I computed a new variable, named child-care experience, based on years of experience with children: for the parents, I used their oldest child's age (M = 18.63; SD = 12.21 years); for teachers, I used both their professional experience in years (M = 17.12; SD = 9.6) and their oldest child's age if they were also parents (M = 18.95; SD = 10.02). I then standardized each of these variables within each role sample and computed a standardized measure for child-care experience. For participants who were both teachers and parents, the higher standardized score was used. Teachers standardized mean child-care experience was M = -0.01 (SD = 1.05), and parents' child experience was M = 0.22 (SD = 0.97). Note that this variable is constructed from two standardized variable, but due to the overlap between roles, it is not a standardized variable in itself. The two roles' means for child care experience were marginally, though not significantly, different from each other, t (338) = -1.87, p = 0.06. The computed variable *child-care experience* was used as a covariate in all of the following analyses.

Expected post-choice satisfaction

To test the main hypothesis that expected post-choice satisfaction would be affected by set size and child's age and gender, a mixed model analysis was used, with set size, child's age group, child's gender, role (parents or teachers) and choice context as fixed factors, and the choice-context (ice-cream, toys or books) as a repeated measure factor. The dependent variable was the child's expected satisfaction from their choice, (henceforth, ES).

Role: ES ratings were not significantly different between parents and teachers, F (1, 318.19) = 0.66, p = 0.42 nor did they interact with set size, choice context, child's age or child's gender, F < 1. The following analysis repeated the mixed design, after removing the role from the factor list.

Choice context: Choice context significantly affected ES ratings, F (2, 326.88) = 3.15, p = 0.04. Children's satisfaction was rated higher in the context of choosing an ice cream (M_{ES} = 6.99, SD = 2.81) than when choosing a toy (M_{ES} = 6.60, SD = 2.60) or a book (M_{ES} = 6.66, SD = 2.34). Post hoc comparisons using the Bonferroni correction indicated that the ratings of ES were significantly higher for ice cream choosing than for toys choosing (p = 0.05). In order

to analyze beyond contexts, I standardized the ES within each context, and used the standardized variables to repeat the mixed design analysis, with choice context using only as a repeated measure variable, and not as a factor.

Set Size: The average ES was 6.84 (*SD* = 2.61) for small choice-sets and 6.66 (*SD* = 2.58) for large sets. This difference was not significant, F (1, 515.86) = 0.95, p = 0.33. Also, there was no significant interaction between set size and the child's age F (2, 727.06) = 0.03, p = 0.97, gender, F = (1, 331.88) = 0.01, p = 0.94 or both F (2, 703.96) = 0.14, p = 0.87. Means (SD) of ES by set size, choice context, and age group detailed in Table 4. The hypothesis that ES would be lower for larger set size was not confirmed. I calculated Cohen's d to further examine the gap between ES for small vs. large set choice. Cohen's d for all age and gender sub groups were low with wide CIs. The hypothesis that teachers' ES ratings would reflect a developmental path with smaller decrease in ES for older children choosing from larger choice set, was not confirmed either.

Set size, child's age and context: Choice context interacted with set size and child's age F (4, 534.57) = 2.37, p = 0.05. Cohen's d for the differences between small and large choice sets for all contexts and age sub groups were low with wide CIs.

Table 4. *Means (SD) of ES by context, set size and child's age*

		Four years old	Seven years old	Ten years old
Books	Few	6.69 (2.53)	6.71 (2.14)	6.49 (2.23)
	Many	7.20 (2.36)	6.74 (2.22)	6.13 (2.53)
Toys	Few	6.74 (2.91)	7.27 (1.88)	6.56 (2.60)
	Many	6.64 (2.63)	6.62 (2.48)	5.72 (2.86)
Ice creams	Few	7.70 (2.65)	6.90 (3.05)	6.53 (3.17)
	Many	6.74 (2.81)	6.61 (2.58)	7.41 (2.46)

Child-care experience: To control for variance *Child-care experience* was used as a covariate. However, the covariate variable did not correlate with ES in neither of the three choice contexts; r_{book} = -0.02, p = 0.74; r_{toy} = -0.004, p = 0.94, and $r_{Ice\ cream}$ = -0.002, p = 0.97. Thus, the analyses were replicated even when conducted without the covariate, with ES ratings still indicating insensitivity to set size, F (1, 532.24) = 1.06, p = 0.31. Removing the covariate from the analysis also did not yield any different results with regard to the interactions between set size and child's age, gender, or both, in neither of the roles, and they were all insignificant.

Summarizing the findings of expected child's post-choice satisfaction, parents and teachers believed that children would be as similarly satisfied when choosing from either small or large choice sets. Their ES ratings were also quite similar across age and gender groups. Choice context influenced ES ratings where higher ES expected for ice cream (vs toy) choosing.

Expected deliberation time

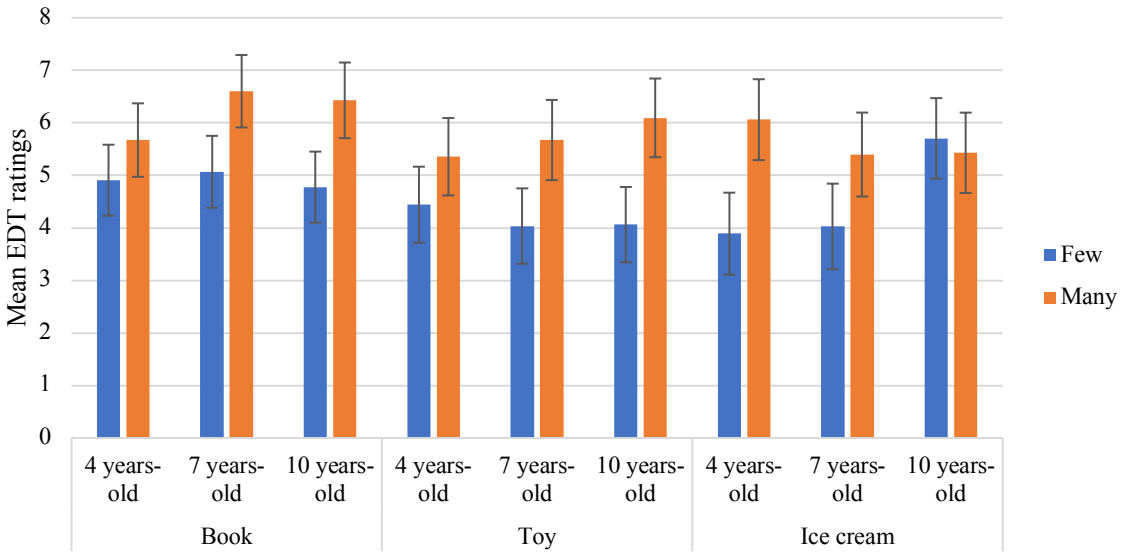
To test the hypothesis that expected deliberation time would be affected by set size and child's age and gender, a mixed model analysis was used, with set size, child's age group, child's gender, role (parents or teachers) and choice-context, as fixed factors, and the choice-context (ice-cream flavor, toys and books) as a repeated measure factor. The dependent variable was the child's expected deliberation time (henceforth, EDT).

Role: EDT ratings were not significantly different between parents and teachers, F (1, 318.95) = 0.03, p = 0.87 nor did they interact with set size, F (1, 641.17) = 0.16, p = 0.69, choice context, F (2, 317.37) = 2.44, p = 0.09, child's age, F (2, 730.05) = 1.38, p = 0.25 or child's gender, F (1, 530.11) = 2.26, p = 0.13. The following analysis repeated the mixed design, after removing the role from the factor list.

Choice Context: EDT significantly varied between contexts F (2, 326.97) = 5.53, p = 0.004. EDT rated longer for choosing books (M_{EDT} = 5.55, SD = 2.71) than for toys (M_{EDT} = 4.91, SD = 2.87) or ice cream choosing (M_{EDT} = 5.10, SD = 3.08). Post hoc comparisons using the Bonferroni correction indicated that the ratings of EDT for book choosing were significantly higher than for toy choosing (p = 0.005) and marginally significantly higher than EDT ratings for ice cream choosing (p = 0.06). EDT for ice cream and toy choosing were rated similarly. As before, I used a standardized variable of the EDT within each context, for the following analyses.

Set Size: Longer deliberation times were expected for the larger set (M_{EDT} = 4.55, SD = 2.88 vs. M_{EDT} = 5.85, SD = 2.77 for small and large set sizes respectively). This effect of set size on EDT was significant F (1, 542.37) = 65.51, p < 0.001. No interaction was found between set size and child's age, gender, or both F < 1.

Figure 3. *EDT for small vs. large set size across contexts and age groups*



Child's Age: EDT ratings were not influenced by child's age F (2, 715.92) = 1.43, p = 0.24. Adults estimated children's deliberation time as similarly, regardless of the child's age.

Set Size, Child's age and Context: The results indicated a three-way interaction between choice context, child's age and set size, F (4, 553.10) = 3.42, p = 0.01. As can be seen in Figure 3, larger set size almost always involved significantly longer EDT ratings. Table 5 further detailed standardized EDT ratings for large and small sets across age groups and choice contexts. I calculated *Cohen's d* for the difference between EDT in small and large sets of choices where positive numbers represent longer EDT when choosing from larger sets. EDT ratings significantly prolonged for choosing a toy in all three age groups, with stronger effect for the older age groups; d = 0.40, 95% CI [0.02, 0.78] for 4-years-old; d = 0.60, 95% CI [0.22, 0.98] for 7-years-old; and d = 0.71, 95% CI [0.32, 1.09] for 10-years-old. EDT for choosing a book prolonged significantly in larger sets only amongst older age groups; d = 0.70, 95% CI [0.31, 1.08] for 7-years-old, and d = 0.61, 95% CI [0.23, 0.99] for 10-years-old. However, four years-old were not expected to deliberate longer over a larger set of books d = 0.26, 95% CI [-0.11, 0.64]. For ice cream choosing the opposite results were found, where EDT for 4- and 7-years-old were significantly higher for larger set d = 0.73, 95% CI [0.35, 1.10] and d = 0.52, 95% CI [0.13, 0.91], but 10-years-old were not expected to be affected by set size d = 0.08, 95% CI [-0.44, -0.28].

Table 5. *Means (SD) of EDT ratings by set size, child's age and context*

		Four years old	Seven years old	Ten years old
Books	Few	-0.26 (1.08)	-0.20 (1.00)	-0.29 (1.02)
	Many	0.02 (1.00)	0.39 (0.67)	0.31 (0.94)
Toys	Few	-0.21 (0.96)	-0.29 (0.97)	-0.29 (0.94)
	Many	0.18 (0.98)	0.28 (0.93)	0.40 (1.02)
Ice creams	Few	-0.40 (1.00)	-0.34 (0.92)	0.14 (0.99)
	Many	0.33 (1.01)	0.12 (0.84)	0.13 (1.06)

Child-care experience: The covariate variable did not correlate with EDT in neither of the three choice contexts; $r_{book} = 0.07$, $p = 0.19$, $r_{toy} = -0.03$, $p = 0.55$, and $r_{ice\ cream} = -0.03$, $p = 0.56$. The analyses were replicated also after removing the covariate variable. EDT ratings were still significantly different between set sizes, F (1, 624.26) = 62.66, $p < 0.01$, and set size had no interaction effect with neither child's age, gender, or both $F < 1$. The three-way interaction between set size, child's age and choice-context was also significant even without the covariate, F (4, 551.93) = 2.93, $p = 0.02$.

Further examination of the relation between EDT and the aforementioned measure of post-choice satisfaction ratings revealed a significant and negative correlation to EDT ratings in each of the choice contexts; $r_{\text{book}} = -0.18$, $p = 0.001$; $r_{\text{toy}} = -0.38$, $p < 0.001$, and $r_{\text{ice cream}} = -0.30$, $p < 0.001$. In other words, longer expected deliberation time is associated with lower estimated satisfaction.

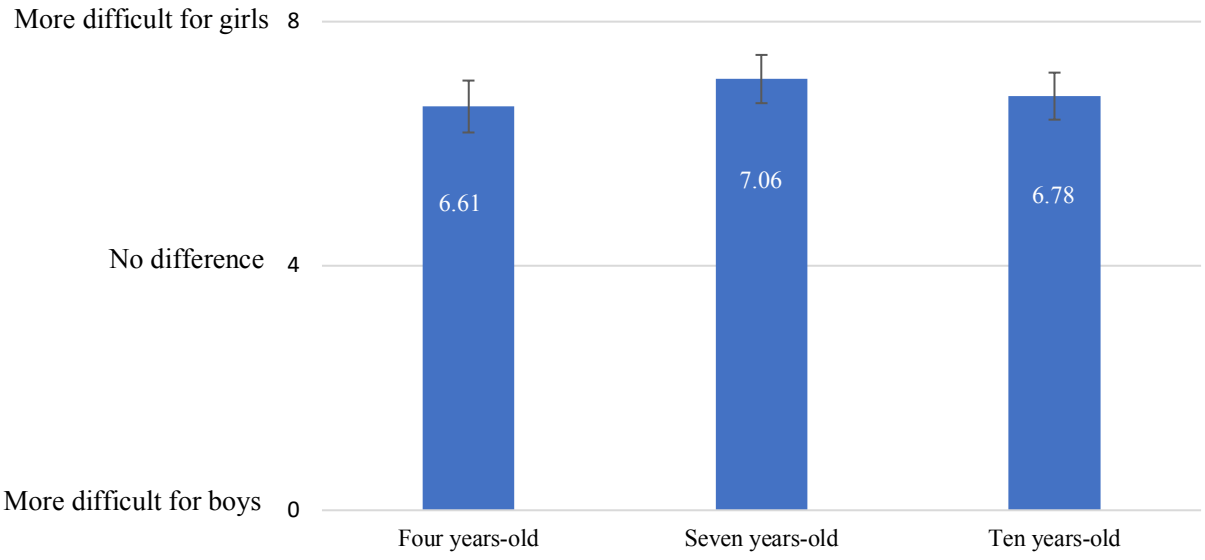
To summarize, the results reflects a belief that children's deliberation time would prolong when choosing from a large (vs. small) choice-set. This believe varied across choice contexts. While all age groups were expected to deliberate longer over larger sets of toys, different trends were occurring for choosing a book or an ice cream. Older children were expected to deliberate longer over books, but not over ice cream flavors. In contrast, younger children's EDT was rated as significantly longer when choosing from many ice cream flavors, but not when choosing from many books. Adults estimated similar deliberation time for all three age groups. Their estimations also reflected a belief that longer deliberation time involve lower post-choice satisfaction.

Perceptions of set size effects among gender and age groups

Next, I analyze respondents' opinions to direct comparisons between the different genders and age groups. As aforementioned in the method section, in this part of the questionnaire each item described two children, who differed in either gender or age, choosing from a large set of options (12 items). Parents and teachers indicated which of the children they expect to have more difficulty choosing.

Gender: After recoding reversed items, the high-end of the scale represents higher difficulty for girls to choose. One-sample t test was used, with the scale midpoint as the test value. Comparing mean expectation to the scale mid-point of *no difference* showed an average belief that girls would have more difficulty choosing than boys, in each of the three age groups (see Figure 5). For 4-year-olds the mean was greater than the scale mid-point, $M = 6.61$ ($SD = 2.25$), $t\,(108) = 7.49$, $p < 0.001$, and 59% of the participants expected girls to experience greater difficulty than boys when choosing from 12 options. For 7 years-old, $M = 7.06$ ($SD = 2.04$), $t\,(108) = 10.55$, $p < 0.001$, with 72% of the participants indicating that they expect girls to experience greater difficulty, and for 10 years-old, $M = 6.78$ ($SD = 2.10$), $t\,(111) = 8.94$, $p < 0.001$, with 66% of the participants expected girls would have greater difficulty to choose than boys.

Figure 5. *Believed gender differences in the difficulty to choose*



Gender and Age: After recoding reversed items, the high-end of the scale represents that the younger child is expected to experience more difficulty when choosing. One-sample t test was used, with the scale midpoint as the test value. Means (SD) of believed difficulty differences are presented in Table 6. According to the responses, 4-years-old boys experience more difficulty choosing than 7-years-old boys do, t (159) = 2.01, p = 0.05. However, 4- and 7-years old girls experience similar difficulty when choosing from many options, t (177) = -1.15, p = 0.25, and so do 7- and 10-years old, t (162) = 0, p = 1 and, t (168) = 0.22, p = 0.24 for girls and boys, respectively. However, when comparing 4- and 10-years old, adults believe that older children would experience more difficulty choosing, t (172) = -2.59, p = 0.01 for boys, and t (165) = -2.35, p = 0.02 for girls.

Table 6. *Means (SD) of believed age differences in difficulty choosing*

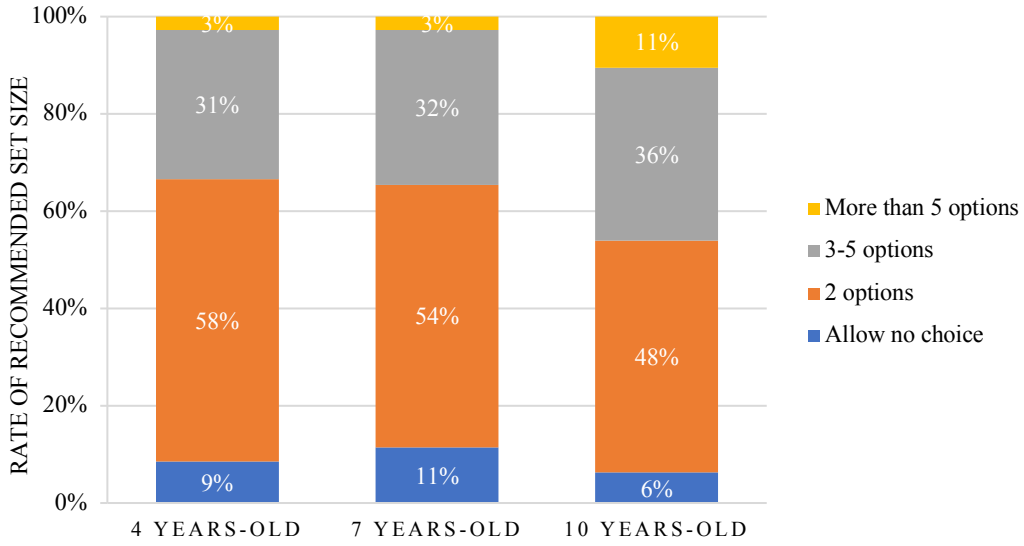
	Four vs. Seven (years old)	Seven vs. Ten (years old)	Four vs. Ten (years old)
Boys	5.41 (2.55)*	5.24 (2.57)	4.45 (2.82)*
Girls	4.76 (2.74)	5.00 (2.61)	4.47 (2.91)*

Note: The scale mid-point was labeled as *no difference* (i.e. between these age groups) and its' value = 5. Ratings that are significantly higher than 5 indicated that the younger child was believed to experience more difficulty

To summarize the age and gender comparisons, adults believe that choosing from many options would be more difficult for girls. They also expected 10 years-old to experience more difficulty choosing than 4 years-old.

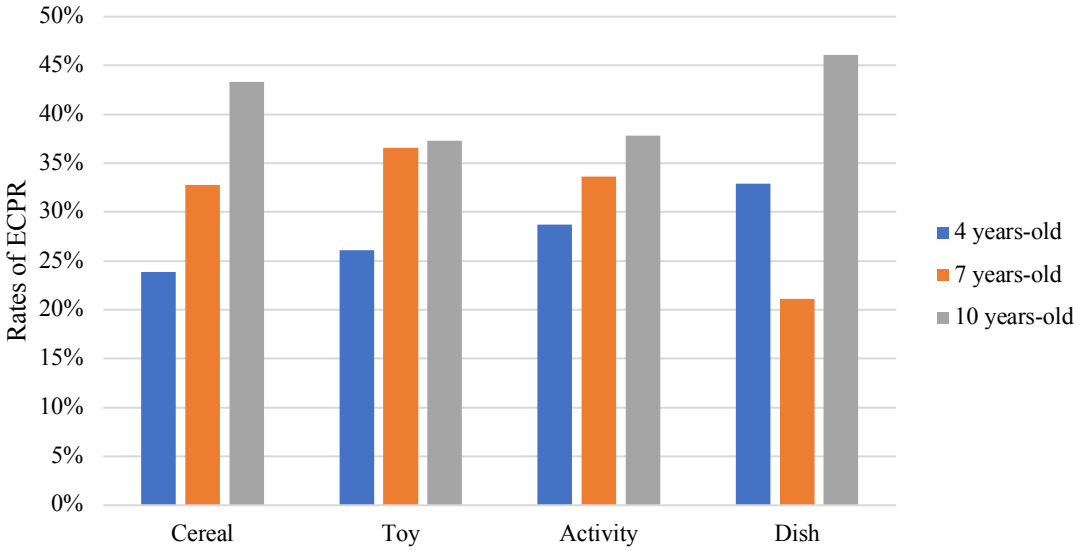
Recommended set sizes: Participants were asked to suggest a recommended set size for a listed choice-context (cereals, toys, activities and restaurant dishes). As Figure 6 show, adults believe that children should have the option to choose, and only 6%-12% of the sample indicated that children should not be provided with any choice (9% thought so about 4 years-old, 12% about 7 years-old and 6% for 10 years-old). Yet, the mode recommended set of choices was of only 2 options. The next most frequent category of recommended set size was to offer 3-5 options. These two categories (providing only two options and, providing 3-5 options) represent the vast majority of the sample beliefs about choice provision at these ages and contexts (89% for 4 years-old, 85% for 7 years-old, and 84% for 10 years-old).

Figure 6. *Recommended Set Size by Child's age*



Child's Age and Choice context: I created a dichotomous variable that differentiated rigid recommendations for limited choice (Up to 2 options) versus an extended choice provision (More than 2 options). A chi-square analysis was used to test whether adults tended to recommend offering more options for older children. Figure 7 show the rates of extended choice provision recommendations (ECPR) across age groups and choice context. In general, the rate of ECPR were higher for 10-years-old than for the youngers. However, this trend did not yield significance in all of the choice contexts. In the context of breakfast cereals, rates of ECPR were higher with child's age, but did not yield significant correlation with child's age X^2 (2, 332) = 4.22, p = 0.12. For toy choosing, ECPR were marginally significantly affected by child's age, X^2 (2, 329) = 4.78, p = 0.09 with higher frequency for 10- versus 4-years-old, but similar rates for 7- and 10-years old. Rates of ECPR for choosing an activity, though were higher with age, did not significantly correlated to child's age, X^2 (2, 331) = 2.36, p = 0.31. Only within the context of restaurant dishes' ECPR significantly differed across age groups, X^2 (2, 331) = 25.46, p <0.001, recommending more options to 10-year-olds than to 4- and 7-year-olds.

Figure 7. *ECPR across Child's age and choice Context*



Summarizing the results in terms of choice-set recommendations, the vast majority of respondents suggested allowing choice, but to restrict choice set with up to 5 options. Results indicated a general tendency to allow more options with age. This tendency varied in magnitude across choice-context.

Discussion

The current experiment was designed to allow a better understanding of caregivers' beliefs regarding children's ability to cope with extensive choice sets. The results suggest that parents and teachers believe that children would be similarly satisfied when choosing from either small or large choice sets. Though this finding is in line with my hypothesis that caregivers would hold rather positive evaluations of children's positive emotions, as previously documented (Baiocco et al., 2009; Comer & Kendall, 2004; Furnham, 2008; Lagattuta, et al., 2012), it also contradicts findings from adults that often showed the negative impact of extensive choice set on post-choice satisfaction (e.g., Haynes, 2009). While we cannot directly infer that the same effect is expected among children, some related evidence with children did show that children's engagement with their choice was negatively affected by set size (Maimaran, 2017). Study 2 also demonstrated that set size affects children's post-choice satisfaction.

Regarding deliberation time, caregivers believed that children's deliberation would be longer for larger choice sets, in each of the age groups. Larger choice sets are often more time consuming among adult decision makers as well (e.g., Fasolo, Carmeci, & Misuraca, 2009; Payne, Bettman & Johnson, 1993). In study 2, I found that, just as adults, children also

deliberated significantly longer over larger (vs. smaller) set sizes across all age groups. Hence, adults' predictions of heightened deliberation time over larger choice-sets are in line with these findings.

The current results suggest that adults expect set size would have a larger influence on children's deliberation time than on their post-choice satisfaction. That gap between adults' expectations regarding deliberation time vs. satisfaction could be a consequence of the different nature and perceived importance of these two aspects. While deliberation time has concrete and tangible consequences (i.e., in terms of time spent), which produces frequent and immediate observable feedback, satisfaction is an inner state and, thus, does not produce such concrete feedback. Concrete and tangible feedback have been found to improve performance and estimations (Miller, & Geraci, 2011; Thaler, Sunstein, & Baltz 2013). Thus, the tangibility of losing time may enhance adults' ability to consider how various aspects, such as the choice set size, can affect time spent. This explanation is in line with other documented gaps in adults' perceptions of children's abilities, which perhaps may also be explained in terms of concreteness and tangibility. Teachers and parents were previously found to be more accurate in evaluating children's motor abilities than they evaluate cognitive performance, and better at evaluating cognitive performance than emotional abilities (Furnham, 2008; Lagattuta, et al., 2012; López-Pérez, & Wilson, 2015; Peters, 2004).

Adults' estimations of post-choice satisfaction negatively correlated with their expectations for deliberation time. That is, the more adults thought children would spend more time deliberating, the less satisfied they expected children to be. Post choice satisfaction and deliberation time are distinct variables, yet both are often used to measure preference-strength (e.g., Greifeneder, Scheibehenne, & Kleber, 2010; Konovalov, & Krajbich, 2019). From that point of view, prolonged deliberation time predicts lower preference strength because it reflects the difficulty of reaching a decision. This difficulty may stem from either the task complexity, the chooser's competency, or both. In contrast, satisfaction is expected to be higher as preference strength increases. Hence, when a strongly preferred alternative is present in the choice-set, the chooser is expected to deliberate shortly and to be highly satisfied with the chosen option. The negative correlation between children's expected post-choice satisfaction and children's expected deliberation time is thus expected and supports this explanation.

Previous studies found that younger children are negatively affected by large choice-sets (Maimaran, 2017), whereas older children coped better with many options, and improved with age (Bereby-Meyer, et al., 2004; Katz, et al., 2010). Study 2 also implied that set size influenced children's post-choice satisfaction, where older children enjoyed having more

options and younger children were less satisfied, if they had relatively average-low inhibition abilities. However, adults' predictions revealed no expectation that larger set-sizes would affect children's post-choice satisfaction. The belief that young children would not suffer from large choice set may be simply explained by adults' tendency to overestimate children's positive emotions (López-Pérez, & Wilson, 2015). However, the unobserved positive effect among older children may not be in line with this explanation. Another explanation to the belief that older children's satisfaction would not enhance when choosing from larger choice set is that parents may be underestimating children's ability to cope with complex choosing tasks (Baiocco et al., 2009).

Several items in the questionnaire described comparisons that revealed adults' beliefs that choosing from many options would be more difficult for girls, and for older children. However, these results should be interpreted carefully. Comparison items were worded in a way that might imply that there are differences, and thus perhaps biased participants to indicate a difference between the compared group. Future research should use other ways to compare these beliefs, such as multiple between-subjects scenarios.

When asked to recommend an ideal set size, most of the respondents recommended providing choice, but restricted it to 2-5 options. Set size recommendations increased with child's age in some choice contexts. The influence of child's age, when occurred, was not linear across the age groups, as 7-years-old were recommended similar set sizes as younger children (i.e., 4-years-old) for restaurant dish choices, whereas for choosing a toy they were recommended set sizes similar to the older children (i.e., 10-years-old). Previous research indeed suggests that older children are cognitively more capable of choosing from more options (e.g., Bereby-Meyer et al., 2004). One would expect that if adults believe that children's abilities to choose improve with age, like other cognitive abilities do in that age range, that should lead to recommending more choice options for older children. However, as previously mentioned, there are several factors that may guide adults when deciding whether or not to provide choice, and how much to interfere with constructing the child's choice set. Among other possible factors, children's competence as perceived by adults, as well as parental stress, have been previously studied in the context of autonomy-provision (Grolnick, et al., 2002, Wuyts, et al., 2017). The fact that set recommendations did not increase significantly with age across all choice contexts may imply that adults' beliefs are not (significantly) modified with child's age. Unmodified beliefs with regards to children's ability to choose as they grow may stem from considering decision making abilities as dependent on stable personality traits, rather than a developing ability. While this explanation can be supported by many studies that

demonstrated the crucial role of personality traits of the chooser (e.g., Schwartz, et al., 2002), the presented scenarios were hypothetical and did not imply any child's personality. Another explanation for the lack of significant increase in set size recommendation with child's age in some choice contexts, could be that beliefs about child's ability are only one consideration of set size recommendation, as suggested by previous studies (e.g., Wuyts, et al., 2017).

Another important consideration of adults' choice-provision is the situational circumstances, and more precisely, pressure. Adults' set recommendations changed across the varied contexts introduced in the study. For example, adults' ideal set size for breakfast cereal choosing was lower than for choosing a restaurant dish. Presumably, choosing breakfast cereals may be perceived as a situation with higher time constraints (i.e., as a part of a morning routine) compared to choosing a dish in a restaurant (i.e., typically a leisure activity). This is in line with the general findings showing that adults' beliefs of deliberation time were sensitive to changes in set size. Perhaps adults believed that choice provision is important, but do not usually have the time to allow a long deliberation over an extended choice-set, and that is why they recommend allowing more choice options, but also restrict it to a relatively small choice-set. Future research should further address the influence of choice-contexts characteristics on parents' tendency to grant children with choice opportunities.

Moreover, parents tended to allow older children more choice options, but this tendency was not significant over all choice-contexts. An alternative explanation to why adults expected set size to affect older children differently in different choice-contexts could be that adults underestimate older children's ability to efficiently cope with larger choice sets. Perhaps, parents perceived some choice-contexts as more difficult to choose from, and hence did not tend to recommend more options for older children. Moreover, previous studies have found that adults tend to underestimate the abilities of older children, but not of younger children (Furnham, 2008), which may support the insignificant differences in choice provision between age groups in some contexts.

Caregivers' experience with children was expected to correlate with their beliefs, to imply that experience contributes to the evaluation of children's abilities as was previously found (Furnham, 2008). In the current study, child-care experience was computed using the years of experience with children (as an educator or as a parent). However, child-care experience did not significantly correlate with adults' belief, ratings or recommendations. Other forms of child-care experience should be explored in future research to establish a better measure of this experience. Among other options child care experience may be computed as

hours spent with children (e.g., Furnham, 2008), aggregated years of parenting across all children, etc.

Caregivers seem to perceive set size as a factor that influences children's choosing behavior in terms of deliberation time, but not in terms of performing a satisfactory choice. Considering also the results of set recommendations raises important questions about the determinants of parental choice provision. If parents believe that older children are more able to successfully cope with larger choice-sets, then it is expected that they would recommend more choice options to older children. However, though that was the general tendency, the provision of more choice to older children was only significant in the context of restaurant dishes, and not at the other contexts. This inconsistency is in line with previous findings, suggesting that child's presumed ability is only one factor to parental choice provision tendency, whereas other context-dependent factors hold a significant role as well (Grolnick et al., 2007). Moreover, if caregivers believe that deliberation time is affected by set-size, and parental time is an important resource in our culture (Vinopal & Gershenson, 2017), then when they have to decide how much choice to provide, time constraints should be a relevant factor. Study 4 was designed to examine the contribution of each of these determinants (time vs. competency) on parental decision whether to offer the child a small or a large choice-set.

Study 4 - The determinants of parental choice-provision

The following experiment was designed to examine the effect of perceived child's ability and time pressure on parents' tendency to provide more choice options. Due to the developmental nature of childhood, children's age may partially imply their competency to choose. Examining the extent to which children choose rationally revealed that 11-years-olds performed much better than 7-years-olds (Harbaugh, Krause, & Berry, 2001). Older children also apply choice strategies more correctly than younger children (Bereby-Meyer et al., 2004). I also found, as described in Study 2, that older children tended to experience higher satisfaction when choosing from large (vs. small) set size, which implies their ability to successfully cope with larger set sizes. Thus, older children are more capable to choose from large choice-sets than younger children, at least when two distinct age groups are being compared (i.e., 4-years-olds vs. 10-years-olds). Hence, to the extent that children's competence is a determinant of choice provision, parental choice provision should enhance with children's age. I therefore examine whether or not parents' choice provision would change with child's age. More specifically, where the age differences are solid enough, I hypothesized that parents would tend to prefer offering larger choice-sets for older children.

Study 3 showed that adults tend to recommend granting more choice options to older children, however, this tendency was significant in some choice-contexts but not in others. This inconsistency of granting more choice for older children in some cases and not in others may be interpreted as random, where some adults tend to underestimate older children's ability, as previous studies have found (Furnham, 2008). Yet another explanation is the different nature of the suggested choice-contexts. As previously suggested, adults' sensitivity to the choice set may stem from context-specific perceived time constraints. One of the major determinants to parental choice provision, and more generally to autonomy-supportive behaviors, is pressure. Findings indicate that as pressure is enhanced, so does the tendency for parental controlling behaviors (Grolnick, et al., 2007). Some of these findings describe parental pressure enhanced due to social pressure derived by the notion of parents that they are being observed (Wuyts, et al., 2017), some refer to the fear from environmental threats (Robichard, et al., 2020), parental deadlines or feelings of time urgency (Grolnick, et al., 2007), and some refer to common daily distress situations (Aunola, Viljaranta, & Tolvanen, 2017).

Adults' estimations of the effect of set size on children's deliberation time, as previously suggested, may indicate the importance of time for parents. Hence, time may be treated as a source of enhanced pressure, that could lead to less autonomy-supported parenting (Grolnick, et al., 2007). I therefore hypothesized that parents in situations where no time constraints are present would grant more choice options than when time constraints are emphasized.

Another notion that stems from study 3 is that adults rated older children as deliberating more and experiencing more difficulty while deliberating over a choice set and these comparisons were significant when comparing 4 to 10-year-olds. These perceived differences may imply that older children are perceived to approach choosing tasks more thoughtfully than younger children, and hence are expected to deliberate longer and experience more difficulty to reach a final decision. Young children performance over several measurements, response time among them, was indeed found to be quite impulsive, compared to older children (Davidson, Amso, Anderson, & Diamond, 2006).

To further emphasize the importance of children's perceived competence to choose, another factor was tested in the following experiment - children's familiarity and experience with the specific choice-set. Naturally, older children gain more experience with choice situations and hence generally may be perceived as more competent. However, controlling for set familiarity may reveal a discriminated notion of gained experience (vs. age or cognitive ability as explaining competence). When choosing from a familiar choice-set, children (both

young and old) could be perceived as more competent and therefore could also be granted a larger choice-set. When choosing from an unfamiliar choice set, competence may be perceived as lower and hence parents may prefer a smaller choice-set. I therefore hypothesized that parents would prefer a large choice-set for a familiar set, and a smaller choice-set for an unfamiliar set. However, I did not expect age and set familiarity to interact – older children are expected to be granted more choices than younger children in both familiar and unfamiliar choice sets, due to their more mature cognitive abilities.

The current experiment was designed to evaluate the importance of different potential parental considerations when determining the extent of choice provided to children of different ages. More specifically, I test the impact of children's age, set-familiarity and time pressure on parents' preferences for children's choice-set size. If older children are perceived as more competent, then parents should allow more choice options to older children. Moreover, if gained experience is perceives as beneficial to children's competence, then parents should allow more choice options for familiar choice-sets. However, if time pressure discourages autonomy-support, then parents would only grant older children with more choices if they are not under time constraints. When time pressure is enhanced, parents are hypothesized to prefer smaller choice-sets, in all age groups and set-familiarity conditions. Moreover, given their belief that older children deliberate longer (spending more time choosing), the decrease in choice provision under time pressure should be sharper for older (vs. younger) children. In other words, I expect older children's choice provision to suffer more dramatically from parental time constraints than younger children's choice provision.

Method

Participants. The sample included 607 participants (49% females, 51% males, M_{age} = 39.8 years, SD = 6.46, age range = 25-55 years, 32 age missing data – no answer from participants), who were all parents with children. Most of the participants (71%) had either 2 or 3 children, and their oldest child's age was M_{age} = 11.26 years (SD = 5.65, age range = 3.5-30 years). Participants were recruited using an Israeli online panel and received a small monetary compensation for their participation.

Design and Procedure. Participants were invited to complete an online questionnaire. After a short description of the research goal, they were asked to provide consent, and whether they were parents in order to proceed to the questionnaire itself. If a participant indicated that they were not parents, they were thanked and excluded from the study.

Participants first answered several demographic questions (i.e., age, gender, number of children and the age of their oldest child), and then were asked to read a scenario that was

randomly chosen from a pool of 8 scenarios. The scenario described a mother and her son exiting the supermarket after doing their shopping, and the son asking for ice cream. The mother agrees, and then she deliberates between two nearby ice cream shops options: one is a large shop that offers many (12) options, and the other is a small counter that offers fewer (3) options. For example: *Yuval is 4 years-old and accompanied his mom for grocery shopping in the supermarket today. After exiting the supermarket, he asked for ice cream, and his mom agreed. Since the shopping prolonged more than expected, they are in a rush to pick up his brother from class on time. At the shopping center, a familiar ice cream shop that Yuval had already visited before, offers a wide range of 12 common children-adapted ice cream flavors. The shop also runs a small counter at the shopping center, offering a narrower selection of flavors, all of the same brand, quality and price. The counter offers 3 out of the 12 children-adapted ice cream flavors. She notices that in both there is no line at the moment, and she deliberates whether to take Yuval to the shop or to the counter.* The description was accompanied with an illustration, see Figure 8. Three factors were manipulated between these scenarios, each with 2 levels: Parent's time pressure (high: rushing to pick up her child on time, low: finished her sopping earlier than expected), Child's age (4 years-old, 10 years-old) and Choice context expertise (high: standard familiar ice cream shop; low: new exotic ice cream shop) resulting in a 2 X 2 X 2 between-subjects design.

Figure 8. *Illustration for the parental set-size dilemma*

After reading the scenario, participants were asked to indicate: a) their recommended choice set (definitely the shop, probably the shop, probably the counter, definitely the counter), b) child's expected deliberation time (very/quite long, quite/very short), c) child's expected post-choice satisfaction (very satisfied/quite satisfied/unsatisfied/very unsatisfied) and, d) expected child's difficulty to choose (very difficult/difficult/not so difficult/not at all difficult). Additionally, they answered two manipulation checks: a) for parent's time-pressure: according to the description, how pressured do you think Yuval's mother is? (very much pressured/quite pressured/not so pressured/not at all pressured) and, b) for options' familiarity: from which set of option were Yuval choosing? (familiar/exotic flavors).

Results

I describe the results for the manipulation checks, and then the ability of the manipulated factors to predict parents' preferred choice-set (large vs. small). Afterwards I describe the relations between parents' preferred choice set, child's age and child's perceived ability to choose in terms of deliberation time, difficulty choosing and post-choice satisfaction.

Manipulation checks

Time pressure: Participants indications of their perceived parental pressure in the described situation were significantly different between conditions, X^2 (3, N = 605) = 162.46, $p < 0.001$. Participants evaluation of the mother's pressure was higher (Mean = 2.79, SD = 0.74, Median = 3.00) if she was described as being in a rush to pick up her son on time, than when she was described as having no pressure (Mean = 1.97, SD = 0.74, Median = 2.00).

Set Familiarity: Only 66% (n = 401) of the sample correctly recalled the set familiarity that was described in the scenario, while 34% (n = 206) failed to recall from which kind of assortment the child had to choose (i.e., familiar vs. unfamiliar). The rate of valid answers to this manipulation check were not equal between the groups. Participants who were allocated to the unfamiliar flavors assortment tended to recall worse (42%) than those who were allocated to the familiar set recalled (91%). Because this question was dichotomous, at least some correct answers may as well be interpreted as mere guesses. The high rate of wrong answers to the manipulation check indicates that the manipulation was not salient enough to produce the desired differences between the groups. Thus, I collapsed the sample across the conditions of set familiarity and did not use that variable in the analyses.

Prediction of set size preferences

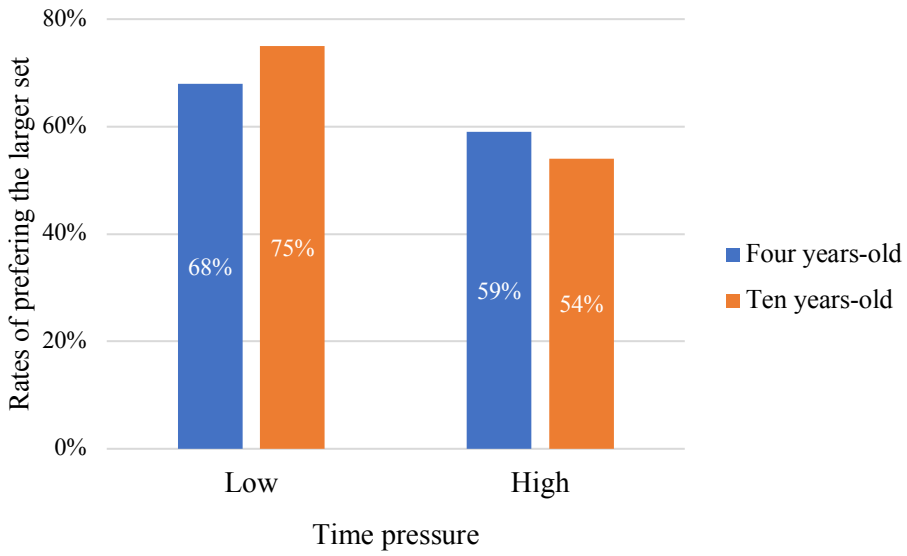
Set Size Preferences. Overall, parents tended to prefer the larger set of options. Both the median and the mode response were *Probably go to the larger shop*, with 44% of the participants choosing that option. Set size had two levels – small (3 options) and large (12

options), and I grouped the response options and treated it as a dichotomous variable, showing whether parents preferred the smaller (=0) or the larger (=1) choice-set.

Most of the participants (64%) preferred to go to the larger shop. Set size preference were not different across genders, as 63% of the mothers and 66% of the fathers preferred to go to the larger shop X^2 (2, N = 605) = 1.27, p = 0.53. Older parents tended more to prefer the larger shop than younger parents did X^2 (2, N = 573) = 5.78, p = 0.055.

As can be seen in Figure 9, parents generally tended to prefer the larger shop for 10 year-olds more often than they did for four year-olds. They also tended to prefer the larger shop when they were under the no time pressure condition. For four year-olds, time pressure decreased the chances of going to the larger shop by 9%, whereas for 10 year-olds, the chances declined by 21% under parental time pressure.

Figure 9. *Rates of preferring the larger choice-set by child's age and time pressure*



To test whether child's age and time pressure and their interaction predicted parents' set size preference I used a logistic regression. The regression model was statistically significant X^2 (3, N = 605) = 68.63, p < 0.001. As detailed in Table 7, Time pressure significantly affected parental preference for set size, p < 0.001. Parents in the low time pressure condition were more likely to prefer the larger shop over the smaller counter, than those who were in the high time pressure condition, *Exp(B)* = 2.93, 95% CI [2.07, 4.14]. Child's age also influenced parental preference, p = 0.03, where the odds of parental preference for the larger shop were higher for older children *Exp(B)* = 1.45, 95% CI [1.03, 2.03]. The interaction between child's age and time pressure was in the hypothesized direction and statistically

significant, $p = 0.03$, showing that parents were willing to allow more option for the older (vs. younger) child, but only when they were not under time pressure. When time pressure occurred, parents restricted the older children to the smaller set size almost as they did for the younger children, *Exp(B)* = 0.51, 95% CI [0.28, 0.92], demonstrating a stronger reaction for older children when time constraints are present.

Table 7. *Logistic regression for predicting set size preference by child's age and time pressure*

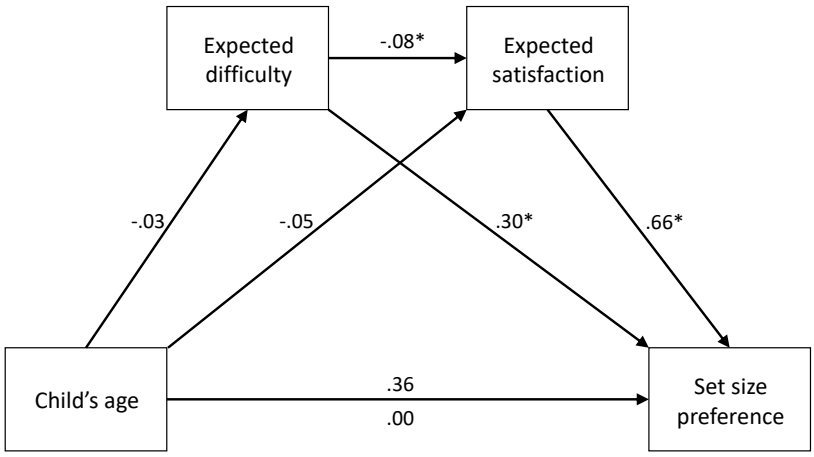
Predictor	*B*	*S.E*	*Wald*	*df*	*sig*	*Exp(B)*
Child's age	0.37	0.17	4.51	1	0.03	1.45
Time pressure	1.08	0.18	37.05	1	0.00	2.93
Interaction	-0.67	0.30	4.96	1	0.03	0.51

Child's age was hypothesized to influence set size preferences through its' expected influence on parents' perception of children's ability to choose. I used parents' evaluations of child's deliberation time and difficulty to choose as a measure for their perception of the child's competency to choose. Because the different estimations were strongly correlated ($\alpha = 0.79$), I combined them to create a new variable called Expected Difficulty and Post-choice satisfaction, which expresses an outcome of choice competency where greater competency to choose is expected to lead to a more satisfactory choice. To test whether child's age may explain parental set size preference a serial mediation model was used with child's expected difficulty as the first mediator, followed by expected post-choice satisfaction as a second mediator. In order to control for the influence of time pressure condition I tested the serial mediation under two sub-samples: participants under the time pressure condition, and participants under the no time pressure condition, separately. Figures 10a and 10b present the theoretical model and the regression coefficients under each time pressure condition.

Figure 10a presents the mediation model for participants under no time pressure condition (N = 324). Child's age had no direct effect on parental set size preference, $p = 0.16$. Child's age also did not predict parents' perceptions of child's difficulty to choose, t (322) = -0.19, $p = 0.85$. Parents' evaluations for difficulty to choose did not change with child's age. The relationship between the two (serial) mediators, child's expected difficulty and child's expected satisfaction, was negative and significant t (321) = -3.10, $p < 0.001$. When children were expected to experience more difficulty choosing, they were also expected to be less satisfied from their choices. Also, as parents expected children to be more satisfied with their

choice, their preference for the larger set size significantly increased, $p < 0.01$. Child's expected difficulty also predicted set size preference significantly, as higher perceived difficulty choosing increased the chances to prefer the larger shop. The indirect effect of child's age in each of the mediation paths was not significant.

Figure 10a. *Coefficients for serial mediation model under no time pressure condition*



*Note: significant coefficients are marked with *.*

Participants under the time pressure condition showed different results as illustrated in Figure 10b. Under the time pressure condition (N = 281) none of the predictors in the model were significant predictors of parents' preference to set size, as further detailed in Figure 10b. However, child's expected difficulty to choose was still negatively and significantly associated with their expected post-choice satisfaction t (278) = -3.95, $p < 0.001$. As evaluations of children's difficulty choosing enhanced, their perceived post choice satisfaction decreased.

Figure 10b. *Coefficients for serial mediation model under time pressure condition*

*Note: significant coefficients are marked with *.*

To summarize, parents tended to offer the larger choice-set to older children more than they did for the younger children. Time pressure was also a significant predictor for parental choice provision preferences. Parents were more willing to offer the larger choice set to children if they were not under time constraints. Moreover, the decrease in larger choice-set provision under time pressure was sharper for older children than for the younger children. A serial mediation model revealed that children's expected difficulty of choosing and expected satisfaction significantly predicted parents' preference for set size, but only when the parents were not under time pressure. Under time pressure, none of the predictors (child's age, expected difficulty to choose, or expected satisfaction) showed any significant effect on parents' choice provision preferences.

Discussion

Study 4 was designed to allow a better examination of the determinants of choice opportunities granted to children by parents. Previous studies already noted that parents' tendency to embrace autonomy-supportive behaviors stems from their beliefs of the child's ability as well as from situational factors (Grolnick et al., 2007). However, these studies did not experimentally evaluate the relative importance of these considerations, and mostly studied social pressure as their main situational factor (e.g., Grolnick et al., 2002; Wuyts et al., 2017). The current study aimed to evaluate the role of time pressure to parents' tendency to allow larger choice sets, and its' importance relative to the perceived ability of children to cope with different choice sets.

The results revealed a significant role of time pressure on parents' preference to offer the child the larger choice set. Parents were overall willing to provide children with many choices, but only if they were not under time pressure. Under time pressure, parents still preferred to offer the larger choice set, but to a significantly lower degree. This finding is in line with previous studies that demonstrated parents' tendency to apply more controlling behaviors when pressure was enhanced (e.g., Grolnick, et al., 2007 The current results thus further expand the understanding of the types of pressure that may affect parental autonomy-provision. These previous studies observed a range of parental controlling (vs. autonomy-supportive) behaviors, such as rushing the child or suggesting solutions. In contrast, the current study expands this effect of parental pressure to another common autonomy-supportive behavior – choice provision. It also emphasizes the significant effect of parental pressure, compared to beliefs of child's ability, on parents' tendency to provide choice.

The differentiation between the origins of controlling parenting behavior is important for theoretical and practical reasons. The classification of parental behavior types was the focus of many studies (e.g., Baumrind, 1967, 1991; Grolnick et al., 2007; Smetana, 1995). Researchers have been trying to characterize and classify parenting styles, presuming a unified and deliberate approach of parents towards their children (for an overview of different typologies of parenting styles, see Baumrind, 2005). More recent research acknowledges the complex link between parental ideas and their actual behaviors, and emphasizes the importance of circumstances and situational factors for parents' behaviors (e.g., Grolnick et al., 2007; Miguel, Valentim, & Carugati, 2009). The central role of time pressure as demonstrated in the current experiment offers further support to the notion that parents' behavior is in part dependent on the circumstances, and is not always coherent or according to a parenting style that reflects their personality traits and core beliefs of education. From a more practical point of view, considering autonomy provision as an important component for children's healthy development (Ryan & Deci 2000) makes the understanding of the circumstances under which children experience more controlling behaviors essential for assessment and interventions. If parents are mainly led by their beliefs and personality to form a coherent parenting style, then intervention should aim at parents' education. Explaining the importance of autonomy-supportive parenting may influence their beliefs and may be reflected in their parenting style. However, if circumstances are pivotal to the extent to which parents would provide autonomy, then interventions should aim at increasing parents' awareness to stressors, and perhaps even their abilities of time management, in the specific context of time spent with their children.

Child's age was expected to be a strong signal for children's ability to cope with the choosing task because older children are more developed (emotionally and cognitively) and more experienced than younger children. This developmental gap has implications for their ability to cope with choosing tasks, as was demonstrated in previous studies (Bereby-Meyer et al., 2004). Parents did recognize these differences and the chance that a parent would offer the larger choice-set was higher for older children (10-years-olds) than for younger children (4-years-olds). However, this was only true when there was no time pressure on parents. Parents in the high-pressure condition tended to recommend offering the larger choice-set less often, and this effect was stronger for the older children (21% decrease in larger-set provision) than for the younger children (9% decrease in larger-set provision). Moreover, after the described decrease in offering the larger choice-set, the difference between age groups diminished; in other words, under time pressure, parents were quite indifferent to child's age (and presumably, their ability). These results are in line with previous demonstrations of the moderating effect

of situational factors on the relationship between attitudes and actual behavior, where heightened pressure weakens the significance of attitudes as predicting behaviors (Wallace, Paulson, Lord, & Bond Jr, 2005). More specifically, they further emphasize the central role of time constraints, and perhaps situational circumstances more generally, to parents' controlling behaviors (Grolnick, et al., 2007; Mageau, Bureau, Ranger, Allen, & Soenens, 2016; Robichaud, et al., 2020).

The interaction between child's age and time pressure on parents' choice-provision may be perceived as counterintuitive. Parents preferred the larger choice more often for older (vs. younger) children, but preference for the larger choice set diminished more dramatically for this age group under time constraints. An additional puzzling finding is the positive correlation between parents' ratings of perceived child's difficulty in choosing and choice set preference. That is, parents believed that older (vs. younger) children would experience more difficulty choosing, and yet tended to prefer granting older children the extensive choice set more often. If children's expected choosing difficulty expresses their presumed competency to cope with the task, then parents should prefer to offer the older children smaller choice sets, which better match their lower abilities. However, it is unlikely that parents believe that older children are less capable than younger children to choose from larger choice sets. Thus, their expectations for heightened choosing difficulty among older children may express another aspect of the choosing task, rather than the ability to cope with it.

Among adults, cognitive effort and task difficulty were previously found to strongly correlate in decision tasks (e.g., Bettman, Johnson & Payne, 1990). Perhaps another way to interpret parents' evaluations of children's expected difficulty to choose may be that choosing difficulty reflects a more effortful, cognitive-demanding, and less impulsive process. From this perspective, expecting higher difficulty may imply expecting a more mature and sophisticated choosing process. Presumably, choosing is a distinct task for varied age groups such that young children might actually *pick* while the older would *choose* (Katz & Assor, 2007; Ullmann-Margalit, & Morgenbesser, 1977), even when given the same instructions. That differentiation between picking and choosing is usually attributed to the choice set – whether it really allow choosing (i.e., from distinct alternatives) or merely picking (i.e., from alternatives which are much similar to each other) – but it may also stem from the chooser's cognitive ability. If younger children cannot deliberate according to their preferences over a set of alternatives due to their cognitive limitations and impulsivity, then they may be considered as engaging in picking and not choosing. This way, the more mature cognitive ability of 10-year-olds enables them to perform more complex cognitive processes that may promote their decision quality but

would be more cognitively demanding and hence more time-consuming. This explanation is supported by findings of preschoolers' impulsive responses, and the prolonged response time of older children when task difficulty increases (Davidson, et al., 2006). If older (vs. younger) children deliberate longer over larger choice sets, then it is reasonable to expect parents under time pressure to limit the older children more, to save time.

The current experiment failed to manipulate set-familiarity. Set familiarity was hypothesized to allow a distinction between perceived ability that stems from development (i.e. manipulated by child's age) and ability that stems from the specific experience with the choice-set. The results showed that parents perceived the assortments of ice cream flavors as familiar for the choosing child, regardless of the familiarity that was described (and underlined) in the experimental scenario. This failure to manipulate set-familiarity may be due to the manipulation (i.e., set familiarity differences were not emphasized enough), but it may also be because it is less realistic to imagine a set of unfamiliar ice cream flavors. Apparently, the effort to differentiate these confounded characteristics of children's heightened ability to choose was too artificial and not convincing, and failed to create a reliable manipulation. Future research may find a more convincing manipulation for children specific set-familiarity. For example, by describing children of the same age, but from distinct cultures, who gained choosing experience in distinctive choice contexts or brands.

General discussion

The research described in the current chapter aimed to understand adults' beliefs regarding children's ability to successfully cope with choosing from extensive choice sets, across varied age groups. These beliefs were also examined in the light of children's actual abilities, as may be predicted by previous studies. Another goal of this research was to reveal the relative importance of two major determinants for parental choice provision, which are perceived child's ability and parental pressure. Study 3 revealed that adults believe that set size affects children's deliberation duration while they choose. Children's expected deliberation time was longer for larger choice sets. However, children's expected post-choice satisfaction was not affected by set size. Post-choice satisfaction is often used as an indicator for choice quality (e.g., Dijksterhuis & Van Olden, 2006), while deliberation time usually indicates process difficulty (e.g., Kool, McGuire, Rosen, & Botvinick, 2010). In this light, adults' responses reflect a belief that children may experience more difficulty choosing from extensive sets (i.e., longer expected deliberation), but that would not necessarily impair their choice

quality (i.e., post-choice satisfaction). This expectation contradicts findings with adults, where larger choice sets (i.e., heightened difficulty to choose) often significantly impair choice quality (Diehl, 2005; Payne et al., 1993). Moreover, the observed correlation between expected deliberation time and expected post-choice satisfaction was significant and negative, suggesting that although not influenced by the set size, adults do expect lower post-choice satisfaction where task difficulty is enhanced.

Study 4 revealed the important role of time pressure on parents' tendency to offer children larger choice sets. Under no time constraints, parents preferred offering the larger choice set, and even more often to the older children, which may imply their recognition of the older children's heightened ability to cope with many options. However, this sensitivity to child's ability diminished under time pressure, where the chance to grant a larger choice set was lower and equal to 4- and, 10-years-olds. Time pressure can easily justify the tendency to limit the choice set (i.e., as an effort to minimize deliberation time), but it cannot directly explain why older children do not enjoy more options than younger children do under time pressure as well. The offered explanation to that counterintuitive interaction was that older (vs. younger) children are indeed expected to perform more complex cognitive processes, but these are also more time-consuming (Davidson, et al., 2006). The findings from study 3 may further support this explanation, as adults indeed found to believe that older children deliberate longer than younger children. Obviously, under time pressure parents prefer the more time-efficient option, and thus their heightened preference for smaller choice set for the older-, and longer deliberating-children, is expected.

This powerful influence of time pressure revealed in study 4 may also shed light on adults' recommendations for ideal set size, as found in study 3. In study 3, adults' recommendations for an ideal set size varied across choice situations and contexts and did not always significantly increased with the child's age. Because adults consider time to be a scarce resource (e.g., Vinopal & Gershenson, 2017), I conjectured that this variance may stem from differences between the evaluated choice contexts in the extent to which they may imply or be associated with time pressure. Thus, adults' rigid choice provision in some choice contexts (breakfast cereals) but not others (restaurant dishes) may be interpreted in terms of contexts perceived time pressure. Moreover, just as the sensitivity to child's ability diminished under time pressure in study 4, adults' choice provision did not significantly increase with child's age under the hypothesized higher time pressure contexts (i.e., breakfast cereals), but did so in the less pressing context (restaurant dish). Thus, adults' perceived ideal set size may further be understood in the light of contextual time pressure, where higher perceived pressure

discourages both the provision of larger set sizes and the adaptation of the set size to the child's age. Previous studies also point to parents' tendency to apply more controlling (vs. autonomy supporting) behaviors when under time pressure (e.g., Grolnick, et al., 2007).

These findings further promote the understanding of parental behavior and their considerations regarding autonomy-supportive behaviors as specifically expressed by the choice provision. While previous studies have noted that parents are directed by their beliefs, perceptions of child's abilities, and situational factors (for a review see Miguel et al., 2009), the current research reveals that situational factors, and time pressure specifically, holds a major part in the extent to which parents would provide choice opportunities. Acknowledging the importance of situational factors may have several implications. For example, education policy-makers may conclude that leaving the decision to provide choice to teachers, may result in rare choosing opportunities due to time constraints in the classrooms and thus, may recommend advanced allocation of choosing opportunities as a part of the curriculum. Another implication may be for parents. Parents may deliberately try to find slots of time with less pressure to further allow choice opportunities adapted to their child's age, as a result of acknowledging the great influence of time pressure on their beneficial autonomy provision.

From a consumer protection policy perspective, marketers may sometimes be suspected of taking advantage of human limitations in ways that may justify relevant regulations to protect the consumers best interests (Ayal, 2011). However, marketers and vendors that do consider the consumer best interest may also address the importance of time pressure by designing the choice environment in ways that may facilitate younger children's deliberation, rather than overwhelm them. For example, perhaps categorizing toy stores by age groups (i.e. preschool, primary school, etc.) rather than by theme (i.e., puzzles, dolls, bricks, etc.) may facilitate children's deliberation because all the relevant options for a child are grouped in one place and are easier to compare. Though the choice architecture literature provides such principles to facilitate choice situations (e.g., Downs, Wisdom, & Loewenstein, 2015), it was mainly studied among adults and further research is needed to identify influential choice features among children.

The current study has several limitations. First is the absence of solid criteria of children's actual behavior when choosing from varied set sizes. Although few studies have previously manipulated set size among children, they differ from the current study in set sizes and the observed behaviors (Katz et al., 2010; Maimaran, 2017). Thus, interpreting adults' beliefs in the light of these findings should be done carefully and with the appropriate reservations. Another limitation is by examining adults' beliefs via descriptions of scenarios

and not via actual behaviors. Studies often point to a gap between beliefs, intentions, or attitudes, to actual parenting behavior (e.g., Miguel et al., 2009). Therefore, self-reported presumed behaviors should carefully be interpreted, because parents' actual behavior may be different. An additional limitation of this study is that the choice situations were all immediate and low-stake (and rather simple) decisions. Thus, perhaps in more important or complex decisions, such as choosing a subject for a school project or an expensive product (e.g., cell-phone, computer, etc.), the weight of the determinants for choice provision would change, and child's perceived ability would have a stronger impact on parents' tendency to provide extensive choice options.

Future research may aim to expand these findings to more complex choice situations, and observe actual behavior rather than provide hypothetical scenarios. Moreover, it would be interesting to directly address the suggested explanation of context-associated time pressure. Choice provision is only beneficial if the set of choice is well-adapted to the chooser's abilities (Katz & Assor, 2007), and time pressure is central to parental tendency to adapt set-size to the child's perceived abilities. Thus, mapping where adults perceive heightened or lessen pressure may accurate the efforts to manage these situations in ways that may benefit children. If parents are highly stressed in specific choice situations, then aiming to facilitate children's deliberation in these situations, or lessen their inherent time pressure, may encourage parents to provide an age adequate choice set rather than a rigid one, which may frustrate the child.

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General Discussion

Choosing is an act of expressing preferences, volitions and freedom and is generally found to have a positive influence on choosers by enhancing their sense of autonomy (Deci, Vallerand, Pelletier, & Ryan, 1991; Schwartz & Ward, 2004). In educational contexts, the beneficial impact of choice opportunities was found to enhance inner motivation, enjoyment and achievements (Flowerday, & Schraw, 2000; Patall, Cooper, & Wynn, 2010). Consumer behavior research also acknowledge the positive effect of providing choice on consumers' opportunities to express their individuality and autonomy (Schwartz & Ward, 2004). Adults were found to prefer having a choice (Bown, Read & Summers, 2003), and find larger assortments more attractive (Oppewal & Koelemeijer, 2005). Moreover, consumers were found to buy more when the set of choice is extensive, suggesting that more choice is even better (Borle, Boatwright, Kadane, Nunes, & Shmueli, 2005; Sloot, Fok & Verhoef, 2006).

However, not all evidence supports this straightforward positive effect of choice provision. Extensive choice sets for example, were found to enhance choice complexity among adults (Payne, 1976), and negatively influence the quality of their choices (i.e., lower satisfaction, mistakes). Consumer behavior studies offer evidence of the negative effect of the profusion of choice opportunities, arguing that many options will not necessarily enhance a sense of freedom and autonomy (Schwartz, 2004). Studies with adults show that extensive choice sets may cause mistakes, choice deferral, and lower post-choice satisfaction, among other possible negative consequences, a phenomenon named choice overload (e.g., Iyengar & Lepper, 2000; Diehl, 2005). Educational studies also highlighted that the positive effect of choice only occurs when the choice is meaningful for the chooser and matched their cognitive abilities. When the choice task is meaningless to the chooser or too complex for them to handle (e.g., too many options) choice provision would have no influence or even have a negative influence (Assor, Kaplan, & Roth, 2002; Katz & Assor, 2007; Patall, Cooper, & Robinson, 2008).

Caregivers often provide children with choice opportunities (Darian, 1998; Gaumer, & Arnone, 2009). Choice provision is considered as an expression of autonomy-supportive behavior and thus is strongly recommended. However, if the final goal is to promote the child's development and sense of autonomy, then choice provision should be done thoughtfully by offering challenging, but not frustrating, choice sets (Katz & Assor, 2007). Children's typical decisions, such as choosing breakfast cereals, a school bag, or shoes, may include a

considerable number of alternatives. However, only a few studies have explored the effect of set size on children's choice- and post-choice behaviors (Katz, Bereby-Meyer, Assor, & Danziger, 2010; Maimaran, 2017), and none, to the best of my knowledge, addressed its' effect on children's perceived choice quality (e.g., their satisfaction).

The current research aimed to explore the relevance of choice set size to children's decisions from two different perspectives. The first perspective is children's actual ability to cope with extensive choice-sets, as expressed by their own evaluations of their choice quality. Building on revealing children's vulnerability to extensive choice sets, I intended to form preliminary guidelines for optimal set sizes across childhood years. The second perspective is caregivers' beliefs with regards to children's ability to perform a satisfactory choice from extensive choice sets. Because children are dependent on their caregivers' willingness to allow them to choose, I explored the relative importance of these beliefs to their tendency to grant children with larger choice sets.

To address the first objective, exploring children's actual ability to perform a satisfactory choice from extensive choice sets, I focused on children's own evaluation of their choice. The focus on child's own evaluation of their choice quality required designing and validating children-adapted measurements for choice quality. Preschoolers and first-graders validly reported their post-choice satisfaction via a visual self-report scale (see Study 1, Tables 2,3). The child's willingness to exchange was found to be valid for first graders, but rather questionable for preschoolers (see Study 1, Figures 2a,b). Preschoolers' difficulty to efficiently use the item-exchange procedure was further emphasized in Study 2, where exchanging did not improve their reported satisfaction, whereas first-grader post-exchanging satisfaction was indeed higher than pre-exchanging satisfaction (see Study 2, Table 1). Behavioral measurements hold advantages over self-reports for several reasons, mainly because that they describe a real (rather than hypothesized or assumed) behavior, and they overcome responders' inability for (valid) introspection (Baumeister, Vohs, & Funder, 2007). However, behavioral measurements often do not correlate with self-reports, even when they strive to assess the same construct (Dang, King, & Inzlicht, 2020). These discrepancies may be attributed to the difficulty to correctly infer the observed behavior, distinguishing the presumed construct from other reasons that may lead to the observed behavior (Chan, 2009; von Baeyer, & Spagrud, 2007). For example, preschoolers' tendency to exchange their item may reflect low post-choice satisfaction as well as impulsivity, playfulness, or lower self-control. Further examination of the willingness to exchange among preschoolers is thus needed to discriminate and reveal the

origin of the observed exchanging behavior, were exchanging for another item did not improve their satisfaction.

By providing valid measurements for young children's perceived choice quality, this research further inspires and promote the role of children as central informants of their own inner states. This is an important contribution given that studies on children tend to heavily rely on adults as informants, even though they were often found to do not correlate with either actual performance, the child's report or other adult reports (e.g., Korat, 2009; Lagattuta, Sayfan, & Bamford, 2012). Moreover, it allows to explore the influence of various characteristics of the choice set (i.e. size, order of options etc.) and its' environment (e.g., choice reversibility, time constraints, etc.) on young children, and thus to promote a better understanding of their choosing process and abilities. Such knowledge is essential for a beneficial use of choice-provision, by allowing an adaptation of choice sets to the choosers (Katz & Assor, 2007).

I used the aforementioned validated measures in a real choice task to test the effects of options profusion on children's ability to perform a satisfactory choice, in various age groups. I deliberately chose age groups that are distinct in the two main factors that provide explanations for the choice overload phenomenon: regret and cognitive ability. Cognitive abilities significantly evolve through childhood, and the ability to experience regret does not usually manifest before first grade. Thus, the results from the chosen age groups - preschoolers, first-graders and fourth-graders - shed light on the relevance of these explanations to the effect of set-size on children's decisions.

Preschoolers, first-graders, and fourth-graders all deliberated longer over larger choice sets, implying that the number of options in the set is relevant to the choice process even at four years of age (see Study 2). The relevance of set size to the decision process is thus common to children and adults, who are also often found to deliberate longer over larger choice sets (e.g., Diehl, 2005). The number of options in the choice set affected children's perceived choice quality as well. More specifically, preschooler's post-choice satisfaction decreased for larger choice sets among children with average to low inhibition scores, but not for children with high inhibition scores (see Study 2, Figure 6). Fourth-graders' satisfaction was higher for larger choice-sets (see Study 2, Figure 7). First-graders' behavior, which seemed quite similar to the preschoolers' behavior, were not significantly different between levels of choice sets and thus provide inconclusive results. These results could imply that first graders are in a liminal period between developmental stages, where extensive choice is either overwhelming (like in preschool) or enjoyable (like in fourth grade). In other words, the observed varied influences

of larger choice-sets across childhood may reflect the developing ability to cope with extensive choice sets.

Addressing the choice overload effects' dominant explanations, regret and cognitive ability, I found a negative effect in preschool, where the ability to experience regret is not expected to occur yet (e.g., O'Connor, McCormack & Feeney, 2012). Thus, it is unlikely to assume that preschoolers expressed lower satisfaction (in larger choice set) due to experiencing heightened regret for foregoing (more) items. Moreover, the older children, despite their ability to experience regret for nonchosen items, actually enjoyed the larger sets more. This result suggests that regret might not be the most crucial component for the choice overload phenomenon, at least for children. These results not only challenge the regret-based explanation, but they also provide support for the importance of cognitive ability as a driver of the negative influence of larger set sizes. There is no doubt that typical fourth graders are more cognitively developed than typical preschoolers. The occurrence of a negative effect in the less competent group (i.e. preschoolers), alongside the positive effect occurred in the more competent group (fourth-graders) imply the importance of cognitive competence. Cognitive competence may easily be interpreted as crucial to the vulnerability of the chooser when facing extensive choice sets. Moreover, among preschoolers, those who scored relatively high on the inhibition task (i.e. higher cognitive ability) were not negatively affected by set size. This support of the cognitive burden explanation is also in line with studies that demonstrate how facilitating the cognitive demands of extensive choice sets (e.g., by organizing or categorizing the options) reduces choice overload effects (e.g., Chakravarti & Janiszewski, 2003; Mogilner, Rudnick & Iyengar, 2008).

One of my goals in this topic was to form the basis for guidelines for an optimal range of options to introduce along childhood years, in order to promote beneficial and empowering choice experiences for children. While further evidence is needed to expand these guidelines in terms of choice context and age groups, the results imply that preschoolers efficiently choose from three options, but may be overwhelmed when offered six or more options (see Study 2, Figure 6). This finding is in line with a previous study that demonstrated that preschoolers engaged longer with their chosen option when choosing from two options than when choosing from six or seven options (Maimaran, 2017). Concerning 10-year-olds, according to the results, a choice made from a set of six options was rather disappointing with compared to a choice made out of sets with either 12 or 18 options (see Study 2, Figure 7).

The second objective of the current research was to explore whether or not caregivers believe that set size has potential influences on children's choice quality in varied age groups

and the extent to which these beliefs guide their tendency to provide opportunities to choose from extensive choice sets. To allow some extent of comparison between caregivers' beliefs and children's actual performance, caregivers filled out a questionnaire describes similar choosing situations to these children actually faced in Study 2. Caregivers believed that set size would influence children's deliberation time across all age groups (see Study 3, Figure 3). They expected deliberation time to be longer as set size increased. This expectation is in line with previous studies among adults (e.g., Fasolo, Carmeci, & Misuraca, 2009; Payne, Bettman & Johnson, 1993), as well as the results of Study 2, where all age groups deliberated longer over larger choice sets. However, in contrast to previous studies with adults (Iyengar & Lepper, 2000) and what was found among children, caregivers did not expect any influence (negative or positive) of larger set sizes on children's post-choice satisfaction, in any of the age groups (see Study 3). In the absence of a solid criterion to conclude whether this expectation is realistic or not, I would carefully suggest that this gap in adults' beliefs with regards to the influence of set size for deliberation time and satisfaction may stem from the nature of these aspects. Adults often found to hold more realistic perceptions (in terms of accuracy or informant-agreement) of their children's tangible and observable behaviors than for their children's inner states and feelings (Comer & Kendall, 2004; Furnham, 2008; Lagattuta, et al., 2012; López-Pérez, & Wilson, 2015; Miller, 1988; Peters, 2004).

The vast majority of the respondents recommended allowing some choice to children in all age groups, but they also restricted that recommendation to the range of 2 to 5 options (see Study 3, Figure 6). While this range of options may be adequate for preschoolers as found in study 2, as well as in previous studies (Maimaran, 2017), it may be too narrow for the older children. Moreover, though in their recommendations older children were granted more choice options than younger children, this tendency was not consistently significant (across choice contexts). The lack of significant increase in set size recommendation with child's age in some choice contexts may imply that beliefs about child's ability are only one consideration of set size recommendation, as suggested by previous studies (e.g., Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017).

Revealing the determinants that guide adults' decision for choice provision to children is important to understanding the actual choice experience children may gain, because children's autonomy and choosing experience is set by their caregivers (Mullin, 2014; Tinson, & Nancarrow, 2007). I found that parents granted significantly more choice to older (vs. younger) children, confirming parents' acknowledgment of the heightened competence of older children to cope with larger choice sets (Bereby-Meyer, Assor, & Katz, 2004). However,

this sensitivity to child's ability diminished under time pressure, where the chance to grant a larger choice set was lower and equal for 4- and, 10-years-olds (see Study 4, Figure 9). While limiting the choice set under time pressure is intuitively understood, it is puzzling that older children were not afforded more options than younger children under time pressure as well. This counterintuitive interaction effect may have stemmed from parents' different expectations from children's choosing process: Older (vs. younger) children might be expected to perform more complex cognitive processes that are also more time-consuming. The findings from Study 3 further support this explanation, where caregivers indeed found to believe that older children would deliberate longer than younger children. These differences in expected deliberation times are also supported by previous studies suggesting that younger children perform rather impulsive choices (Davidson, Amso, Anderson, & Diamond, 2006), as well as by the findings from Study 2 where 10-year-olds children actually deliberated longer than four-year-olds. Thus, if older children do generally deliberate longer than younger children, and parents are aware of that - it is reasonable to expect parents under time pressure to limit the older children more, to save time.

The crucial role of time pressure that was demonstrated in Study 4 offers further support to the notion that parents' behavior is in part dependent on circumstances, and is not always coherent or according to a parenting style that reflects their personality traits and core beliefs of education (Miguel, Valentim, & Carugati, 2009). Several studies already pointed at some situational factors as encouraging more controlling parenting behaviors (Grolnick, Price, Beiswenger, & Sauck, 2007; Mageau, Bureau, Ranger, Allen, & Soenens, 2016; Robichaud, Roy, Ranger, & Mageau, 2020). However, most of previous studies under this topic were correlational and thus do not allow causal inference of the role of these determinants (e.g., Wuyts, Vansteenkiste, Soenens, & Assor, 2015). Among those with experimental design, the actual behavior of the parent with their children was observed (e.g., Grolnick et al., 2007), thus though they emphasize the role of situational pressure, they cannot discern it from parental experience with the child's prior abilities and behaviors, that may also influence parental behavior (but see Wuyts, et al., 2017). The current research asked parents to evaluate their decisions regarding a hypothetical child, and thus the influence of the prior experience with the child was controlled. Moreover, while previous studies mainly focused on social pressure or environmental threats (e.g., Grolnick, et al., 2007; Robichaud et al., 2020; Wuyts, et al., 2017), the current research emphasize the importance of time pressure to parental decisions to provide choice. In our growing pace of life, time pressure is quite prevalent and is accompanies great

deal of our daily activities (Garhammer, 2002), including our parenthood (Cha & Papastefanou, 2020), and thus acknowledging its potential negative is important.

The results also give rise to some interesting novel questions. For example, if the more competent preschoolers were not negatively affected by larger choice-sets, and fourth-graders were even positively influenced by it, it may raise questions about the manifestation of the choice overload phenomenon among adults, who are even more competent than 10-year-olds. Indeed, previous studies detailed a considerable number of preconditions and moderators to the occurrence of the choice overload effect. Choice overload effects occurred when there was no obvious dominant option, when the chooser was not an expert in the choice context, when no prior preference was articulated or when the chooser was asked to justify their choice, when options diverse over several attributes, and when attributes were not easy to align when time pressure was high and even more such factors (e.g., Chernev, Böckenholt, & Goodman, 2015; Scheibehenne, Greifeneder, & Todd, 2010). Though considering these preconditions and moderators may make it sound like a rather negligible phenomenon in adulthood, many of our daily decisions may share some of these characteristics (e.g., Schwartz, 2004).

Adults' decision-making situations may differ from the choice situations children confronted in this research in ways that may explain the relatively low vulnerability of the children to the set size. First, the current samples were deliberating over a maximum of 18 items. The number of items in every day choice decision may easily exceed 18 items. In a local supermarket in the U.S., customers may find up to 275 varieties of breakfast cereals, 90 varieties of snacks and 40 options of toothpaste, and assortments are even larger in online shopping, were nearly 5,000 kinds of breakfast cereals, about 50 types of milk, and over 100 different mouthwash products are offered (Aichner, & Coletti, 2013; Schwartz & Ward, 2004). Even if the ability to cope with choosing from more options expands with cognitive development, it probably has some boundaries. Moreover, while the children in this study deliberated over a low-stake choice-set (i.e., inexpensive rewards), adults are sometimes required to deliberate over a high-stake choice set, such as retirement saving plans or health care plans (Hanoch, Wood, Barnes, Liu, & Rice, 2011; Iyengar, Huberman, & Jiang, 2004). The consequences of the choice may further enhance the pressure to choose correctly, and hence heighten the cognitive effort even when the choice set is not enormous. The choice set that was offered to children was also of low heterogeneity. All the presented options offered pretty much the same experience (e.g., different animals-shaped puzzles), while adults may face alternatives that offer very different, incomparable options, that elevate the cognitive effort (Gourville & Soman, 2005). One last possible explanation is that even though adults are more

cognitively competent than children, they do not always focus all their available resources to perform the task at hand, due to many other distractions and constraints (Beal, Weiss, Barros, & MacDermid, 2005).

Revealing that children as young as 10-year-olds were actually more satisfied as set size increased was quite surprising. Though larger choice-sets are sometimes found to have positive effects on the chooser (e.g., Oppewal & Koelemeijer, 2005), I assumed that due to their premature cognitive abilities and limited experience children would at best not be negatively influenced by set size. The positive effect in that age group further emphasizes the scope of set size effects on children's decision making, suggesting that too small choice sets may also have a negative effect. A good adaptation of the choice set to the chooser's ability is crucial to the beneficial use of choice provision, while a choice set that is too easy or too complex may harm the child's sense of competence and autonomy (Katz & Assor, 2007; Patall, Cooper, & Wynn, 2010). Offering too many options relative to the child's ability, may be overwhelming and thus frustrating to choose from, however, offering too few options relative to the child's ability may be disappointing and just as frustrating.

Practical and policy implications

Monitoring children's evolved ability to cope with extensive choice sets may greatly contribute to the understanding of children's decision-making in general, by highlighting phases of change in choice-related abilities (e,g., John, 1999; Katz & Assor, 2007). More practically, establishing guidelines for beneficial use of choice provision would allow adults to offer children choice sets that are adapted to their abilities, rather than disappointing or overwhelming choice sets. For example, teachers may consider adapting the number of class activities or essay topics they offer to their class age; parents may interfere in children's decisions by constructing age-appropriate choice sets relying on such guidelines; and education policy-makers may promote the implementation of such guidelines in the school environment, curriculum planning, and teachers' training programs. Moreover, children are considered a vulnerable consumer group, and thus these findings may improve consumer protection policies, by considering children's sensitivity to set size to limit frustrating and overwhelming choice situations addressed to young children. Studies with adults also pointed out the need for such paternalistic interventions, at least for some decision-domains, to promote desired decisions (Ayal, 2011; Haynes, 2009; Iyengar, Huberman, & Jiang, 2004). While for adults the need for set-size limitations arise mainly in choice domains with serious consequences such as health and savings, children's need for choice adaptation stems from the influence of the choice

experience on their healthy psychological development, inner motivation, and well-being (Deci & Ryan, 2012; Patall, Cooper, & Robinson, 2008).

Caregivers' beliefs of children's ability and situational factors were previously found to predict their tendency to apply autonomy-supportive (vs. controlling) behaviors (Grolnik et al., 2007; Wuyts, et al., 2017). Realistic perceptions of children's abilities promote the provision of adequate and well-adapted stimulations, which in turn allow healthy development (Deci & Ryan, 2012; Fay-Stammbach, Hawes, & Meredith, 2014; Grusec, 2007). In the light of the (few) available previous studies, most of the caregivers' beliefs of children's ability to choose from extensive sets seem realistic. The only meaningful gap is for the effect of set size on post-choice satisfaction, where caregivers did not evaluate to be affected by set size. However, the only available data from children is from study 2, thus further research on the influence of set size on children's perceived choice quality is needed to draw any conclusions or offer explanations. Whether they are realistic or not, the current research revealed that caregivers' beliefs of child's ability are only relevant to their choice-provision preference under no time constraints. In the presence of time pressure, no other consideration was longer significantly predicted choice-provision preference. Time is considered as a scarce resource (Vinopal & Gershenson, 2017), often described in terms of planning and saving and hence, it is not surprising that it holds such a powerful influence on parents' decisions. Beyond the theoretical contribution to the understanding of caregivers' beliefs and the determinants for their choice provision preferences, acknowledging the importance of situational factors, and time pressure specifically, may have practical implications. Educators and parents may decide to dedicate constraints-free time slots to allow themselves to be more sensitive to the child's ability in choice situations. For example, they may choose to allocate additional time for grocery co-shopping with children, or schedule classes or days in which the teacher offers choosing opportunities for assignments. From the perspective of consumer protection, vendors may be guided to design their stores in a way that would lessen pressure (e.g., more spacious, well organized and categorized, with no loud music) to allow parents to remain attentive to their child's abilities and provide adequate choice.

Limitations and directions for future research

The current research limitations are first in the aspect of choice context. I only examined one choice context with children, and a few with caregivers, and hence the results of this research are limited to choice contexts that share the same features (e.g., merchandise, low-stake, etc.). For example, the variety of new friends to meet, or more expensive decisions such as to purchase a new cell phone or shoes, which are also common childhood choice situations,

are fairly different from the choices introduced in this research. One more limitation regards the ability to produce confident recommendations for practice, whereas only limited set of outcomes has been tested. Future research may examine additional outcomes as indicators for set size sensitivity, such as motivation for use/consume the chosen item, motivation to subsequent decision tasks, a more direct measures for regret, long-term learning to choose satisfactorily etc. Another limitation is the absence of sufficient data that would allow concluding whether caregivers' beliefs are accurate or not, thus compromising on a careful comparison of some general features of these beliefs to relevant (and rare) studies. An examination of these beliefs and their correlations to children's actual abilities may further promote the understanding of both the prevalence of choice overload effects among children and caregivers' ability to identify them. I found that time pressure is crucial to choice-provision preference, however, this is just one situational factor, and it is unclear if its' powerful influence is unique or similar to other situational factors such as social pressure. If other situational factors are as powerful influencers to choice provision preference, then the chances that caregivers would provide adequate choice is low, and perhaps justify regulatory interventions (for example by settings standards for choice situations in the public space) or at least to consider a change in educational policies by implementing adequate and sufficient choice opportunities to children as a part of the pedagogical curriculum.

Future research may also address the large gap in children's decision-making literature, where relatively little attention was dedicated to the child's subjective point of view on their decisions. Studies describe children's consumption, decision strategies, information gathering, mistakes, and other features of the choice process and its' consequences while neglecting the child's own feelings and beliefs with their choices and choice process. The number of alternatives in the choice set was the central set feature in the current study. However, it is only one feature of the choice sets, among many others (e.g., display order, choice reversibility, time constraints, etc.) that should also be studied from the perspective of the child's perceived choice-quality, to allow beneficial adaptation of choice situations to children in their homes, schools and in the public space.

Conclusions

From the perspective of child-rearing and education, it is clear that choice provision is an easy and powerful way to allow children to express themselves, practice decision-making skills, and empowering their sense of autonomy and competence. However, the current research emphasizes that not every choice provided to a child holds these favorable consequences, and some choice situations may even hinder them. I found that both too

complicated choice sets (e.g., offering 12 items for 4-years-olds) and simplistic ones (e.g., offering 6 items for 10-years-olds), can reduce children's post-choice satisfaction. Thus, caregivers may best use choice provision by offering children a challenging, yet not too frustrating, choice sets. The current research suggests that although caregivers are sensitive to children's abilities to choose, they only consider the child's abilities when not under time pressure. While under time pressure, 4- and 10-year-olds were offered the same number of choice options. Considering the extent of time constraints in adults (and parental) daily lives, this leaves quite limited opportunities for well-adapted beneficial choice provision situations. The current research supports this notion as reflected in caregivers' rigid recommendations for set sizes across several common choice contexts such as choosing breakfast cereals or a new toy.

A beneficial use of choice provision requires caregivers' attention. Caregivers should be aware to the extent to which the offered choice can challenge the child and promote their sense of autonomy and competence. The current results imply that coping with complex choice tasks improves with age and with relevant cognitive abilities (i.e. inhibition). Interestingly, other skills as bicycle riding, problem-solving or literacy do gain a lot of gradual practice and thoughtful attention from parents and educators. Perhaps choosing and decision-making abilities should also be treated as other developed skills, promoted through gradual practice by exposure to adapted choice tasks along childhood years. This perspective is beyond the scope of the current research; however, the current results do show that treating choice provision thoughtfully and in accordance to children's abilities is in itself beneficial to the child's choice experience.

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תקציר

הורים, מחנכים ומטפלים מציעים לילדים אפשרויות בחירה בהיקפים שונים של מבחר. הם עשויים למשל להציע לילדים לבחור את דגני הבוקר שלהם מתוך המבחר המצומצם שבארון המטבח בבית, או במהלך קניות בסופרמרקט, שם המבחר גדול הרבה יותר. גודל סט הבחירה עשוי להשפיע על איכות הבחירה של הילד ועל שביעות הרצון שלו מבחירתו. מצד אחד, אפשרויות רבות בסט הבחירה מגדילות את הסיכוי שהילד ימצא אפשרות המתאימה לו, ולכן שביעות הרצון שלו מהבחירה תגדל. מצד שני, בחירה מסט גדול לעיתים דווקא פוגעת בשביעות הרצון, אם היא יוצרת "עומס בחירה". תופעת "עומס הבחירה" נבדקה עד כה בקרב מבוגרים בלבד וההשפעה השלילית של ריבוי אפשרויות בחירה מיוחסת בעיקר לעליה בעומס הקוגניטיבי כאשר שמתלבטים בין הרבה אפשרויות, ולתחושות חרטה שנובעות מההכרח לוותר על יותר אפשרויות כשסט הבחירה גדול. הגורמים הללו לתופעת עומס הבחירה – יכולת קוגניטיבית ותחושות של חרטה – מתפתחים באופן משמעותי במשך שנות הילדות. לכן, האופן שבו סט בחירה גדול ישפיע על איכות הבחירה הנתפסת של ילדים עשוי להיות שונה לאורך שנות הילדות, בהתאם לשלב ההתפתחותי הקוגניטיבי והרגשי שלהם. למרות שילדים נחשפים למצבים בהם עליהם לבחור כבר מגיל צעיר מאוד, עדיין לא ידוע לנו כיצד מספר האפשרויות בסט הבחירה משפיע על איכות הבחירה שלהם, בשלבים שונים של יכולת קוגניטיבית ורגשית.

מתן אפשרויות בחירה מהווה דרך מקובלת להתנהגות תומכת-אוטונומיה, ולכן מומלצת מאוד על ידי מומחים רבים מתחומי החינוך והפסיכולוגיה. לפי תיאוריית המוכוונות העצמית (Self-determination theory) תחושות האוטונומיה והמסוגלות של הילד הן בעלות חשיבות מכרעת להתפתחות פסיכולוגית תקינה של הילד ולכן התנהגויות תומכות אוטונומיה, ובכללן יחד עם זאת, אם הילד יחוש מוצף לנוכח סט הבחירה, או מתוסכל מהקושי להתלבט ולבחור מהאפשרויות המוצעות לו, עלולה דווקא להיות פגיעה בתחושת המסוגלות והאוטונומיה שלו. כלומר, התוצאה החיובית והמעצימה של מתן אפשרויות בחירה תלויה במידה רבה באופן שבו הילד יחווה את סט הבחירה ואת איכות הבחירה שלו.

מחקר של המידה שבה גודל סט הבחירה רלוונטי ומשפיע על חווית הבחירה ואיכות הבחירה של ילדים עשוי לתרום להבנת תהליכי קבלת ההחלטות של ילדים ולקדם שימוש מושכל במתן אפשרויות בחירה, באופן כזה שיגדיל את הסיכוי להשלכות חיוביות ומעצימות של היכולת לבחור ויימנע מההשלכות השליליות שלה. האופן שבו גודל סט הבחירה משפיע על איכות הבחירה עשוי להשתנות לאורך שנות הילדות בעקבות התפתחות של יכולות רלוונטיות. ככל שהיכולת שלהם לבחור מאפשרויות רבות יותר גדולה יותר, כך ההשלכות השליליות של סט בחירה גדול צפויות להצטמצם והסיכוי שמתן אפשרות הבחירה יהיה מעצים וחיובי עבורם גדל. אך ילדים לא תמיד חופשיים לבחור לעצמם את אפשרויות הבחירה. הם תלויים לעיתים (קרובות) במבוגרים המטפלים בהם, המחליטים עבורם מתי ובאיזו מידה הם יכולים לבחור. מחקרים קודמים מצאו שהאמונות של המבוגרים האחראיים לגבי יכולתם של ילדים להתמודד עם משימה, יחד עם נסיבות מצביות מעוררות לחץ, משפיעות על הנטייה של המטפלים לאפשר לילדים אוטונומיה ובחירה. לפיכך, לאמונות של מבוגרים לגבי יכולתם של ילדים בגילאים שונים להתמודד עם סט בחירה גדול ונסיבות הסביבתיות, עשויה להיות השפעה משמעותית על איכות הבחירה של ילדים. מטרת המחקר הנוכחי היא לבחון גם את היכולת של ילדים לבחור באופן משביע רצון (לדעתם) מסטים בגדלים שונים, וגם את

השיקולים שמנחים מבוגרים בקביעתם מתי ועד כמה לאפשר לילדים בחירה מסט גדול של אפשרויות בחירה. התאמה טובה בין יכולות הילד וסט הבחירה המוצע לו, תגדיל את הסיכוי להשפעה מיטיבה ומעצימה של מתן אפשרות הבחירה על הילד, באופן שיקדם את התפתחות תחושת האוטונומיה והמסוגלות שלו.

כדי לבדוק את ההשפעה של גודל סט הבחירה על שביעות הרצון של ילדים מבחירתם, גיליתי כי קיים צורך בבניית כלי תקף ומהימן למדידת איכות הבחירה הסובייקטיבית של ילדים מבחירתם. המטרה הראשונה של המחקר הנוכחי הייתה לבנות ולבחון כלי כזה למדידת איכות הבחירה של ילדים ולתקף אותו. בפרק 1 אני מדווחת על מחקר שבו פיתחתי ותיקפתי מדד התנהגותי (הנכונות להחליף) ומדד מבוסס דיווח עצמי (סולם פרצופים) למדידת איכות הבחירה של ילדים צעירים.

המטרה המרכזית של המחקר הנוכחי הייתה בדיקת ההשפעה של גודל סט הבחירה על איכות הבחירה של ילדים. בפרק 2 אני מדווחת על מחקר שבו ילדים משלוש קבוצות גיל שונות (גן, כיתה א׳ וכיתה ד׳) התבקשו לבחור פריט (פרס) מתוך סטים בגדלים שונים שהוצעו להם. ילדי הגן הראו תופעת עומס הבחירה – הם היו פחות מרוצים מבחירתם כאשר סט הבחירה היה גדול יותר – אך רק אם יכולתם לאינהיביציה קוגניטיבית הייתה ממוצעת או נמוכה ביחס למדגם. התוצאות של ילדי כיתה א׳ היו דומות מאוד לתוצאות של ילדי הגן, שביעות הרצון שלהם מבחירתם נראתה נמוכה יותר כאשר בחרו מאפשרויות רבות, אך ההבדל הזה בשביעות הרצון כתוצאה משינוי בגודל הסט לא היה מובהק בקבוצה זו ילדי כיתה ד׳ הושפעו בכיוון הפוך – הם היו מרוצים יותר מבחירתם כאשר בחרו מסט גדול של אפשרויות מאשר כאשר בחרו מסט מצומצם.. מכיוון שהיכולת לחוות חרטה מתפתחת בדרך כלל לאחר גיל הגן, התוצאות מקבוצת גיל הגן מאתגרות את האפשרות להסביר את תופעת עומס הבחירה כנובעת מהחרטה שמתלווה לוויתור על יותר אפשרויות שלא נבחרו בסט גדול. התוצאות לא רק מאתגרות את ההסבר מבוסס החרטה, אלא גם מהוות תמיכה להסבר המבוסס על העומס הקוגניטיבי כגורם לתופעת עומס הבחירה. ילדי הגן שנמצאו יותר מפותחים קוגניטיבית לא חוו אפקט שלילי של גודל סט הבחירה, וילדי כיתה ד׳ (שהם לרוב מפותחים יותר קוגניטיבית מילדי הגן) חוו אפקט חיובי של גודל סט הבחירה. התוצאות הללו מעידות שהדרישה הקוגניטיבית הגבוהה מהתלבטות ובחירה בין מספר רב של אפשרויות מהווה גורם מרכזי במנגנון המסביר את תופעת עומס הבחירה.

המטרה האחרונה של המחקר הנוכחי הייתה לבחון את האמונות שהורים ומטפלים אחרים מחזיקים לגבי יכולתם של ילדים לבחור באופן משביע רצון מסטים בגדלים שונים ואת הגורמים שמשפיעים על ההחלטה של הורים ומטפלים לאפשר לילדים לבחור מסט גדול של אפשרויות בחירה. בפרק 3 אני מדווחת על שני ניסויים בהם מבוגרים ביטאו אמונה שסט בחירה גדול יאריך את משך ההתלבטות של ילדים בכל גיל, אך לא ביטאו אמונה שגודל הסט ישפיע על שביעות הרצון של הילדים מבחירותיהם. מבוגרים נטו להמליץ לאפשר לילדים מצבי בחירה, אבל גם הגבילו מאוד את מספר אפשרויות הבחירה המומלץ. בדיקת הגורמים להעדפת סט בחירה מצומצם כפי שהומלץ חשפה שמבוגרים המליצו על סט גדול יותר לילדים גדולים יותר אך רק כאשר לא היה לחץ זמן. כאשר תואר מצב עם לחץ זמן, גיל הילד כבר לא השפיע על העדפת גודל הסט.

הממצאים של המחקר הנוכחי מקדמים משמעותית את הבנתנו לגבי היכולת של ילדים להתמודד עם בחירה מסטים בגדלים שונים ומצביעים על כך שגודל סט הבחירה אכן רלוונטי ומשפיע על איכות הבחירה של ילדים. העדויות להשפעות שונות של גודל הסט על איכות הבחירה בגילאים שונים, מדגישות את חשיבות ההתאמה של סט הבחירה ליכולותיו של הילד הבוחר. המחקר הנוכחי גם מהווה עדות נוספת לכך שילדים יכולים לדווח באופן תקף

על תחושותיהם, אפילו בגיל צעיר מאוד. המדדים שפיתחתי יכולים לשמש להמשך הרחבת ההבנה של השפעת מאפיינים נוספים של סט הבחירה על איכות הבחירה של ילדים. ככל שניטיב להבין את הגורמים המשמעותיים בסט הבחירה, כך נוכל להגדיל את הסיכוי לשימוש מושכל ומיטיב הגלום במתן אפשרויות בחירה לילדים. יחד עם זאת, ההשפעה המשמעותית של לחץ זמן על מידת הבחירה שמבוגרים נוטים לאפשר מעידה שייתכן שהבנה טובה יותר של יכולות הילד להתמודד עם סט הבחירה לא בהכרח תשפר את אפשרויות הבחירה הניתנות לו. מחקרי המשך יכולים לבחון את עוצמת ההשפעה של גורמים נסיבתיים אחרים כמו לחץ חברתי וכד' על הנטייה של מבוגרים לאפשר בחירה, כמו גם הערכת שיעור המצבים שבהם ילדים אכן עשויים לזכות באפשרות בחירה מותאמת עבורם (כזו שנעשית ללא לחץ זמן, למשל).

תוצאות המחקר הנוכחי יכולות להעלות גם תרומות מעשיות. הורים ומחנכים יכולים לנצל את המידע הזה כדי להתאים טוב יותר את סט הבחירה עבור ילדיהם או תלמידיהם. קובעי מדיניות, ובכללם הרשות להגנה על הצרכן, צריכה לשקול לקחת בחשבון את הרגישות של ילדים למספר אפשרויות הבחירה בקביעת המלצות או בקידום רגולציה כדי להגן על אוכלוסייה פגיעה זו, ומדיניות בחינוך יכולה לקדם יישום של אפשרויות בחירה תואמות גיל ויכולת בתוך מצבי למידה שונים המאפשרים זאת. המחקר הנוכחי מציע תובנות להשפעת גודל סט הבחירה על איכות הבחירה של ילדים משני היבטים: התנהגות הורית מחד, ויכולתם של הילדים להתמודד עם גדלים שונים של סטים בפועל מאידך. למידת השפעת גודל הסט משני ההיבטים המרכזיים האלו יכולה לקדם שימוש מושכל במתן אפשרויות בחירה לצורך קידום ההתנהגות והחוויה החיובית המידיות של הילד, כמו גם מטרות ארוכות טווח כגון התפתחות תחושת המסוגלות והאוטונומיה שלו, שיובילו להתפתחות פסיכולוגית בריאה יותר.

עבודה זו נעשתה בהדרכתו של פרופ׳ איל פאר

עומס הבחירה בקרב ילדים:
איך גודל הסט משפיע על תפיסת איכות ההחלטה של ילדים

חיבור לשם קבלת תואר דוקטור לפילוסופיה

מאת

הילה שצ'ופק

הוגש לסנט האוניברסיטה העברית בירושלים

06/2021

עומס הבחירה בקרב ילדים:
איך גודל הסט משפיע על תפיסת איכות ההחלטה של ילדים

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