Waiting for a treat. Studying behaviors related to self-regulation in 18- and 24-month-olds

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A B S T R A C T

The ability to delay gratification – conceived as an early expression of self-regulation – develops in the second half of the second year of life. We used inductive methodology to identify different behaviors and set of behaviors performed by children while waiting for a treat. We asked which sets are more effective when it comes to successfully delaying gratification and how all observed sets change during toddler age. 130 children were tested twice – at 18 and at 24 months – using a Snack Delay Task. We observed 20 different behaviors and distinguished 4 sets of behaviors. The most important and effective set for delaying gratification in 18 and in 24 month olds was the set called Attention and Movements. We concluded that growth in the ability to delay gratification resulted from increased ability to overcome temptation by using an active strategy mainly based on attention.

The experiencing of discrepancies between our own desires or aims and the restrictions imposed by a situation play an inevitable role in our individual and social functioning. This forces us to learn self-regulation skills, i.e. to adapt our emotions and behaviors to conform to situational and social standards. Children must learn to monitor and modulate their cognition, emotions and behavior in order to accomplish their own objectives and/or adapt to the cognitive and social demands of any situation (Berger, Kofman, Livneh, & Henik, 2007). Research on self-regulation in infancy and childhood, including research on the first signs of this process, should not overlook the two main distinguishing features of self-regulation − the target of the regulation (behavior or internal states) and the extent to which the self-regulation is spontaneous, as opposed to voluntary (Spinrad, Eisenberg, & Gaertner, 2007). We choose to emphasize that in childhood self-regulatory processes are spontaneous and behavioral in two senses. First, they may be viewed as targeted behavior and second, they are expressed on a behavioral level, for example as the first signs of effortful control in the second year of life (Rothbart & Bates, 1998). We therefore decided to concentrate on observing children's behaviors during a potentially tempting situation. Kochanska and Knaack (2003) highlighted waiting for a reward or pleasant event, which is one of the five components of effortful control, is an important ability that could be measured by means of the delay of gratification paradigm. Using this paradigm, we asked 1) if the ability to delay gratification – believed to be an early expression of self-regulation develops in the second half of the second year of life and 2) what such young children do while waiting for a treat, i.e. how they behave in this situation. Moreover, we used an inductive methodology (Babbie, 2004) to observe all the behaviors performed by children during this task and asked if 1) sets of behaviors are distinguishable and 2) how are they related to effective delay of gratification.

Mischel et al. (Mischel, 1974; Mischel & Baker, 1975; Shoda, Mischel & Peake, 1990) first developed the classic delay task in which children are told that if they wait for the experimenter to return they will receive a larger treat (e.g. more food) than if they do

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not wait, in which case they are given a smaller treat. It was also Mischel et al. (Ayduk et al., 2000; Casey et al., 2011; Mischel, Shoda, & Peake, 1988; Shoda et al., 1990) who not only proved that intensive development of self-regulation takes place in preschool years but also that it is related to academic and cognitive competence in adolescence or even in adulthood (for a review of Marshmallow studies see: Zelazo et al., 2013; for the predictive power of this task, see: Duckworth, Tsukayama, & Kirby, 2013). Certainly, we may acknowledge the importance of research on behaviors related to the first signs of self-regulatory abilities, which can be observed during tasks in which not only preschoolers but even toddlers have to postpone immediate gratification even if no internal conflict exists between the larger and smaller reward (Duckworth & Steinberg, 2015).

Kochanska, Murray, and Harlan (2000) used a Snack Delay Task and a Wrapped Gift Task to study the development of effortful regulation in children as young as 22–33 months. In the first task, the child was meant to wait to eat an M & M placed under a transparent cup until he/she heard the sound of a bell (10–30 s). In the second task, the child was supposed to avoid looking while the tester was packing a present (60 s) and wait until the tester returned before opening it (180 s). The research revealed a correlation between improvement in the level of task completion and increased age (e.g. extended time of delay or increased number of delayers, i.e. children who wait until the end of the task). The delay of gratification paradigm is an important measure of self-regulatory abilities in children of toddler age (see: Kochanska, Coy, & Murray, 2001; Spinrad et al., 2007; Vaughn, Kopp, & Krakow, 1984), especially as it also allows the observation of sets of behaviors or, as many authors have proposed, "strategies" used by children during the waiting time.

Such coping strategies were first indirectly proposed by Mischel, Ebbesen, Raskoff, & Zeiss, (1972); Metcalfe & Mischel, 1999; Shoda et al., 1990), who differentiated between high-temptation focus children, who directed their attention toward the reward, and their low-temptation counterparts, who use other strategies that turned out to be more effective, such as obscuring the treat or distraction. Moreover, in the research undertaken by Grolnick, Bridges, and Connell (1996), different child behaviors were observed during the Gift Delay Task and Food Delay Task. These strategies were labelled as the follows: active engagement with a substitute toy (e.g. active play), passive use of objects and exploration (e.g. exploring the room), symbolic self-soothing (e.g. self-directed statements), physical self-soothing (e.g. thumb sucking), other-directed (e.g. touching the parent) and focusing on the object causing a delay in gratification (e.g. asking about the object). The most frequently employed strategy was active engagement with substitute items. It was observed that 2-year-olds are capable of diverting their attention toward other nearby objects. Similarly, Steelandt, Thierry, Broihanne, and Dufour (2012) demonstrated that even 2-year-old children were able to apply strategies to shift their attention from the rewards (e.g. looking elsewhere, talking with the parent, playing alone). The use of "non-treat-focused" strategies was associated with a longer delay in gratification. On the basis of these strategies, we can hypothesize that the effectiveness of self-regulatory skills measured by means of the delay of gratification paradigm is related to particular sets of behaviors presented by children during the delay period or the increased effectiveness of these sets of behaviors, i.e. their positive relation to a longer time of delay or successful delaying. This enables us to label these sets with the term: "strategies".

Research clearly indicates that the ability to deploy attention flexibility is a key competence required for effective waiting (Mischel et al., 1988; Sethi, Mischel, Aber, Shoda, & Rodriguez, 2000). Johansson, Marciszko, Gredebäck, Nyström, and Bohlin (2015) emphasize that self-regulatory constructs are related to executive functioning and effortful control. Other researchers have also shown that attention processes constitute a developmental foundation for self-regulatory functions, executive functioning and effortful control (Diamond, 2013; Garon, Bryson, & Smith, 2008; Johansson et al., 2015; Rothbart, Derryberry, & Posner, 1994). Garon et al. (2008), in particular, emphasized that attention processes are not only related to executive functioning, but that attention in infancy seems to constitute a developmental foundation for these functions. Johansson et al. (2015) showed that sustained attention at the age of 1 year was a predictor of individual differences in 2-year-olds' self-regulation measured using an eye-tracking version of the A-not-B task and parental ratings of effortful control. Cole et al. (2011) have also shown that the ability to shift attention away from the desired object develops between 18 and 48 months. In comparison to 36- and 48-month-olds, 18- and 24-month-olds are less able to shift their attention and anger more easily (or faster) when they have to wait for the desired object. When faced with the presence of treats during a waiting period, long-delaying children divert their attention away from the treats. In contrast, children who fix their attention on the treats during the delay period are most likely to terminate the wait early (Calkins & Johnson, 1998; Cole et al., 2011; Peake, Hebl, & Mischel, 2002). Kochanska, Murray, and Harlan (2000) found that focused attention, coded as the extent to which toys are looked at and manipulated, predicted, at 9 months of age, effortful control at 22 months. Self-initiated shifting of attention away from a desired but restricted object involves effortful control of attention, which is viewed as central to self-regulation (Calkins, 2007; Eisenberg, Smith, & Spinrad, 2011; Posner & Rothbart, 2000; Rueda, Posner, & Rothbart, 2011; Sheese, Rothbart, Posner, White, & Fraundorf, 2008). Rothbart, Sheese, Rueda, and Posner (2011) concluded that evidence for regulation by the anterior attention network does not begin to appear until the age of 18–20 months. The second half of the second year of life seems to be a crucial period when attentional strategies important for the development of self-regulation in the delay of gratification paradigm could be observed. On a behavioral level, this means that in the delay of gratification paradigm, we could observe many behaviors in children aged 18 months and 2 –years, and some of them—especially those related to attention—would probably serve as effective coping strategies, enabling a child to be more effective in delaying or waiting for a treat.

To sum up, it is worth mentioning the strong emphasis placed in previous research on describing self-regulatory, especially attentional, strategies defined as indices of voluntary or at least effortful behaviors. However, we would like to stress that more suited to this kind of research is an approach involving the analysis of toddler behaviors using a broader atheoretical strategy with no interpretation at the entrance stage. We decided to use an inductive strategy (Babbie, 2004) with a bottom-up approach and derived sets of behaviors based on all observed behaviors in the delay of gratification paradigm. As we are interested in the development of self-regulation, we collected data longitudinally to ask if children in the second half of the second year of life are able to delay gratification and whether this ability increases in that period. We hypothesized a positive response to both these questions. Our third