



How to bridge the intention-behavior gap in food parenting: Automatic constructs and underlying techniques

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ARTICLE INFO

Article history:

Received 17 August 2017
Received in revised form
15 December 2017
Accepted 15 December 2017
Available online 24 December 2017

Keywords:

Automatic cues
Children
Food parenting
Obesity

ABSTRACT

Although parents often report positive intentions to promote and create a healthy food environment for their children (e.g., setting limits to snacks offered), they also experience difficulties in translating these intentions into actual behaviors. In this position paper, we argue that automatic processes explain an important part of the gap between parents' intentions and their actual food parenting behaviors. We provide a conceptual framework in which we hypothesize that automatic effects on food parenting occur through two key interrelated constructs: habits (key outcome construct) and volitional regulation behaviors (key mediating construct). Moreover, we discuss potentially important impulse-focused techniques that may directly change habits (e.g., nudging; inhibitory control training) or indirectly through volitional regulation behaviors (e.g., implementation intentions; mental contrasting). We make use of the literature on the role of intention-behavior discordance in general health behaviors and discuss implications for food parenting practices. Our framework provides a dual process view towards food parenting and may help to explain when and why parents are likely to engage in (un)healthy food parenting behaviors. In addition, this framework may hopefully stimulate research on (combinations of old and) new techniques to promote good food parenting behaviors.

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Contents

1. Introduction	192
2. Our conceptual framework and hypotheses	192
3. Article outline	193
4. Automatic pathway influencing food parenting	193
4.1. Habits	193
4.1.1. Nudging	193
4.1.2. Inhibitory control training	194
4.2. Volitional regulation behaviors	195
4.2.1. Implementation intentions	195
4.2.2. Mental contrasting	196
5. Manipulation of both key automatic and reflective constructs	196
6. General conclusion	197
References	198

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1. Introduction

Childhood obesity is a serious public health epidemic in most industrialized countries (Ebbeling, Pawlak, & Ludwig, 2002; Lobstein, Baur, & Uauy, 2004; Wang & Lobstein, 2006). The rise in childhood obesity in the past decades has been explained by the “obesogenic” and “toxic” effects of the current modern environment. This environment encourages sedentary lifestyles and provides an abundance of easily accessible, energy-rich foods and drinks, often in large portion sizes (Lobstein & Frelut, 2003). The home environment encompasses a range of potential influences on children’s eating behaviors. In this specific micro-system, food parenting practices, which refer to food-specific, discrete, goal-directed observable acts of parenting (Baranowski et al., 2013) play an important role in the development of children’s dietary behavior and Body Mass Index (BMI) (Larsen et al., 2015; Vaughn et al., 2016). According to Vaughn and colleagues, there are three overarching dimensions of food parenting: structure, coercive control and autonomy support. Structure refers to practices that may directly affect the child food environment (e.g. food rules and limits, monitoring, routines, modeling and food availability and accessibility). Coercive control refers to overly controlling practices (e.g., restriction, threats, instrumental and emotional feeding) aimed at controlling child’s eating, emotion or behavior. Finally, autonomy support refers to positive child-centered practices (e.g., encouragement, praise, nutrition education, reasoning, and negotiation).

An important starting point for the current position paper is that although most parents often report positive intentions to promote ‘structure’ in food parenting and create a healthy food environment for their children (Rylatt & Cartwright, 2016), they also experience difficulties in translating these intentions into actual behaviors. While most parents, for example, aspire to set limits on snacks offered to their children, they often struggle to do so (Fisher et al., 2015; Gerards, Hummel, Dagnelie, de Vries, & Kremers, 2013; Herman, Malhotra, Wright, Fisher, & Whitaker, 2012). Similarly, most parents intent to create positive eating situations and avoid the use of coercive control strategies, but some parents eventually end up doing otherwise. The gap between parents’ intentions and their actual food parenting behaviors can be referred to as the ‘intention-behavior gap’. It has been proposed that automatic, and mostly unconscious, processes play an important role in health

behaviors, particularly the intention-behavior gap (Marteau, Hollands, & Fletcher, 2012; Sheeran & Webb, 2016; Sheeran, Gollwitzer, & Bargh, 2013). The aim of this position paper is to present the rationale for a new conceptual framework emphasizing the importance of automatic processes for food parenting behaviors, bridging the potential gap between food parenting intentions and behaviors. We believe this framework can stimulate research on new techniques to promote good food parenting behaviors. The summary of knowledge and evidence underlying this paper is derived primarily from studies that examine how automatic constructs and underlying techniques can explain and influence health behavior (i.e. eating behavior). We consider the utility of these constructs for understanding food parenting behaviors and the food parenting intention-behavior gap. It is important to note that this paper does not provide a systematic review of the literature, but rather provides arguments for the inclusion of automatic constructs and underlying techniques in future food parenting (intervention) research.

2. Our conceptual framework and hypotheses

Theoretically, our conceptual framework (see Fig. 1) is in line with a dual process view (Hofmann, Friese, Wiers, Id, & Wiers, 2008; Strack & Deutsch, 2004), where two different systems of information processing (i.e., automatic and reflective) underlie the production of food parenting behaviors. The focus of our framework, however, is on explaining constructs and relevant techniques from the automatic route. The framework does not specify key reflective constructs or underlying techniques, as previous research drawing from social cognitive perspectives (e.g., the Theory of Planned Behavior) has already given this significant consideration (Hagger, Chan, Protogerou, & Chatzisarantis, 2016; Michie et al., 2013).

Fig. 1 presents two main hypotheses regarding the formation and modification of food parenting behaviors. First, parental habits in response to food (cues) and children’s emotion/eating moderate the food parenting intention-behavior gap. Second, impulse-focused techniques (e.g., nudging; inhibitory control training) influence parental habits directly, while reflective techniques (e.g., implementation intentions; mental contrasting) change parental habits indirectly through volitional regulation behaviors. Thus, these techniques for modifying impulsive processes (Van Beurden,

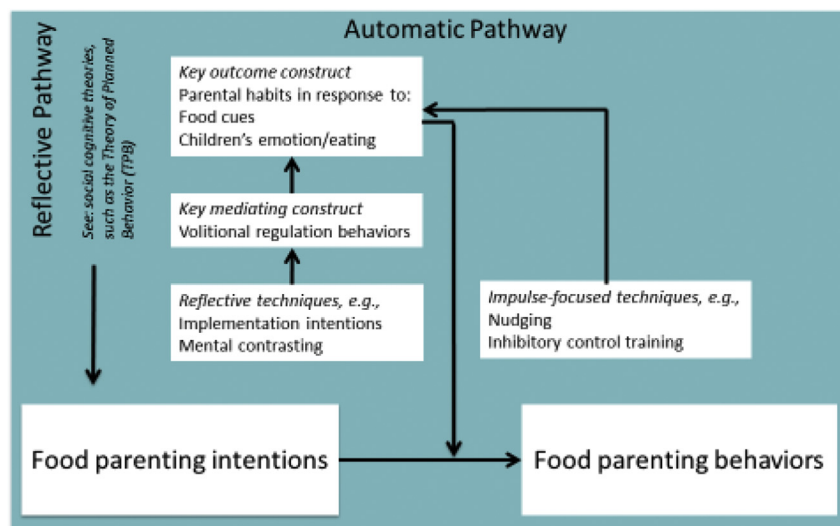


Fig. 1. Conceptual framework of automatic constructs and underlying techniques that may bridge the intention-behavior gap in food parenting.

Greaves, Smith, & Abraham, 2016) may help bridge the food parenting intention-behavior gap by changing parental habits. A final hypothesis not specifically depicted in Fig. 1 is that manipulating key reflective constructs (e.g., attitudes, norms or self-efficacy) (Hagger et al., 2016) and key automatic constructs (i.e., habits and volitional regulation behaviors) will have greater influence on food parenting behavior than changing constructs from either the automatic or reflective pathway alone. Our choice of a moderating framework (intention x parental habits) illustrates this final hypothesis.

3. Article outline

In the following section we present the rationale for our conceptual framework and hypotheses by shortly discussing our key automatic outcome construct (i.e., habits) and mediating construct (i.e., volitional regulation behaviors). Moreover, we provide a broad overview of the literature on automatic behavioral techniques (i.e., nudging; inhibitory control training; implementation intentions; mental contrasting) that might be relevant in changing these key automatic constructs. We explain our choice of proposed techniques for influencing food parenting behavior and the intention-behavior gap and discuss the mechanisms involved. Thereafter, we provide evidence suggesting that manipulating key reflective and automatic constructs will have greater influence on health behavior (i.e., eating behavior) than changing constructs from either the automatic or reflective pathway alone, ending his part with related suggestions for food parenting. Finally, we end with conclusions and recommendations for future research.

4. Automatic pathway influencing food parenting

4.1. Habits

Habits are defined as actions that occur in response to stimuli without necessarily bringing to mind the goal of that action (Marteau et al., 2012) or mechanisms prompted automatically by situational cues, as a result of learned cue-behavior associations (Gardner, 2015). Studies from the literature on general health behaviors have observed that habits importantly influence health behaviors and often moderate the relationship between intention and behavior (Gardner, de Bruijn, & Lally, 2011). Similarly, we propose that parental habits around food cues and emotional reactivity to children's eating and emotions may importantly impact food parenting and moderate the food parenting intention-behavior gap. To the best of our knowledge, these propositions have not been examined to date. However, imaging studies illustrate the important role of brain reward region responsivity to food cues in predicting eating characteristics and future weight (Stice & Yokum, 2016). Moreover, parental eating characteristics are associated with food parenting (McPhie, Skouteris, Daniels, & Jansen, 2014; Saltzman et al., 2016). Thus, parents with increased responsivity to food cues, compared to parents without this responsivity, may have an increased risk of automatic and situationally induced unhealthy food selection and intake that may lead to food parenting intention-behavior incongruence (e.g., unintended food modeling and/or food availability and accessibility). Moreover, prospective food parenting research suggests considerable child effects on food parenting behaviors (e.g., Jansen et al., 2017). Though speculative, these child effects may arise because of automatic reactions of parents to children's eating and emotion (e.g., unintendedly buying candy or snack food or over-controlling reactions in response to child fussiness). In general, we assume that the impact of intention on behavior diminishes as unwanted habit strength increases and that more insight into and prevention of these automatic parental

reactions may help in closing the food parenting intention-behavior gap.

McGowan and colleagues developed an intervention to train healthy parental habits (i.e., serving fruit/vegetables, healthy snacks, and non-sweetened drinks) aimed at making the food parenting practice itself habitual. This intervention trained parents to formulate specific food parenting goals. Thus it was not developed to change food parenting habits directly, but rather indirectly through volitional self-regulatory behaviors. Parents received information on habit formation and specific tips (e.g., having a specific plan and identifying feasible triggers or prompts to habits). Compared to a control condition the intervention successfully modified these food parenting behaviors and, subsequently, positively affected children's diets (McGowan et al., 2013). However, it has generally been acknowledged that even when someone has adopted a new pattern of behavior, older, habitual patterns may arise and overrule these newly established behaviors (Rothman, Gollwitzer, Grant, Neal, & Wood, 2015). In our framework, unintended and presumably largely automatic cue-learned associations (i.e., in response to food cues and children's emotion or eating) are proposed to moderate discrepancies between food parenting intentions ('I want to do X') and behaviors ('but I often do Y (something incongruent)').

Many of the parenting habits that cause discrepancies between food parenting intentions and behaviors may arise because the reward value of the response outcome (e.g., buying snack food) is conditioned by context cues (e.g., seeing the snack food restaurant) (Gardner et al., 2011, 2015). For instance, parents may aspire and/or intend to provide their child with low energy-dense foods, but may instead buy energy-dense foods out of habit while passing by a certain restaurant on a Friday evening. Or parents may intend to refrain from giving children candy between meals but may end up doing so as a habitual reaction to children's requests or begging to eat such foods. These examples refer to situational food cues and child behavior cues that may trigger habits and unwanted food parenting behaviors that are incongruent with parental intentions. To change habits that can alter the relationship between intention and behavior, parents need to acquire skills to inhibit unhealthy motivated cue associations (e.g., resisting the temptation to visit the snack food restaurant) and to establish new healthy parental habits in reaction to food and child's eating or emotion (e.g., staying calm after child's screaming for food).

Cognitive strategies such as distraction and avoidance strategies have proven useful in controlling affectively based habitual responses. Scholars often cite the well-known delay of gratification experiment in which children were better able to resist immediate consumption of marshmallows when they had better cognitive avoidance strategies (Mischel, Shoda, & Rodriguez, 1989). Nudging can be seen as a specific avoidance strategy that may distract people's attention to the 'right' cue. Inhibitory control is another technique where people are specifically trained to inhibit and avoid the performance of the habitually cued response. Both techniques (i.e., nudging and inhibitory control training) may be regarded as impulse-focused techniques, as they attempt to modify the generation or strength of impulses triggered by specific stimuli (Van Beurden et al., 2016). In the following section, these two impulse-focused techniques will be explained and explored for their potential utility in shaping food parenting habits, which may sustain food parenting behaviors that close the food parenting intention-behavior gap.

4.1.1. Nudging

Nudging interventions are generally defined as interventions that involve altering the properties or placement of objects or stimuli within micro-environments with the intention of changing

health-related behavior (Vlaev, King, Dolan, & Darzi, 2016). Restructuring the physical environment is a common type of nudge behavioral change technique (Michie et al., 2013) which might particularly be useful for changing habitual reactions (Lally & Gardner, 2013; Marteau et al., 2012). In essence, nudging goes with the grain of human nature instead of trying to change it (Vlaev et al., 2016). Nudges are simple changes in the presentation of choice alternatives that make the desired choice the easy, automatic, or habitual choice. For instance, nudges that help ignore unhealthy food cues, like storing unhealthy food out of sight, and that provide parents with strategies to keep calm in response to a child's fussiness during eating could support the prevention of unintended parental habitual reactions to food cues and child's eating and emotion. Papies and Hamstra used specific diet reminders (i.e., diet-related words) on a restaurant menu to increase healthy food choices (Papies & Hamstra, 2010). Diet reminders at home may have similar effects. Thus, in line with our framework (see Fig. 1), we propose that nudges may be used to change parents' own habitual reactions (i.e., in response to food cues and children's eating behaviors or emotion). Nevertheless, nudges may also be aimed at performing healthy parenting practices (e.g., being a healthy model), or may involve a food parenting skill that promotes healthy eating among children. For example, parents may create reminders in the kitchen for their children (e.g., an attractive water tap) to make the 'right' choice.

By creating nudges, the automatic cues are directly adapted to change unhealthy or undesirable habits. De Ridder suggests that three conditions are essential for developing effective nudges (de Ridder, 2014). First, nudges should respect autonomous choice and include alternative choices. For instance, the provision of a fruit bowl on a table still allows the autonomous choice of selecting unhealthy snacks in the kitchen. According to self-determination theory (Ryan & Deci, 2000), autonomous motivation is hypothesized to have a stronger influence on behavior maintenance than controlled motivation (e.g., parents who restrict certain foods). Second, people must be aware of the nudge to some extent. If people pay no attention to the nudge then it probably won't work. Overall, this suggests that we should *not* make parents 'passive' products of nudges, but instead should actively involve them in developing effective nudges that make the most sense for them. Third, the nudge should lead to the most desired choice. In other words, the desired choice is the default and should be easy and preferably also attractive. A recent systematic review supports the idea of 'food positioning' as a promising nudge for promoting the selection of healthy food choices (Bucher et al., 2016). We argue that parents can be trained to make these kind of adaptive nudges. As suggested by De Ridder (de Ridder, 2014), collaborations between scientists, psychologists or practitioners, and the creative industry are the best way to invent creative nudges. For the specific field of food parenting, parents should also be involved (i.e., co-creation) (Greenhalgh, Jackson, Shaw, & Janamian, 2016).

While 'food positioning' is often conceptualized as a type of nudge and discussed in the context of nudging healthy choices (Marteau et al., 2012; Papies, 2016), portion sizes (Marteau, Hollands, Shemilt, & Jebb, 2015) and health goal priming (i.e., the activation of a health goal as a mental representation by external cues) (Papies, 2016; Weingarten et al., 2016) are not typically considered nudges. Although they aren't often thought of like nudges, they probably act in the same way. Parents can be trained to develop food parenting habits around increasing children's portion sizes of healthy foods and decreasing portion sizes of unhealthy foods. Additionally, for some people, health goal priming (e.g., prime words related to healthy parenting) might be a promising technique, but it should be noted that individuals with less nutrition knowledge and a lower level of education may not be able

to identify health goal primes well (Forwood, Ahern, Hollands, Ng, & Marteau, 2015; Papies, 2016).

4.1.2. Inhibitory control training

Inhibitory control training (i.e., stop signal or go/no-go tasks) is a paradigm that has been used to train participants to inhibit motor responses to pictures of high-calorie foods. Recent meta-analyses provided evidence that food-specific inhibition training decreased unhealthy food intake among adults (Jones et al., 2016; Turton, Bruidegom, Cardi, Hirsch, & Treasure, 2016). Effects of inhibitory control training on food intake were greater among participants who were attempting to restrict their food intake (Jones et al., 2016). Hence, inhibitory control training is regarded as an innovative and potentially promising technique for breaking unhealthy habits and treatment for obesity (Stice, Lawrence, Kemps, & Veling, 2016). It might also be a promising way of teaching vulnerable parents (i.e., obese with high appetite) and motivated parents (i.e., intention to create a healthy child's food environment) to change their own unhealthy food habits in the presence of their children. By increasing their own food inhibitory control, parents can create healthier home food environments that are more in line with their intentions by avoiding unhealthy food modeling and decreasing the accessibility of unhealthy foods (Larsen et al., 2015; Vaughn et al., 2016). Parents of young children, for instance, might chose to consume some types of snacks out of sight of their children. However, older children may be more aware of their parents snacking behaviors. Inhibitory control training might thus be a promising solution to help parents avoid unhealthy food modeling, particularly for older children where 'eating out of sight' becomes more difficult. Moreover, an effect of inhibitory control training to decrease food intake has shown to be mediated by decreased evaluation of the palatable food (Veling, Aarts, & Stroebe, 2013). More research is necessary comparing different mechanisms explaining inhibitory control effects (e.g., decreased evaluation of food; inhibition of motor system or decreases in attention to food) (Stice et al., 2016). Decreased evaluation or food attention mechanisms might be particularly useful for creating healthier family food environments and avoiding accessibility of unhealthy food. Parents who experience decreased evaluation of or attention to unhealthy palatable foods might be less likely to habitually buy these foods, thereby creating a healthier food environment in line with their intentions.

In contrast to rather consistent evidence for food-specific inhibition training (Jones et al., 2016; Turton et al., 2016), there is mixed evidence for approach-avoidance training (AAT), a paradigm that trains responses both away from unhealthy food (by pushing a joystick away) and towards another healthy food or neutral cue (by pulling a joystick). To date, three studies (including one which had 3 different trials) found no effects of this type of training on amount of food consumed (Becker, Jostmann, Wiers, & Holland, 2015; Dickson, Kavanagh, & MacLeod, 2016; Kakoschke, Kemps, & Tiggemann, 2017) while two other studies found reduced unhealthy food intake following AAT (Fishbach & Shah, 2006; Schumacher, Kemps, & Tiggemann, 2016). It is so far unclear why these studies revealed mixed results. According to Stice and colleagues, differences in the control condition across studies may explain different AAT results (Stice et al., 2016). The studies that observed effects had a control condition in which participants were trained to approach high-caloric food, whereas the other null studies did not. Stice and colleagues also mentioned that inconsistent findings may be due to methodological aspects of the paradigm in which participants are trained both to approach and avoid certain food cues. It might be better to fully focus on avoidance or inhibition, as is the case with inhibitory control training. In support of this suggestion, general avoidance techniques appear to

be promising for changing habitual affective cuing (Gardner et al., 2011, 2015). Nevertheless, a recent study has found effects on healthy food intake after an AAT only for impulsive people, suggesting that an AAT might be a promising solution for some people (Kakoschke et al., 2017) and some parents.

Attentional Bias Modification (ABM) is another cognitive bias modification (CBM) technique that appears promising for reducing the overall intake of unhealthy foods. This paradigm also balances approach and avoidance, as is the case with an AAT. In an ABM paradigm (e.g., dot-probe) participants are asked to respond as quickly as possible when a visual dot appears on the screen. This visual dot has been subsequently paired with healthy (experimental condition) or unhealthy (control condition) food most of the time, with both healthy and unhealthy food being presented together on one screen, so that participants attention is trained towards or away from unhealthy food (e.g., chocolate). Although reviews suggest that ABM training reduces unhealthy food intake among adults (Kakoschke et al., 2017; Turton et al., 2016), additional research is needed, particularly because all (eating domain) studies that found effects did not have or had a suboptimal control group (Becker, Jostmann, & Holland, 2018).

4.2. Volitional regulation behaviors

Volitional regulation behaviors refer to monitoring behaviors and action plans to maintain or hone intentions (Rhodes & Yao, 2015), increasing the automaticity by which the intended behavior is enacted (Webb, Sheeran, & Luszczynska, 2009). We suggest that having a clear plan of when and what to provide as a snack to children decreases the chance that snacks will be offered every time the child asks for one. In general, ‘monitoring goal progress’ and ‘planning’ are important constructs which ensure that actual changes in health behavior will be achieved (Harkin et al., 2016; Sniehotta, Scholz, & Schwarzer, 2005). To date, the literature in this area indicates that ‘monitoring’ and ‘planning’ approaches to parenting can be adopted. When parents were trained to use self-regulation skills to monitor their general parenting behaviors they were more likely to generalize their skills to untrained situations than when they only received instruction without explicit monitoring of own behaviors (Sanders & Glynn, 1981). Meta-analyses of the well-known Triple P positive parenting program have demonstrated positive outcomes for parents and children by improving positive parenting and control through goal setting (i.e., planning approach) in child behavioral and discipline domains (Nowak & Heinrichs, 2008; Sanders, Baker, & Turner, 2012). More recently, the *lifestyle* Triple P program has been modified to intervene on volitional regulation behaviors and action planning for changing lifestyle parenting behaviors (Gerards et al., 2012, 2015). However, this program does not make use of implementation intentions (i.e., ‘if-then plans’) or mental contrasting to make planning more specific.

We suggest that implementation intentions and mental contrasting are useful strategies for bridging the gap between food parenting intentions and behavior. Below we will explain these techniques and discuss whether and how implementation intentions and mental contrasting may support planning and volitional parental regulation behaviors in the context of the food parenting intention-behavior gap. It is important to keep in mind that these self-regulatory techniques may also support the development of healthy parenting habits and automatic processes, which is why these more reflective techniques have been included in the automatic pathway. They refer to modifications in the existing cognitive structures that underlie people’s unconscious health behavior (Papies, 2016) and they require volitional regulation in that they aim at identifying, suppressing or otherwise

managing urges or cravings before they are acted on (i.e., reflective techniques) (Van Beurden et al., 2016).

4.2.1. Implementation intentions

Implementation intentions include if-then plans specifying where, when, and how people will achieve their goals. An example of an implementation intention is “I will drink water instead of sugary drinks at mealtime”. Implementation intentions are one of the most best-validated approaches for translating intentions into action (Sheeran & Webb, 2016). Previous systematic reviews have shown the benefits of implementation intentions for reaching health behavior change and closing intention-behavior gaps (Gollwitzer & Sheeran, 2006) and for promoting changes in specific health domains, including healthy eating and fat intake (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011; Turton et al., 2016; Vila, Carrero, & Redondo, 2017). Notably, research has shown that the development of implementation intentions helps to regulate people’s subjective emotional responses (e.g., ‘staying calm’) (Gallo, McCulloch, & Gollwitzer, 2012) and may partially change people’s objective physiological arousal (Azbel-Jackson, Butler, Ellis, & van Reekum, 2016). Research using smartphone apps to support habit formation suggests that implementation intentions might be more beneficial than general self-tracking and monitoring (Stawarz, Cox, & Blandford, 2015). Previous research has also suggested that more effective planning interventions appear to be characterized by “if-then” rather than by “global” formatted plans (Hagger & Luszczynska, 2014).

We suggest that forming implementation intentions might also be a promising strategy that can be used in parenting interventions to facilitate volitional regulation behaviors and (food) parenting habits. By making healthy parenting planning specific (if-then), it will have greater chances to succeed. In general, implementation intentions that refer to alternative or replacement behaviors appear to be more effective than those specifying a plan to avoid an unwanted behavior (Adriaanse et al., 2011; Sullivan & Rothman, 2008). This would mean that, instead of focusing on unwanted behaviors, implementation intentions would develop alternative parental habitual reactions to food cues or children’s emotion or eating (e.g., taking another route from work to home to avoid passing by the snack food restaurant or staying calm when a child refuses to eat vegetables or requests unhealthy snack foods). Thus, if-then plans should be developed to counter and replace the unintended habitual response with a more healthy one. Nevertheless, it should be noted that previous studies which found greater support for alternative goals than avoidance goals involved mostly self-selected rather than manipulated goals. Therefore, it is difficult to definitely conclude that implementation intentions are moderated by ‘approach vs. avoidance goals’ (Prestwich et al., 2014).

Although forming an “if-then” plan is a conscious act, the mechanism by which implementation intentions operate is hypothesized to be automatic and unconscious (Hagger & Luszczynska, 2014). Forming implementation intentions may increase the accessibility of situational cues and may strengthen the cue-action link, ultimately resulting in the automatization of the behavior. One important moderator of implementation effects is to plan reminders (Prestwich et al., 2014). This is in line with research supporting the importance of monitoring goal process (Harkin et al., 2016). Hence, when specifying implementation intentions to counter the unwanted habitual response, it seems important to use reminders and by doing so monitor whether specific plans made by implementation intentions have been followed over time. For instance, when parents are going to town with their children they might receive a reminder about ‘saying no’ when they unexpectedly are asked by the store staff whether their child is allowed to get a cookie.

A recent meta-analysis found that forming implementation intentions helps people with mental health problems achieve various goals (Toli, Webb, & Hardy, 2016). Many parents of obese children are obese themselves (Whitaker, Jarvis, Beeken, Boniface, & Wardle, 2010). Further, obese people more often experience mental health problems (Luppino et al., 2010), and parental mental health problems are linked to lower parental self-efficacy and parenting skills (Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Wilson & Durbin, 2010) as well as greater risks of child obesity (Benton, Skouteris, & Hayden, 2015; Tate, Wood, Liao, & Dunton, 2015). Although more research is needed to evaluate potential causality or influence of other third variables (e.g., poverty or stress exposure), findings to date generally indicate that parents' mental health influences parenting and subsequent a child's obesity risk. In this regard, the technique of implementation intentions might be particularly efficacious for increasing volitional regulation behaviors and countering unwanted habitual parental responses to food cues and child's emotion or eating among parents with mental health issues.

4.2.2. Mental contrasting

According to fantasy realization theory, mental contrasting promotes desired behaviors by helping people utilize their expectations of reaching the desired future outcomes (Oettingen, Pak, & Schnetter, 2001). Mental contrasting is a strategy used to help people identify an important aspiration (e.g., 'serving less unhealthy meals'), imagine the positive future when those aspirations are fulfilled (e.g., 'being a better mum; having healthier children'), and then mentally contrast the images of a positive future with the current reality that holds them back from realizing the desired future (e.g., 'palatable food cues or lack of time or energy to cook'). Thus, mental contrasting may be useful for understanding the food parenting intention-behavior gap by tapping into automatic processes that require the parent to imagine a desired future, health goal, or food parenting behavior (i.e., goal intention), and to then contrast that intention and goal with the reality that comes between those intentions and desired goal.

Research suggests that one important mechanism by which mental contrasting operates is by increasing perceived clarity about critical cues for the unwanted behavior (i.e., snacking) (Adriaanse et al., 2011). This mechanism importantly explains how mental contrasting may bridge the food parenting intention-behavior gap. Another mechanism may be that people change the meaning that they assign to health promoting behaviors (Kappes, Wendt, Reinelt, & Oettingen, 2013). This mechanism might suggest that mental contrasting may thus even change people's intentions and underlying attitudes or norms. A final mechanism comes from psychophysiological evidence showing that mental contrasting operates by energizing individuals (Sevincer, Busatta, & Oettingen, 2014). However, findings suggest that people who were depleted or mentally fatigued were less likely to mentally contrast than those who were not, and that these depletion effects might be overcome by more or less forcing individuals to use mental contrasting (Sevincer, Schlier, & Oettingen, 2015). This might particularly be important for obese parents with mental health problems who have problems with translating their food parenting intentions into action.

Mental contrasting dieting intentions have been associated with retrospective reports of reductions in calorie intake (Johannessen, Oettingen, & Mayer, 2012). However, most follow-up research has focused on the combined influence of 'implementation intentions' and 'mental contrasting' in producing food consumption changes. For example, in two experiments, Adriaanse and colleagues show that mental contrasting with implementation intentions (MCII) was more effective than mental contrasting or formulating intentions alone in diminishing unhealthy snacking habits (Adriaanse

et al., 2011). We suggest that mental contrasting may provide insight into unwanted habitual parental reactions that may influence incongruent food parenting intention-behavior associations, whereas implementation intentions provide a more prominent and concrete tool to plan new, more healthy cued associations. Future research should examine whether MCII may aid to more successful healthy food parenting interventions that bridge the gap between food parenting intention and behavior.

5. Manipulation of both key automatic and reflective constructs

To this point, this position paper has been overly focused on explaining the automatic pathway and providing 'evidence' for key constructs and underlying techniques of this pathway. Here, we would like to describe some health behavior (i.e., eating behavior) research that may support our final hypothesis where we argue that manipulating both key reflective (e.g., attitudes, norms or self-efficacy) (Hagger et al., 2016) and automatic constructs will have greater influence on food parenting behavior than changing constructs from either the automatic or reflective pathway alone. Below we give two promising examples in which 'predictors' from both the automatic and reflective pathways are included.

First, self-regulatory planning and self-efficacy interventions may operate through distinct mechanisms that exert interactive effects. Volitional regulation interventions mainly intervene on the automatic pathway, whereas self-efficacy interventions include a more reflective motivational mechanism that may operate along the entire continuum from adoption to maintenance (Teixeira et al., 2015). Theoretically, increases in motivation due to enhanced perceived self-efficacy may leave more resources available for self-regulatory efforts (Muraven & Baumeister, 2000) and may also help parents to remember their self-regulatory action plans. Parenting interventions often consider parental self-efficacy to be one of the most important determinants of success. This is not surprising, considering that changing self-efficacy has been shown to have medium-sized effects on health behavior (including diet) (Sheeran et al., 2016). Previous studies have primarily examined the combination of self-regulatory planning and self-efficacy aspects. To date, mental contrasting mainly works when it is paired with high expectations of success; when paired with low expectations of success mental contrasting leads to weaker health outcomes (Kappes, Singmann, & Oettingen, 2012). This suggests that a certain degree of self-efficacy and expectations for success is needed for mental contrasting to be an effective technique. However, these studies did not manipulate self-efficacy or expectations of success. Two other studies have tested the effects of manipulating both 'implementation intentions' and 'self-efficacy' to influence Fruit and Vegetable Intake (FVI). Most studies observed unique and combined effects of implementation intentions and self-efficacy on FVI (Krausukon, Gellert, Lippke, & Schwarzer, 2012; Luszczynska, Tryburcy, & Schwarzer, 2007). Notably, such combined interventions carry the potential to increase long-term FVI (Guillaumie, Godin, Manderscheid, Spitz, & Muller, 2013). Similarly, we suggest that food parenting behaviors (e.g., serving FVI) may be further supported by combining self-regulatory planning focusing on alternative habitual parental reactions (through implementation intentions and/or mental contrasting) with techniques to increase parental feelings of self-efficacy with regard to healthy parenting.

Second, additional techniques from the reflective and automatic pathway have been proposed by the Synergy Expert Group, a group comprising world-leading researchers in health and social psychology and behavioral medicine. This group has considerable promise in social support (a common reflective barrier) as a means

to facilitate more effective execution of planning and implementation intention techniques (Hagger, Luszczynska et al., 2016). To date, research on this topic has only examined whether support moderates the influence of planning interventions. Most studies indeed show that planning interventions are more effective when accompanied by social support. However, future studies should evaluate whether manipulating both social support and volitional regulation behaviors might yield more promising results than manipulating volitional regulation behaviors or support alone.

In general, a sound rationale is needed to explain why a particular combination of 'predictors' will be more effective than others. Above, we have proposed evaluating the combination of self-regulatory planning and self-efficacy interventions, each of which is independently supported by the FVI literature. Future research should be aimed at untangling the 'black box' of predictors and examining specific combinations of intervention techniques that are more or less effective in promoting intended food parenting practices. In line with a dual process framework (Hofmann et al., 2008; Strack & Deutsch, 2004), we suggest that a more balanced and effective approach should take both reflective and automatic constructs into account. The simultaneous manipulation of specific combinations of key determinants from the reflective and automatic pathway may yield most promising effects in terms of shaping parenting habits that bridge the food parenting intention-behavior gap.

6. General conclusion

Most parents have a strong desire to promote the health of their children (Rylatt & Cartwright, 2016). However, some parents have difficulties to translate these healthy parenting intentions into actual behaviors. In this position paper, we propose a new conceptual framework in which constructs and underlying techniques influencing automatic processes may close the food parenting intention-behavior gap. Our framework provides a dual process view towards food parenting, considering that two different systems of information processing (i.e., automatic and reflective) underlie the production of food parenting behaviors.

This position paper provides tentative support for the role of habits and volitional regulation behaviors in healthy parenting. Considering that most evidence comes from studies examining how habits or volitional self-regulation can explain and influence health behavior, more research is needed to examine how these key constructs may influence food parenting behaviors. We contend that impulse-focused techniques (i.e., inhibition training, nudging) may directly influence the effects of situational cues on parental habits (i.e., changing habits directly), whereas 'reflective' techniques (i.e., implementation intentions, mental contrasting) may identify, suppress or manage impulses before they are acted upon (i.e., changing habits indirectly through volitional regulation behaviors). Evidence is provided in support of both impulse-focused and reflective techniques for influencing eating behaviors or emotions. Whether changes in habitual reactions of parents to food cues (e.g., decreased food attentional bias and food devaluation) or children's emotions and/or eating (e.g., 'staying calm') may also influence food parenting and close the food parenting intention-behavior gap remains unknown. Future research should further examine this. We propose that by preventing unhealthy and creating more healthy habitual parental reactions (i.e., in response to food cues and child's emotion or eating) parents probably can more easily attend to their healthy food intentions and close the respective food parenting intention-behavior gap.

Although McGowan and colleagues (McGowan et al., 2013) effectively trained parents in facilitating automatic food parenting habits via goal setting, they did not use implementation intentions.

Similarly, the well-known Triple P positive parenting program which includes a 'planning' approach (Sanders et al., 2012) does not make use of specific implementation intentions. Future research should consider which techniques (i.e., impulsive-focused and/or reflective) exert the strongest influence on key automatic constructs and food parenting behaviors. As limitations of standard efficacy trials are well-known, Experimental Medicine (EM) may offer an approach stimulating researchers to examine basic mechanistic processes as part of related intervention trials (Sheeran, Klein, & Rothman, 2017).

Moreover, we hypothesized that interventions that tackle combined constructs from both the automatic and the reflective pathway will be more effective in engendering healthy and preventing unhealthy parental habits that close the intention-behavior gap. This position paper presents some evidence supporting the idea that combining constructs that tap into the automatic and reflective routes are more effective than either one alone. Once again, future research should examine the extent to which these effects generalize to food parenting. It is not only important to gain insight into moderating parental habits that bridge the food parenting intention-behavior gap, but also to gain insight into which food parenting behaviors interact with parenting context (i.e., parenting or feeding styles) (Hughes, Power, O'Connor, Fisher, & Chen, 2016; Sleddens, Kremers, Stafleu, Dagnelie, De Vries, & Thijs, 2014), to have greatest influence on child's dietary intake and BMI. Findings of a recent systematic review and meta-analysis showed that food availability and parental food modeling had consistent positive associations with children's food consumption (Yee, Lwin, & Ho, 2017). In line with this, we have previously suggested that parental influences are importantly mediated by changes in the child's home food environment (Larsen et al., 2015). We suggest that most important food parenting intention-behavior gaps concern those with higher-order food parenting constructs of coercive control and structure (Vaughn et al., 2016) by tapping into the home food environment.

Rothman and colleagues (Rothman, Sheeran, & Wood, 2009) distinguish key determinants and techniques based on whether they refer to behavior change initiation or maintenance, with for example the key determinant 'habit' regarded as an automatic construct being responsible for behavior change maintenance. We did not explicitly make a distinction between behavior change initiation or maintenance in our conceptual framework. However, in line with Rothman and colleagues (Rothman et al., 2009), 'volitional regulation behaviors' and underlying techniques may be more important during behavior change initiation, whereas 'habits' and techniques manipulating habits may be more important during behavior change maintenance. Future research might further examine this.

It is important to note that the techniques considered in this paper (i.e., nudging, inhibitory control training, implementation intentions, mental contrasting) were not meant to be exhaustive. Van Beurden and colleagues (Van Beurden et al., 2016) also distinguish other impulse-focused and reflective techniques that might play an important role in bridging the food parenting intention-behavior gap. For instance, mindfulness-based strategies are potentially relevant reflective techniques to change cue-based eating reactions, and in the parenting literature there also is an increased focus on mindful parenting interventions (Townshend, Jordan, Stephenson, & Tsey, 2016). We propose that particularly experiential acceptance (nonjudgment) and mindful awareness of decision making processes (self-regulation) (Forman, Butryn, Manasse, & Bradley, 2015; Mason et al., 2016) may be beneficial in decreasing reward driven reactions to food cues and unintended emotional reactions in response to child's emotion and eating.

Our framework neither included potentially significant barriers

(e.g., time, financial costs and access) facing parents from lower socio-economic status (SES), nor child factors that may moderate the effectiveness of the intervention techniques described. Although parental intentions may determine food parenting behavior among low-income parents (Blaine et al., 2015), we assume that the habitual parental reactions proposed in our framework are potentially stronger among parents who are “depleted” and under-resourced and/or having children with more difficult temperaments. There is ample research available suggesting that people eat more and have stronger reactions to food cues when depleted (e.g., Vohs & Heatherton, 2000). Moreover, child temperament also appears to be an eminent factor affecting food parenting (Bergmeier, Skouteris, Horwood, Hooley, & Richardson, 2014). Future research may examine whether certain common SES barriers or child’s characteristics might moderate effectiveness of the impulse-focused or reflective techniques. Another suggestion for future research is to examine whether and for whom the impulse-focused and reflective techniques elicit the expected underlying neural changes in brain reward and/or control regions. Finally, future research should systematically examine whether different impulse-focused and reflective techniques including personalized cues and tailoring are more effective, considering the success of tailored health interventions (Lustria et al., 2013).

To conclude, this position paper highlights constructs and processes that may have utility for bridging the intention-behavior gap around healthy food parenting. The ideas presented in this paper may represent important ‘black box’ constructs that explain why food parenting intentions do not always lead to desired food parenting behaviors. Moreover, this paper describes the potential utility of techniques for changing automatic health behaviors for the food parenting literature. Experimental studies are needed to manipulate constructs from the reflective pathway (e.g., self-efficacy) with those from the automatic pathway (i.e., habits and volitional regulation behaviors). Insights from these studies may eventually inform the development of health initiatives and interventions aimed at promoting good food parenting behaviors.

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