



The application of defaults to optimize parents' health-based choices for children



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ABSTRACT

Optimal defaults is a compelling model from behavioral economics and the psychology of human decision-making, designed to shape or “nudge” choices in a positive direction without fundamentally restricting options. The current study aimed to test the effectiveness of optimal (less obesogenic) defaults and parent empowerment priming on health-based decisions with parent-child (ages 3–8) dyads in a community-based setting. Two proof-of-concept experiments (one on breakfast food selections and one on activity choice) were conducted comparing the main and interactive effects of optimal versus sub-optimal defaults, and parent empowerment priming versus neutral priming, on parents' health-related choices for their children. We hypothesized that in each experiment, making the default option more optimal will lead to more frequent health-oriented choices, and that priming parents to be the ultimate decision-makers on behalf of their child's health will potentiate this effect. Results show that in both studies, default condition, but not priming condition or the interaction between default and priming, significantly predicted choice (healthier vs. less healthy option). There was also a significant main effect for default condition (and no effect for priming condition or the interaction term) on the quantity of healthier food children consumed in the breakfast experiment. These pilot studies demonstrate that optimal defaults can be practicably implemented to improve parents' food and activity choices for young children. Results can inform policies and practices pertaining to obesogenic environmental factors in school, restaurant, and home environments.

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Childhood obesity is considered a public health crisis with negative implications for the physical (Baker, Olsen, & Sorensen, 2007; Janssen et al., 2005; Llewellyn, Simmonds, Owens, & Woolacott, 2016), social (Janssen, Craig, Boyce, & Pickett, 2004; Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008), and socio-economic (Au, 2012; Wang, Wild, Kipp, Kuhle, & Veugeliers, 2009) well-being of youth worldwide (Spruijt-Metz, 2011). As the complexities of obesity as a multi-determined disease continue to be studied, sustainable solutions remain elusive, particularly within personal responsibility models of change (Brownell, Schwartz,

Puhl, Henderson, & Harris, 2009; Brownell et al., 2010; Katz, 2006, 2014). Data strongly implicate “toxic” environmental influences among a variety of factors (Schwartz & Brownell, 2007). By extension, it has been argued that such evidence demands a public policy-level set of responses to reduce obesity prevalence - currently 17% among 2–19 year-old children and adolescents (Ogden, Carroll, Kit, & Flegal, 2014) - and support prevention (Brownell et al., 2009; Katz, 2006, 2014; McKinnon, 2010).

One strategy that has been shown to have utility for other areas of public health is *optimal defaults*. Optimal defaults is a compelling model from behavioral economics and the psychology of human decision-making, designed to shape or “nudge” (Thaler, Sunstein, & Balz, 2010) choices in a positive direction without fundamentally restricting options (Choi, Laibson, Madrian, & Metrick, 2003a;

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Kahneman, 2003; Simon, 1955, 1986; Smith, Goldstein, & Johnson, 2013). It thus falls within the policy theory framework of “asymmetric” or “libertarian” paternalism (Loewenstein, Brennan, & Volpp, 2007; Thaler & Sunstein, 2003). Specifically, optimal defaults capitalize on the human tendency to remain with the status quo, rather than actively seeking out available alternatives, by positioning the default option in a choice paradigm to be consistent with public welfare, while allowing individuals to retain access to choices deemed less desirable by taking active steps (Kahneman, Knetsch, & Thaler, 1991; Samuelson & Zeckhauser, 1988). Its powerful effects have been demonstrated in multiple domains, including organ donation (Abadie & Gay, 2006; Johnson & Goldstein, 2003), green energy (Pichert & Katsikopoulos, 2008), pension plan enrollment (Choi, Laibson, Madrian, & Metrick, 2003b; Choi et al., 2003a), physician orders for laboratory tests (Probst, Shaffer, & Chan, 2013) and influenza vaccinations (Chapman, Li, Colby, & Yoon, 2010). Hypothesized mechanisms of the power of defaults include conservation of the effort required to access the alternative option; implied or assumed endorsement of the default by an authority; and reference dependence, or the tendency to evaluate options as gains or losses relative to a reference point (Dinner, Johnson, Goldstein, & Liu, 2011; Johnson & Goldstein, 2003; McKenzie, Liersch, & Finkelstein, 2006).

Optimizing defaults has unique potential as a strategy for childhood obesity prevention. Children's reliance on systems-level environments (e.g., home, school) for availability and accessibility of options for energy intake and expenditure renders them vulnerable to the ill effects of sub-optimal environmental defaults. At the same time, this dependency provides an opportunity to convert the defaults in these systems to health-oriented ones (Radnitz et al., 2013). Conversely, personal responsibility models of weight-related change for children are not only ineffective but arguably developmentally inappropriate (Brownell et al., 2010).

In environments such as the school system, changes in food presentation strategy can be generated at a policy level; food preparation and delivery methods are typically determined without children present and there is little opportunity for direct feedback from children about food service. In the home, however, parents often navigate purchasing, preparing, and serving food while interacting with their children. Thus, strategies to help parents buffer against petitions for suboptimal choices may be essential for the successful implementation of defaults to a family's health advantage. In fact, there is a strong link between permissive or indulgent parenting – that is, a parenting style characterized by high responsiveness and low demands (Baumrind, 1971; Hughes, Power, Fisher, Mueller, & Nicklas, 2005; Maccoby & Martin, 1983) – and childhood obesity (Golan, 2006; Golan, Kaufman, & Shahar, 2006; Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011; Wake, Nicholson, Hardy, & Smith, 2007). While the mechanisms behind this association are likely complex, interventions designed to elicit a more authoritative parenting stance (high responsiveness coupled with high demands; Baumrind, 1971; Maccoby & Martin, 1983), as a complement to optimal defaults in the home, may potentiate the strategy's success toward childhood obesity prevention.

The idea for optimal defaults as a powerful strategy for obesity prevention has been put forward in the literature at a theoretical level (Brownell et al., 2009, 2010; Katz, 2014; Liu, Wisdom, Roberto, Liu, & Ubel, 2014; Radnitz et al., 2013; Roberto et al., 2015; Schwartz & Brownell, 2007), and has begun to be tested in empirical research as a method to alter food choices. Promising proof-of-concept results have been observed in the restaurant and home environment, while school-based findings are mixed depending on study design (Anzman-Frasca et al., 2015; Cravener et al., 2014; Downs,

Loewenstein, & Wisdom, 2009; Just & Price, 2013; Just & Wansink, 2009; Lee, Kiesler, & Forlizzi, 2011; Loeb et al., 2016; Peters et al., 2016; Wisdom, Downs, & Loewenstein, 2010). Moreover, qualitative research shows that mothers like the idea of automatic healthier defaults in fast-food restaurants, citing reasons including increased efficiency and less parent-child conflict (Henry & Borzekowski, 2015).

Adding to this literature, the current study aimed to test the effectiveness of optimal defaults and parent empowerment priming with parent-child dyads in a community-based setting, with conditions that have potential application to both family and school systems. Specifically, we conducted two proof-of-concept experiments (one on breakfast food selections and one on activity choice) comparing the main and interactive effects of optimal versus sub-optimal defaults, and parent empowerment priming versus neutral priming, on parents' health-related decisions for their children. Parent empowerment priming consisted of information designed to prime parents to adopt a more authoritative position around child eating; neutral priming was control information intended to have no impact on parenting style. Thus, we aimed to manipulate conditions related to both energy intake and energy expenditure, factors implicated in etiologic and maintenance models of childhood obesity (Bleich, Ku, & Wang, 2011). We hypothesized that in each experiment, making the default option more optimal (less obesogenic) will lead to more frequent health-oriented choices, and that priming parents to be the ultimate decision-makers on behalf of their child's health will potentiate this effect.

1. Method

1.1. Design

We conducted two randomized, 2 by 2, experiments (a children's breakfast selection study and a children's activity choice study) testing the main and interactive effects of defaults and priming on parents' or other primary caregivers' health-related choices on behalf of their children. The primary outcome variable for each experiment was binary (healthier choice opted by parent yes/no). For the breakfast experiment, a secondary outcome variable was consumption (quantity, using plate waste methodology) of healthier foods, i.e., the foods served in the optimal default breakfast array.

The experimental sessions were run with individual or small groups of participant parent-child dyads [in the breakfast experiment mean (*M*) number of dyads per session = 3.10, *SD* = 1.89; in the activity experiment, *M* = 3.63, *SD* = 2.33]. For each experiment (breakfast and activity), randomization to one of the four conditions was assigned by session, not by dyad, to avoid confounds in a group setting. Experimental sessions were offered in either English or Spanish. Families were paid \$50 for their participation, which required approximately two-and-a-half hours of their time on a single visit. All procedures were approved by the first author's university Institutional Review Board.

1.2. Sample

Parent-child dyads were recruited for both experiments via flyers through a local community center, which functioned as the study performance site, from its broad network of affiliates, including schools and health centers, and from the surrounding communities. Eligibility was determined by telephone with a screening questionnaire.

Inclusion criteria were a child aged 3–8 with at least one parent or guardian willing to participate. We were interested in studying a developmental stage in which parents typically make choices on

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