

Leveraging Means-Goal Associations to Boost Children's Water Consumption: Persuasion in a Four-School, Three-Month Field Experiment

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ABSTRACT We collaborated with UNICEF and launched a field experiment in Panama to test the effectiveness of communicating different means-goal associations in promoting children's consumption of water. This research is the first to examine whether interventions that operate by highlighting strong means-goal associations have real consequences outside the lab in the noisy real world. Also important, means-goal associations have previously been examined exclusively among adults. Because prior research reveals that children and adults often respond differently to persuasion attempts, important theoretical insight is gained by investigating whether children's use of a means can be increased by interventions that highlight means-goal associations. This research is also the first to explore whether highlighting means-goal associations of different strengths can produce not only positive but also potentially negative effects. Together, the current research advances the extant understanding of the divergent impact of means-goal associations on behavior, uncovers an intervention that increases children's consumption of water, and provides valuable managerial implications as well as food for thought for future research.

Companies spend over \$17 billion annually marketing products, and children are exposed to roughly 71 of these advertisements per day (Schor 2004). On average, children view more than 100 advertisements per year just for soft drinks alone (Albuquerque et al. 2018). These marketing appeals are often successful (Campbell et al. 2016). Relative to adults, children are particularly vulnerable to the persuasive influence of advertisements, which produce long-term consequences on them (Connell, Brucks, and Nielsen 2014; Albuquerque et al. 2018). As a result, the World Health Organization (WHO) in 2004 appealed to the private sector to eliminate the marketing of unhealthy food and beverages to children. This global crisis was further highlighted by the former first lady of the United States, Michelle Obama, when she initiated the "Let's Move" campaign in 2009.

Yet the problem persists. A recent study found that food and beverage companies spend \$149 million annually on in-school youth-target marketing, and that sugary drinks and snacks account for 90% of the brands marketed to children

in schools (Harris and Fox 2014). Many health organizations, academic scholars, and global leaders warn that the increasing marketing of foods and beverages high in fat and sugar will have enduring negative consequences on children's consumption habits and therefore harm their health later in life (Hawkins et al. 1999; Kraak, Gootman, and McGinnis 2006).

In this research, we tested a potential solution to this problem by examining a bottom-up approach that aims to directly increase children's consumption of healthy options (rather than the top-down approach of reducing children's exposure to the marketing of unhealthy options). Specifically, we leveraged means-goal associations (i.e., associations between goals and methods of attaining those goals) to increase children's consumption of water. To that aim, we collaborated with UNICEF and launched a four-school, three-month field experiment in Panama to test the effectiveness of communicating different means-goal associations in promoting children's consumption of water.

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We focused on promoting water consumption for multiple reasons. First, water is the healthiest and most hydrating beverage (De Ruyter et al. 2014). Despite the benefits of water consumption, over 70% of children who have open access to water do not drink enough of it (Bar-David et al. 2009; Claire 2016). The resulting dehydration is particularly acute among children in hot climates, like those in Panama (Bar-David et al. 2009; Fadda et al. 2012). The consequences of this dehydration are severe; consuming sufficient water not only helps prevent obesity but also is vital for children's growth, physical health, and mental well-being (Muckelbauer et al. 2009; Armfield et al. 2013; Masento et al. 2014). Water also has important implications for children's academic performance because it bolsters children's memory, attention, and cognition (Benton and Burgess 2009; Edmonds and Burford 2009; Edmonds and Jeffes 2009). As a result, the WHO has repeatedly stated that encouraging children to drink more water is a global priority (World Health Organization 2012, 2016).

Therefore, in the current research we examine the efficacy of four different interventions aimed to encourage greater consumption of water among children. We leveraged research on goal systems (Kruglanski et al. 2002; Shah, Friedman, and Kruglanski 2002; Maimaran and Fishbach 2014) to develop a variety of messages that highlighted different associations between the means of drinking water and the goals that children value. As children grow older, they learn associations between means and goals and internalize abstract cause-and-effect relationships (Ginsburg and Oppen 1988; John 1999). When children reach the age of 7 years, they begin to form associations between the self and products/brands, understand abstract cause-and-effect relationships, and analyze stimuli across multiple dimensions (John 1999; Chaplin and John 2005). These abilities enable them to perceive means as conduits to the achievement of abstract goals (e.g., health, popularity, and academic success). For example, children may associate the goal of being healthy with the means of eating green vegetables and the goal of being popular with the means of showing off the newest toy at school.

Importantly, associations between means and goals are instrumental (Gollwitzer and Brandstatter 1997; Shah and Kruglanski 2000); as a result, research conducted in the lab suggests that a strong means-goal association can increase young adults' pursuit of a goal through the associated means (Zhang and Tu 2011). Drawing on this research, we predicted that an intervention that leverages means-goal associations would influence water consumption among children in grade

school. Specifically, we predicted that highlighting an existing, strong means-goal association (e.g., the belief that water consumption boosts health) would increase use of the means (drinking water) in pursuit of the goal (health). Notably, the current research is the first to examine whether interventions that operate by highlighting strong means-goal associations have real consequences outside the lab (and thus outside the reach of demand characteristics) in the noisy real world. Also important, this investigation further tests the practical utility of leveraging means-goal associations among previously unexamined populations by exploring whether the findings documented among young adults in the lab (e.g., Zhang and Tu 2011) may also emerge among children who are in the phase of developing abstract thinking capabilities. Prior research suggests that children and adults often respond differently to persuasion attempts (Ward, Wackman, and Wartella 1977; Roedder, Sternthal, and Calder 1983; Boush, Friestad, and Rose 1994). Thus, important theoretical and practical insight is gained by investigating whether children's use of a means is increased by persuasion attempts that highlight strong means-goal associations.

In addition to exploring the impact of strong means-goal associations on children, the current research also provides new theoretical insight into the different consequences that may result from leveraging means-goal associations of varying strengths. Previous research suggests that highlighting strong means-goal associations can increase use of the highlighted means among young adults in a lab (Zhang and Tu 2011). However, prior research has not examined the impact of highlighting weak means-goal associations on use of that means. The current research is the first to examine this question. In particular, we predict that weak means-goal associations may at times produce the opposite effect (i.e., decreased use of the means), such that highlighting means that are not closely associated with a goal can backfire. This is because messages that highlight a weak association between a means and a goal may appear deceptive, dishonest, or even confusing, resulting in resistance against the persuasive attempt. By testing this possibility, this research examines whether highlighting means-goal associations of different strengths can produce not only positive but also potentially negative effects. Examining this possibility advances the extant understanding of the divergent impact of means-goal associations on behavior and provides valuable managerial implications: If exposure to weak means-goal associations reduces use of the means, such a phenomenon would suggest that there are systematic conditions in which communications designed to increase the use of a

means through highlighting means-goal associations may counterintuitively have the opposite effect.

THE FIELD EXPERIMENT

Method

School Selection and Government Approval. In collaboration with UNICEF, we recruited four elementary schools in the Republic of Panama to participate in a field experiment. Because our experimental intervention required that the target schools had a preexisting kiosk that sold water (and that children at these schools purchased clean drinking water at the kiosk), we focused our consideration set on private schools; unlike public schools, most private schools had kiosks, and children at these schools could purchase drinking water at the kiosks during school hours. During the study recruitment in 2016, Panama had 274 private schools, enrolling 50,353 students.

To maintain similar demographic characteristics across the four schools, we limited the consideration set to schools whose annual tuition and elementary school enrollment (i.e., enrollment in grades 1–6) matched the average in the country’s private schools (approximately US\$1,700 per student, and approximately 100 students in each grade). Four of these schools had similar demographics and geography: These four schools enrolled 78–140 students in grades 1–6, had similar age/grade distributions, were located in residential neighborhoods in urban areas (in either the district of San Miguelito or the district of Panama City), and had a kiosk that sold water. In addition, these schools were located within 10 miles of each other and shared similar weather and humidity conditions (see app. A for further detail regarding the schools’ enrollment and geographic location, and see app. B for detail regarding the institutional review board [IRB] procedures in Panama; apps. A–E are available online).

Goal Selection and Pretests. Based on interviews with the local research team and the teachers at the four schools, we selected three goals that the children in Panama valued—being healthy, smart, and popular. Among these three goals, we expected that the students would naturally perceive a strong association between the means of drinking water and the goal of being healthy (a strong means-goal association). We expected that the connection between drinking water and being smart would be moderate (a moderate means-goal association), as intelligence and physical health are often discussed in tandem (e.g., children are often encouraged to build

“a strong body and mind”; Barnett 2010). We further predicted that the connection between drinking water and being popular would be the weakest—that students would perceive drinking water as having little effect on their popularity (a weak means-goal association). A pretest conducted among a randomly selected sample of elementary school students in Panama confirmed these predictions of varying strengths of means-goal associations (see app. C).

Experimental Design. With this pretest in hand and IRB approval from the Panamanian government, we proceeded with the field experiment. We first randomly assigned each school (via a random number generator) to one of four means-goal association conditions: a condition that highlighted the association between water and the goal of being healthy (a strong means-goal association), a condition that highlighted the association between water and the goal of being smart (a moderate means-goal association), a condition that highlighted the association between water and the goal of being popular (a weak means-goal association), or a no-association control condition.

For each condition, we designed a poster that advocated the consumption of water (see app. D). Each poster was 50×70 centimeters and featured the same animated graphic of two children who were each holding a water bottle. Because Panama is a multiethnic country, the two children (in all conditions) were depicted with a gray skin tone (i.e., a skin tone unrelated to any particular child) in order to render a nonexclusive depiction. The phrase “Drink Water” appeared in Spanish along the top of each poster. The only difference between these four conditions was the means-goal association depicted in each poster, and each poster depicted this association both visually and through text.

Specifically, in the intelligence goal condition, the poster directly connected water consumption with the goal of becoming smart—it featured the words “Drink Water” and “Learn Faster” (in Spanish) and included illustrations depicting numbers, a book, and study-related words beside the two children holding bottles of water. In the health goal condition, the poster directly connected water consumption with the goal of becoming healthy—it featured the words “Drink Water” and “Be Healthy” (in Spanish) and included illustrations depicting fruits and vegetables beside the two children holding bottles of water. In the popularity goal condition, the poster connected water consumption with the goal of making more friends at school (i.e., becoming popular)—it featured the words “Drink Water” and “Make Friends” (in Spanish) and included illustrations depicting additional chil-

dren beside the two children holding bottles of water. In the no-association control condition, water was neither visually nor textually associated with any goal; instead, the poster simply depicted two children holding bottles of water and featured the words "Drink Water." Thus, the instruction to drink water and depiction of the two children holding bottles of water were identical across the four posters; they differed only in the text and illustrations that conveyed each of the specific mean-goal associations.

To ensure that the students were exposed to the poster messages, research assistants blind to the focal predictions posted a total of 240 posters (poster content depended on the condition) at each school in numerous locations (i.e., the hallways, classrooms, the kiosk, and the cafeteria) on August 3, 2016. The posters remained on the school walls for approximately 4 weeks and were removed on August 30, 2016. Research assistants provided the same information to the teachers across the four schools regarding the posters' presence and regularly visited the schools during this period to ensure that the posters remained clean and visible; broken posters were replaced with new ones immediately.

Each school had a kiosk at which children could purchase water. The kiosk staff members were trained by the local team to record the number of water bottles sold each day for 60 consecutive weekdays—each weekday in the approximately 4 weeks prior to the intervention (July 6, 2016, to August 2, 2016), each weekday in the approximately 4 weeks during the intervention (from August 3, 2016, to August 30, 2016), and each weekday in the approximately 4 weeks after the intervention (from August 31, 2016, to September 27, 2016). Thus, this field study constituted a 4 (goal: health vs. smart vs. popularity vs. control) \times 3 (phase: baseline vs. intervention vs. postintervention) design. The between-school manipulation of means-goal associations ensured that children's exposure to each message would not be contaminated by any exposure to the other messages (which would have been a likely consequence of a within-school manipulation of means-goal associations, posing a risk to the internal validity of the study). The within-school variable of three phases enabled us to isolate the unique consequence of each intervention while controlling for any baseline and school size differences.

Results and Discussion

To determine whether the water bottle sales data were normally distributed, we first conducted z-tests to evaluate the skewness and kurtosis of the distribution of the sales data

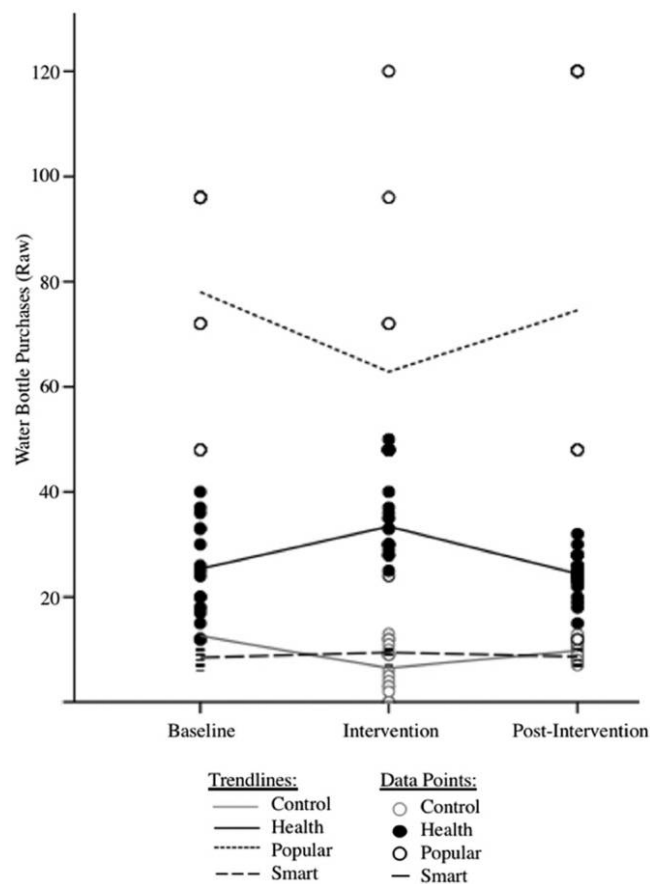


Figure 1. Water bottle sales (raw) as a function of condition and phase.

(see fig. 1 for the plot of the raw sales data).¹ These analyses revealed that the water bottle sales data were nonnormally distributed (kurtosis = 1.933 [SD = .32], $Z_{\text{kurtosis}} = 6.07$ and skewness = 1.677 [SD = .16], $Z_{\text{skew}} = 10.48$, both exceeding the $Z = 3.29$ threshold of normality; Kim 2013; Tan, Lau, and Lee 2017; Zailskaitė-Jakste et al. 2017; Keough et al. 2018). Because nonnormally distributed data violate the assumptions of linear regression and thus could result in non-meaningful and nonreliable estimates (Speed 1994; Osborne and Waters 2002), we logged the water bottle sales data to normalize the distribution for analysis (Frederick 2012; Torfason, Flynn, and Kupor 2013; Chan, Li, and Pierce 2014; Ward and Dahl 2014). Examination of the logged sales verified that the log transformation successfully normalized the sales data (kurtosis = .475 [SD = .318], $Z_{\text{kurtosis}} = 1.49$ and skewness = -0.43 [SD = .16], $Z_{\text{skew}} = .27$, neither exceeding the $Z = 3.29$ threshold of normality). We

1. The data set (DOI 10.17605/OSF.IO/4SPRB) is available at https://osf.io/4sprb/?view_only=d7080020a7ac42f1b9d5734db8d39c0d.

Table 1. Water Bottle Sales (Raw) as a Function of Condition and Phase

Intervention	Number of Water Bottles Sold per Day			Number of Water Bottles Sold per Day per Student		
	Baseline Phase	Intervention Phase	Postintervention Phase	Baseline Phase	Intervention Phase	Postintervention Phase
Control:						
<i>M</i>	12.632	6.450	9.842	.019	.010	.015
SD	(1.892)	(4.662)	(1.385)	(.003)	(.007)	(.002)
Health goal:						
<i>M</i>	25.375	33.421	24.421	.039	.051	.037
SD	(8.563)	(6.636)	(4.312)	(.013)	(.010)	(.007)
Popularity goal:						
<i>M</i>	78.316	63.273	74.526	.107	.086	.101
SD	(20.926)	(25.166)	(45.708)	(.028)	(.034)	(.062)
Smart goal:						
<i>M</i>	8.500	9.476	8.684	.016	.018	.017
SD	(1.277)	(.750)	(1.455)	(.002)	(.001)	(.003)

thus used the logged sales in the analyses below. The raw (i.e., nonlogged) sales data and the raw sales data per student are displayed in table 1.

A 4 (goal: health vs. smart vs. popularity vs. control) × 3 (phase: baseline vs. intervention vs. postintervention) ANOVA on the logged number of water bottles sold revealed a significant interaction, $F(6, 220) = 9.19, p < .001$ (fig. 2), suggesting that the changes in water bottle sales from one phase to another depended on the means-goal association intervention executed at each school.

Planned contrasts further showed that the health poster intervention (i.e., the intervention highlighting a strong means-goal association) increased the number of water bottles sold: Water sales significantly increased from the baseline phase ($M = 3.22, SD = .34$) during the intervention phase ($M = 3.52, SD = .18; p = .034$; Cohen’s $d = 1.112$). The heightened water sales then decreased in the postintervention phase ($M = 3.22, SD = .18; p = .026$; Cohen’s $d = 1.676$) and returned to the same level of sales as in the baseline condition ($p = .998$).

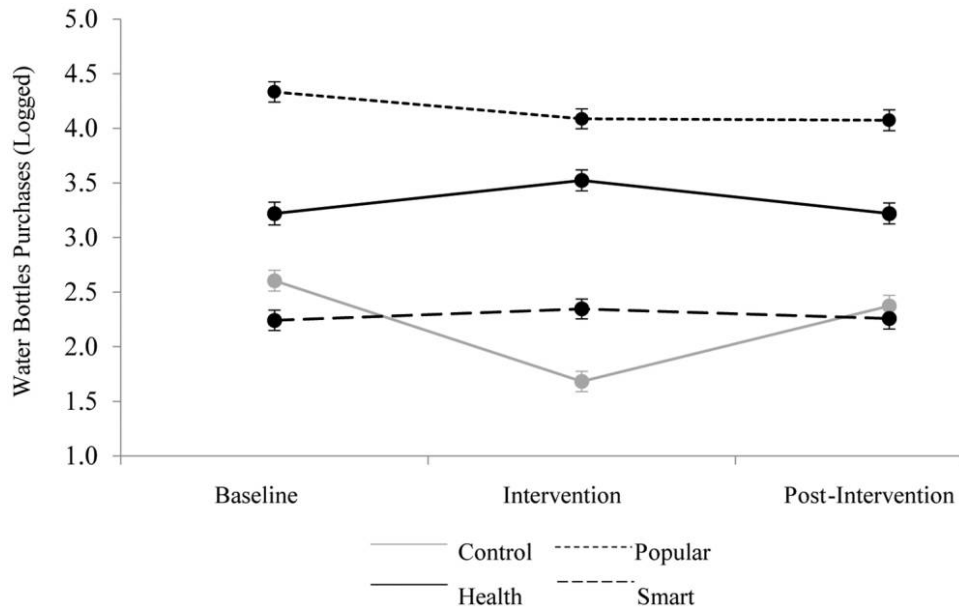


Figure 2. Water bottle sales (logged) as a function of condition and phase. Note: Error bars are standard errors.

In comparison, the intelligence goal intervention (i.e., the intervention highlighting a moderate means-goal association) had no impact on water sales. Water sales during the baseline phase ($M = 2.24$, $SD = .14$), the intervention phase ($M = 2.35$, $SD = .08$), and the postintervention phase ($M = 2.26$, $SD = .15$) did not significantly differ (all $p \geq .425$).

In contrast to the previous two conditions, the intervention trended toward backfiring in the popularity goal condition (the intervention highlighting a weak means-goal association, based on the pretest): Water sales marginally decreased from the baseline phase ($M = 4.33$, $SD = .29$) during the intervention phase ($M = 4.09$, $SD = .37$; $p = .060$; Cohen's $d = .719$). Water sales in the postintervention phase remained low—the same amount of water was sold during the intervention phase and the postintervention phase ($M = 4.07$, $SD = .80$; $p = .923$), an amount that was marginally smaller than the number of water bottles sold during the baseline phase ($p = .054$; Cohen's $d = .432$).

Interestingly, the control intervention significantly decreased water sales; water sales decreased from the baseline phase ($M = 2.60$, $SD = .12$) during the intervention phase ($M = 1.68$, $SD = .97$; $p < .001$; Cohen's $d = 1.333$). Water sales increased in the postintervention phase ($M = 2.38$, $SD = .13$; $p < .001$; Cohen's $d = 1.005$), and returned to almost the same level of sales as in the baseline phase ($p = .091$). In the General Discussion, we draw from outcome-orientation research conducted among children to discuss why the control intervention may have decreased water sales.

Of note, despite the fact that we selected schools with comparable demographic characteristics, tuition, and geography, examination of the descriptive statistics suggested that baseline water sales differed across the four schools (see fig. 2, table 1). Because this variation could be due to a variety of unobserved intrinsic and extrinsic factors between the schools, we focused our analyses on the effect of phase (baseline vs. intervention vs. postintervention) within each school in order to derive clean insights into each intervention's impact on water sales. In addition, at the end of the field experiment, each school's registrar verified that student enrollment remained constant during the experiment, further enhancing the validity of using within-school comparisons to control for any variation observed in the baseline period (i.e., baseline between-school variation in enrollment and water sales).

In sum, the health intervention increased water sales, the popularity intervention marginally trended toward decreasing water sales, and the intelligence intervention did not impact water sales.

GENERAL DISCUSSION

A three-month, four-school field experiment leveraged different means-goal associations to encourage children to consume water. Analysis revealed that the effectiveness of these means-goal associations differed dramatically: Promoting water as a means of boosting health increased water sales, promoting water as a means of gaining intelligence did not affect water sales, and promoting water as a means of boosting popularity trended toward decreasing water sales. Of importance, however, the marginal nature of the popularity intervention's consequences should be viewed as suggestive and not conclusive; as discussed in greater detail below, we hope that this preliminary finding inspires future research to further investigate the consequences of exposure to weak means-goal associations.

These findings advance the extant understanding of the impact of means-goal interventions on children's consumption behavior. The current research is the first to find that highlighting strong means-goal associations can influence behavior outside the lab in the noisy real world—specifically, in a real school environment filled with many other educational and marketing messages. Our findings further suggest that the trajectory of this influence vastly differs as a function of how closely the recipients associate the goal with the means. For example, when the goal is closely associated with the means (e.g., when drinking water is promoted as a means of boosting health), highlighting that association boosts usage of the means. In contrast, when a means is not perceived as an effective mechanism of pursuing the goal (e.g., when drinking water is promoted as a means of boosting popularity), the current research suggests that highlighting that association does not increase use of the means; if anything, the marginal effect that emerged from the popularity intervention condition suggests that exposure to a weak means-goal association may at times undermine use of the means. As noted below, we encourage future research to further investigate this possibility.

Boundaries and Extensions

It is worth considering some remaining questions and avenues for future research. In particular, while our empirical work provides initial insight into the impact of means-goal

associations on children's consumption of water, future research could profit from further investigating (1) the persuasive consequences of weak, moderate, and strong means-goal associations as well as the psychological underpinnings of those consequences, (2) the persuasive consequences of the associations' mode of delivery, and (3) the social dynamics that may amplify the persuasive impact of these associations.

Strength of Means-Goal Associations. First, and as previously noted, the current research suggests (but does not conclusively determine) that the weak means-goal association may decrease water sales. Therefore, we encourage future research to further investigate the consequences of exposure to weak means-goal associations. Future research could also profit from examining whether weak means-goal associations operate similarly when the focal goal is (vs. is not) already strongly associated with another means. As previously noted, the children in the current research weakly associated water consumption with popularity but strongly associated water consumption with health (app. C). It is possible that when a means is already strongly associated with a goal, highlighting a different means that is relatively weakly associated with the same goal is perceived as deceitful and dishonest. By contrast, when a goal is not already strongly associated with a means, it is possible that message recipients do not make these negative inferences, and that a backfire effect would not occur at all. If so, perhaps a weak means-goal association can be an effective persuasion vehicle when the means is not strongly associated with any goal. We encourage future research to investigate this possibility.

Also relevant to future research, the current field experiment detected no impact of the intervention highlighting a moderate means-goal association (i.e., the connection between drinking water and being smart) on water sales. Of note, this null effect is unlikely to be due to either a ceiling effect or a floor effect—indeed, examination of the descriptive statistics (table 1) indicates that the control intervention led water sales to decline below sales in the moderate means-goal association condition, and that the strong means-goal association intervention increased water sales above sales in the moderate means-goal association condition. Although this field experiment thus suggests that moderate means-goal associations do not impact goal pursuit, the threshold association strength at which a means-goal association changes from weak, to moderate, and to strong remains

unknown. Future research is encouraged to map the threshold association strength that would nudge people to pursue a focal goal.

Also of importance, the current field study included a control condition that did not associate the means of drinking water with any goal. We expected that exposure to the means only (without mentioning a goal) would have little or no motivational properties and thus would not affect water consumption. Indeed, prior research suggests that although the salience of an existing association between a means and a goal (e.g., the association between the means of jogging and the goal of strengthening muscles) dramatically affects the impact of that association on behavior, low salience can cause a variety of factors to reduce the impact of a means-goal association on behavior (Zhang, Fishbach, and Kruglanski 2007). Drawing on this literature, we expected that exposure to the control poster would have little or no impact on water consumption. We found, however, that communicating the means without any goal backfired among children.

On the face of it, this finding may appear to be inconsistent with the mere exposure literature, which suggests that mere exposure to a product can increase product liking and promote purchases (Bornstein and D'agostino 1992; Rindfleisch and Inman 1998). However, subsequent research has revealed that when children are exposed to a message that directs them to pursue a means with no explanation (no outcome orientation), such exposure can reduce compliance (Davidov and Grusec 2006; Baumrind 2012). Drawing on this research, we speculate that the control poster's spotlight on the means with no explanation may have unleashed a similar outcome. For example, it is possible that the children in the control condition perceived the promotion of water with no clear explanation as deceitful, confusing, or manipulative. We encourage future research to explore these possibilities.

Mode of Presentation. As previously noted, we implemented the means-goal association manipulation by displaying posters depicting each association on school walls. Although each poster's instruction to drink water, depiction of two children holding bottles of water, and color scheme remained constant across conditions, the four poster designs featured slight differences in their illustrations in order to clearly communicate each means-goal association. While these experimental procedures ensured clear comprehension of the focal means-goal association at each school, it is possible that some of the illustrations produced unfore-

seen consequences that contributed to the observed effect. Therefore, we encourage future research to further investigate the impact of leveraging means-goal associations among children using other modes of presentation (e.g., storytelling and in-class activities) in order to further enhance the generalizability of the present findings across other intervention materials, as well as across other cultures and message recipients of various ages.

When viewed in the context of prior literature, our research suggests that different methods of message delivery may have divergent consequences on children's behavior. In particular, the current research finds that a relatively non-blatant communication of a strong means-goal association (i.e., via a poster display on school walls) can increase children's use of that means. In contrast, prior research has shown that more blatant methods of message delivery can backfire. For example, directly verbally instructing children that a food is associated with health, and then giving children that food and suggesting that they consume it, can backfire by prompting reactance (Wardle and Huon 2000; Miller et al. 2011; Maimaran and Fishbach 2014). Therefore, future research could explore the moderating role of the blatancy through which means-goal associations are communicated to children on their reactions to those messages and identify the features of communications that lead children to perceive them as blatant.

Social Dynamics. The effect sizes observed in this field experiment were relatively large. It is possible that the social setting in which we implemented the poster intervention amplified its impact because children may have observed their peers' purchase behavior and imitated it. Indeed, significant research reveals that people's goal pursuit is influenced by their observation of others' behaviors (e.g., Asch 1955; Aronson 2004; Cialdini and Goldstein 2004; Fishbach, Henderson, and Koo 2011; Huang et al. 2015; Fishbach, Steinermetz, and Tu 2016). Thus, it is plausible that each child's observation of peers' increased water purchases in response to the health intervention amplified their own response to the intervention. We encourage future research to investigate these important social dynamics and measure the extent to which the social context of goal pursuit may intensify the persuasive influence of goal-relevant interventions.

Coda

Our research uncovers an important intervention that can increase children's consumption of healthy options. Rather

than using costly external rewards to motivate children to consume healthy options (e.g., Wardle et al. 2003; Cooke et al. 2011), we find that the mere presentation of subtle messages about the goals that children value can also prompt them to make healthier consumption choices. Interestingly, similar to interventions that employ external rewards (as do many interventions employed among children; e.g., Wardle et al. 2003; Cooke et al. 2011), the health intervention employed in the current research did not affect behavior after the intervention was removed. These temporal dynamics suggest that producing long-term behavior change may be more challenging than organizations, marketers, and scholars had originally anticipated. It is our deepest hope that this research inspires and motivates efforts to strengthen the magnitude (and increase the longevity) of the influence of interventions on behavior change, and that researchers and practitioners utilize the insights uncovered in this field study to help children live a healthier life.

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