



Research report

Healthy food consumption in young women. The influence of others' eating behavior and body weight appearance [☆]

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ABSTRACT

People's eating behaviors tend to be influenced by the behaviors of others. In the present studies, we investigated the effect of another person's eating behavior and body weight appearance on healthy food consumption of young women. In Study 1, participants watched a short film fragment together with a confederate who appeared normal weight or overweight and consumed either 3 or 10 cucumber slices. In Study 2, a confederate who appeared underweight, normal weight, or overweight consumed no or 4 cucumber slices. The number of cucumber slices eaten by participants was registered. Results showed that participants' healthy eating behavior was influenced by the confederate's eating behavior when the confederate was underweight, normal weight, and overweight. Participants ate more cucumber slices when the confederate ate a higher amount of cucumber slices compared with a lower (or no) amount of cucumber slices (Studies 1 and 2). The food intake effect was stronger for the underweight compared with the overweight model (Study 2).

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Introduction

People consume food for more reasons than being hungry. One such important aspect influencing food consumption is people's social environment. When familiar others are present, people generally eat more than they would when compared to eating alone (e.g., De Castro & De Castro, 1989). When strangers are present, people generally eat less (Herman, Roth, & Polivy, 2003; for a recent review on the social facilitation of eating, see Herman, 2015). Moreover, how much other people eat affects one's own food intake. In abundant experiments it has been demonstrated that people are influenced by the food intake of others (e.g., Conger, Conger, Costanzo, Wright, & Matter, 1980; Goldman, Herman, & Polivy, 1991; Herman et al., 2003; Rosenthal & Marx, 1979; Roth, Herman, Polivy, & Pliner, 2001; Tanner, Ferraro, Chartrand, Bettman, & Van Baaren, 2008). For example, Nisbett and Storms (1974) showed that participants consumed more crackers when a confederate consumed a large number of crackers than when the confederate consumed a small number of crackers. This effect occurred regardless of whether participants were underweight, normal weight, or overweight (see also Conger et al., 1980). This modeling effect in eating

has also been found for restrained eaters (Rosenthal & Marx, 1979) and even when participants were really hungry (Goldman et al., 1991). Thus, people tend to adjust their food intake to the food intake of others, even when they have strong desires to eat a lot, or on the contrary, to restrict their food intake. We investigated whether people's consumption of healthy food is influenced by the consumption of another person and whether the appearance of the other person plays a role in this effect.

Why do people adjust their eating behavior to the behavior of others? A viable explanation for modeling eating behavior is given by Herman and colleagues (Herman & Polivy, 2005; Herman et al., 2003). In their normative account they explained modeling of food intake by the tendency of people to socially compare themselves to others to keep track of whether they themselves show the appropriate behavior (normative influence). Then they adjust their behavior to the behaviors of others. Also, people may adjust their behavior because they think others know better what the best behavior in a situation is (informational influence; Robinson, Thomas, Aveyard, & Higgs, 2013) or to avoid embarrassment or rejection for behaving differently (interpersonal influence; Cialdini, Kallgren, & Reno, 1991). This can explain why people show increases as well as decreases of food intake depending upon the food intake of another person.

Although adjusting the food intake to the intake of others is not affected by the weight of the people who model (e.g., Conger et al., 1980; Nisbett & Storms, 1974), it may be affected by the weight appearance of the model. It is conceivable that people may be more affected in their food intake by the food intake of normal weight

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models (vs. under- or overweight models) as people may compare themselves more with such models. They may compare themselves more, for instance, as normal weight models may be perceived as more knowledgeable about the appropriate behavior in a situation (cf. normative account, e.g., [Herman et al., 2003](#)), or about which eating behavior is best for an individual in that situation (cf. informational account, e.g., [Robinson et al., 2013](#)). Also normal weight models may be seen as more similar and less likely to be judgmental about other people's eating behavior ([Hermans, Larsen, Herman, & Engels, 2008](#)). Under- or overweight models may also remind people of their diet (e.g., [Anschütz, van Strien, & Engels, 2008](#); [Fishbach, Friedman, & Kruglanski, 2003](#); [Hermans et al., 2008](#)), which could reduce the influence of under- or overweight models' food intake on people's consumption of unhealthy foods. In contrast, being reminded about dieting could increase the likelihood that people will be influenced by another person's intake of healthy food, even of under- or overweight persons, because eating healthy food does not interfere with potential dieting concerns ([Stroebe, Van Koningsbruggen, Papies, & Aarts, 2013](#)). [Shimizu, Johnson, and Wansink \(2014\)](#), however, argued that eating in the presence of overweight models reduces people's health commitment goals. As a result, people may be more influenced by the food intake of overweight than of normal weight or underweight models.

With respect to unhealthy food intake, [Hermans et al. \(2008\)](#) investigated food intake effects when the confederate was slim or normal weight. They showed that the food intake of the model influenced participants only when the confederate was normal weight. When the confederate was slim, no modeling effects of unhealthy food intake occurred (for related findings, see also [De Luca & Spigelman, 1979](#), [Johnston, 2002](#), and [Salvy, Romero, Paluch, & Epstein, 2007](#)). So far, research on the influence of the presence of others on eating behavior has mainly focused on unhealthy food consumption. Thus, little is known about effects on healthy food consumption. One study by [Hermans, Larsen, Herman, and Engels \(2009\)](#), however, showed that participants also modeled the healthy food intake of another person. Because influence effects of healthy food appear to be under researched and the overall effect of [Hermans et al. \(2009\)](#) was rather small (Cohen's $f^2 = 0.08$), a first aim of the present study was to replicate these findings. Second, the influence of another person's appearance on the effects of healthy food intake remains unclear. Although [Hermans et al. \(2009\)](#) showed that participants modeled the healthy food intake of a normal weight confederate and also of a slim confederate, their manipulation of the model's appearance was unfortunately not successful (although the same manipulation was successful in an unhealthy eating context, [Hermans et al., 2008](#)). Participants did not observe any weight differences between the slim and normal weight confederate (i.e., the participants did not differ in their perception of the confederate's body figure which was measured with drawings of female figures on a 9 point scale). So it is possible that both confederates were regarded as normal weight. Furthermore, they did not investigate the influence of healthy food intake of overweight models. This is important to investigate as obesity rates continue to increase, making it more likely that people consume food in the presence of others who are overweight. Whether people are also influenced in their healthy eating behavior by the eating behavior of an overweight person is, according to our knowledge, not yet investigated.

A study related to the effect of an overweight person on the healthy eating behavior of others, showed that participants took and consumed more food when a confederate took a large amount of food than when no confederate was present ([McFerran, Dahl, Fitzsimons, & Morales, 2010](#)). This effect occurred regardless of whether the food was healthy or unhealthy. Furthermore, participants took and consumed more food when the confederate was thin compared with when the confederate was obese. Importantly, only

the presence of a thin or obese confederate was manipulated in this study, while the amount of food intake by the confederate was held constant. So it is possible that the same results would have been obtained when the confederate took a small amount of food. Hence, the results could be due to a thin or obese person being present, not necessarily to the influence of the amount of food the confederate took. Therefore, in our studies, we manipulated the confederate's amount of food intake.

More specifically, a confederate appearing either normal weight or overweight watched a film fragment together with a participant, while taking either a low amount (or no) of cucumber slices or a higher amount of cucumber slices (3 vs. 10 cucumber slices in Study 1; 0 vs. 4 cucumber slices in Study 2). We selected cucumbers as a healthy food because of its popularity as a healthy snack (cf., [Hermans et al., 2009](#)). In Study 2, we also included a condition in which the confederate appeared underweight. We used a different manipulation of the model's appearance than [Hermans et al. \(2009\)](#). First, as we were interested in an overweight condition, the confederates in the overweight condition wore a suit making them appear overweight (see [Appendix S1](#)). Second, it is conceivable that the difference between the slim and normal appearance conditions used by [Hermans et al. \(2008, 2009\)](#) was not large enough to be perceived by participants in a healthy eating context. Therefore, in Study 2, we included an underweight condition so that the difference in appearance would be maximized. As mentioned above, we expect to replicate the general effect of people's healthy food intake being influenced by the food intake of a confederate. Also, we explored whether the confederate's weight appearance would or would not moderate this effect, while showing that participants did perceive weight differences between the confederates.

Study 1

Method

Participants and design

A total of 144 female students from Tilburg University ($M_{\text{age}} = 19.54$ years, $SD_{\text{age}} = 1.88$) participated in this study. Their BMI ranged from 16.53 to 51.90 ($M = 21.57$, $SD = 3.41$). Twelve participants were underweight, 123 were normal weight, and 9 were overweight. Fifteen participants were excluded because they were suspicious about measuring mimicry of eating behavior ($n = 12$) or about the confederate appearing heavier than she really was ($n = 3$). A total of 129 participants remained in the final sample ($M_{\text{age}} = 19.43$ years, $SD_{\text{age}} = 1.86$). Their BMI ranged from 16.53 to 51.90 ($M = 21.55$, $SD = 3.51$). Ten participants were underweight, 121 normal weight, and 8 were overweight.

Participants were randomly assigned to one of the conditions of a 2 (food intake: 3 vs. 10 cucumber slices) \times 2 (appearance: normal weight vs. overweight) between participants design ($n = 34$ in the 3 cucumber slices food intake-normal weight condition; $n = 29$ in the 10 cucumber slices food intake-normal weight condition; $n = 36$ in the 3 cucumber slices food intake-overweight condition; $n = 30$ in the 10 cucumber slices food intake-overweight condition). The main dependent variable was the number of cucumber slices participants consumed. Participants engaged in the study for course credits or for €3,-.

Sample size was a result of terminating data collection after one month (as was decided beforehand). We report all data exclusions, all manipulations, and all measures in the study. Data exclusions were based on a priori decisions. Furthermore, the main analysis will be reported with and without exclusions.

Procedure

To create a situation in which we could study the influence of another person's healthy eating behavior on participants' eating

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