Consuming media, consuming food?
Reactivity to palatable food cues in television content
Alblas, M.C.

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CHAPTER 7

General discussion and conclusions
The present dissertation aimed to unravel to what extent, for whom, and through what processes exposure to palatable food cues embedded in TV content may result in unhealthy food choices and increased food intake. Even though the abundance of food cues in TV content is often assumed to contribute to overweight and obesity by triggering food intake (e.g., Boulos, Vikre, Oppenheimer, Chang, & Kanarek, 2012), the lack of strong empirical evidence for the causal relationship between exposure to food on TV and eating behavior, particularly in adults, highlighted the need for further investigation on this topic.

This dissertation contributed to this need in four ways. First, knowledge on the underlying processes through which exposure to palatable food cues on TV may affect eating behavior was largely absent (e.g., Boyland, Burgon, & Hardman, 2017). To identify potential processes, a systematic review of experimental research on psychological and physiological responses to palatable, visual food cues (i.e., food pictures, food words, real food, and food cues embedded in media content) was conducted. Moreover, two potential processes – hedonic eating goal accessibility and visual attention – were further explored in the context of food cues embedded in TV content. Second, the current dissertation investigated potential individual differences in psychological and behavioral reactivity to palatable food cues on TV, as individual differences have been suggested to play an important role in explaining previous inconsistent findings regarding effects of food cues on TV (e.g., Mills, Tanner, & Adams, 2013). Based on the goal conflict model of eating (Stroebe, Van Koningsbruggen, Papes, & Aarts, 2013), it was hypothesized that restrained eaters (i.e., chronic dieters) with low perceived self-regulatory success (PSRS), also called unsuccessful restrained eaters, would be more susceptible to the influences of exposure to food on TV compared to successful restrained eaters (i.e., chronic dieters with high PSRS) and unrestrained eaters (i.e., non-dieters). Third, to extend prior research that has almost solely focused on effects of food commercials, various types of TV content were examined in the present research (i.e., food commercials, culinary content, a TV show with subtly presented food cues), providing a more comprehensive view of the potential effects of food cues in TV content. Fourth, to gain understanding of the relationship between exposure to food cues in TV content and eating behavior outside a laboratory context, and in the broader adult population, the dissertation concluded with time use research among a sample of the general population of adults in the Netherlands. Moving beyond food cues as an explanation for the relationship between TV viewing and increased food intake, food intake was also studied in relation to TV viewing in general.
Key Findings
The research presented in Chapters 2 through 6 of this dissertation resulted in the following five key findings:

1. **Exposure to high-calorie, visual food cues may increase self-reported appetite, but does not consistently result in other immediate psychological and physiological responses.** The results of the systematic review as presented in Chapter 2 showed that self-reported appetite consistently increased in response to exposure to high-calorie food cues compared to non-food cues. This finding is based on research on a variety of visual food cues (i.e., food pictures, food words, real food, and food cues embedded in media content). Mixed or weak evidence was found for the effect of exposure to high-calorie, visual food cues on all other psychological responses, assessed with self-report (i.e., affect, cognitions, food appeal) as well as with behavioral tasks (i.e., attentional bias, mental accessibility of goals and cognitions, approach tendencies and affective evaluations, cognitive performance). Mixed or weak evidence was also found on physiological responses (e.g., salivation, heart rate, skin conductance). Although findings from Chapter 2 suggest that (self-reported) appetite may be an important process through which exposure to food cues in TV content may increase food intake, exploratory analyses in Chapters 3 through 5 showed only very little influence of exposure to food on TV on changes in self-reported appetite. Overall, these mixed findings suggest that evidence on the processes through which exposure to visual food cues – such as food cues on TV – may increase food intake are not unequivocal, and that they likely depend on other factors (e.g., individual differences, salience of the cues).

2. **To some extent, unsuccessful restrained eaters show heightened psychological reactivity (i.e., increased hedonic eating goal accessibility and visual attention to food) when exposed to palatable food cues embedded in TV content.** In Chapter 3, evidence was found that watching a cooking segment (vs. a non-food related segment) of a TV show briefly increased mental accessibility of a hedonic eating goal (i.e., the goal to eat palatable food) among unsuccessful restrained eaters, but decreased mental accessibility of this goal among successful restrained eaters. Results from an eye-tracking study, presented in Chapter 5, showed that unsuccessful restrained eaters had a faster initial orientation of visual attention to subtly depicted, palatable food cues in a TV show (i.e., they demonstrated a shorter time until their first fixation on food) compared to successful restrained eaters, which indicates heightened visual attention to food cues in TV content in unsuccessful restrained eaters. Unrestrained eaters generally showed
weaker reactivity to food cues. These findings shed some light on Key Finding 1 and suggest that psychological reactivity to palatable food cues may depend on individual differences in eating restraint and PSRS. It should be noted, however, that this heightened psychological reactivity in unsuccessful restrained eaters was not always found. In Chapter 3, effects on hedonic eating goal accessibility were only brief (i.e., they were only found in the first block of the computerized task used to measure goal accessibility). Furthermore, no effects on hedonic eating goal accessibility were found in the two other experiments in the chapter, that did not use a TV show but food commercials (vs. non-food related commercials) as stimuli. In Chapter 5, in contrast to the findings on unsuccessful restrained eaters’ fast initial orientation of visual attention to food cues, no such evidence was found on the other measured component of visual attention (i.e., the total duration of visual attention to food cues). Thus, individual differences in restrained eating and PSRS may explain psychological reactivity to food cues on TV to some extent, but effects are short in duration and are only found for some components of the process. The way the food is presented in TV content (i.e., in a TV show vs. commercials) likely plays a role as well (see also Key Finding 4).

3. **No evidence was found that unsuccessful restrained eaters’ heightened psychological reactivity to palatable food cues embedded in TV content translates into behavioral reactivity.** Even though results of Chapter 3 showed that watching a cooking segment (vs. a non-food related segment) of a TV show briefly affected hedonic eating goal accessibility differentially for successful and unsuccessful restrained eaters (see Key Finding 2), findings from Chapter 4 showed that watching the same cooking segment (vs. non-food related segment) did not result in more unhealthy food choices for unsuccessful restrained eaters, relative to successful restrained eaters. In Chapter 5, although unsuccessful restrained eaters showed a faster initial orientation of visual attention to palatable food cues in a TV show compared to successful restrained eaters, this heightened visual attention was not associated with an increased subsequent intake of (unhealthy) food.

4. **Reactivity to palatable food cues in TV content is likely influenced by the way food cues are presented.** In Chapter 3, the effect of exposure to food cues in TV content on hedonic eating goal accessibility was tested with two different types of TV content. Two experiments showed no effect of exposure to food (vs. non-food related) TV commercials on hedonic eating goal accessibility. However, a third experiment did show such an effect of a cooking segment (vs. a non-food related segment) of a TV show. The commercials
and the TV show differed in the duration of exposure to the food cues, which was longer in the TV show, and the content served different purposes (i.e., a TV show mainly aims to entertain and/or inform viewers, whereas commercials promote a product to viewers). The differential effects could therefore be the result of differences in salience of the food cues and/or engagement with the content in general. Although the two types of TV content were not directly compared within one experiment, it is unlikely that factors other than the stimuli caused the differential findings because the same methods and procedure were used across the three experiments, and in the first experiment a similar sample was recruited as in the third experiment. It may therefore be expected that reactivity to food cues in TV content depends on the way these cues are presented, with stronger effects for food cues appearing in cooking shows compared to commercials.

5. The relationship between TV viewing and food intake is likely better explained by influences relating to the activity of TV viewing in general, than by exposure to palatable food cues in TV content. Results from a seven-day time use diary study conducted among a sample of the general population of adults in the Netherlands, as presented in Chapter 6, showed no differences between the time spent on food intake while watching culinary TV content (i.e., programs focusing on food and cooking) and the time spent on food intake while watching non-food related TV content. However, regardless of age, gender, and educational level, the majority of participants reported to regularly engage in food intake while watching TV, and when food was consumed in front of the TV, the average duration of food intake was longer than when food was consumed without concurrent media use. Findings also suggest that this additional time spent on food intake was not compensated for at another time during the day, as it was found that on days of food intake in front of the TV, the total time spent on food intake was higher compared to days of food intake without concurrent media use. Even though calorie intake was not assessed, these findings indicate that other influences relating to TV viewing, such as distraction, are likely better able to explain the association between TV viewing and increased food intake than exposure to food cues in TV content.

Factors Influencing Psychological Reactivity to Palatable Food on TV

Although no evidence was found that hedonic eating goal accessibility and visual attention served as underlying processes explaining eating behavior in response to seeing food on TV, the findings of the present dissertation provide useful insights regarding psychological reactivity to food cues embedded in TV content, a topic on which knowledge was largely absent to date (Boyland et al., 2017). Based on the current research, at least two factors
appear to influence psychological reactivity to food cues on TV: individual differences (i.e., in eating restraint and PSRS) and the type of content in which the food cues are embedded. This suggests that food cues in TV content are not processed similarly for everybody and for all types of TV content, and that these factors should be taken into account when studying the effects of food on TV.

**Individual differences**

Results from Chapters 3 and 5 show that food cues embedded in TV content are to some extent processed differentially depending on individual differences in eating restraint and PSRS. More specifically, evidence was found that unsuccessful restrained eaters showed stronger psychological reactivity to food compared to successful restrained eaters (and unrestrained eaters). The goal conflict model of eating predicts that unsuccessful restrained eaters are more susceptible to the influences of external, palatable food cues because exposure to these cues may activate a hedonic eating goal, and inhibit a competing dieting goal (Stroebe et al., 2013). So far, however, this was mainly tested with isolated food cues (i.e., words representing food in a computerized task; Fishbach, Friedman, & Kruglanski, 2003; Papies, Stroebe, & Aarts, 2008a). Results from the current research showed that to some extent (i.e., briefly, and only for some content), processes of goal accessibility also apply to food cues that are more naturally occurring (i.e., in TV content).

The goal conflict model of eating further predicts that increased hedonic eating goal accessibility may steer (visual) attention to cues congruent with this goal to facilitate goal pursuit (Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008; Stroebe et al., 2013). While based on this model, as well as based on previous research on visual attention to food cues (Junghans, Hooge, Maas, Evers, & De Ridder, 2015; Van der Laan, Papies, Hooge, & Smeets, 2017), it was expected that unsuccessful, compared to successful restrained eaters, would show a longer total duration of visual attention to food cues, it was found instead that unsuccessful restrained eaters differed from successful restrained eaters in that they showed a faster initial orientation to food cues on TV. These findings suggest that self-regulation is particularly important during early processes of visual attention (i.e., detection of food cues), and underscore the relevance of distinguishing early and later processes of attention to food cues (see also Werthmann, Jansen, & Roefs, 2015). Food cues in TV content seem to grab, but not so much hold the attention of unsuccessful restrained eaters. Altogether, these findings show that individual differences in eating restraint and PSRS play a role in how food cues in TV content are processed, which may reflect a heightened sensitivity to food cues in the environment in unsuccessful restrained eaters.
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**Type of TV content**

In the current research, some evidence was found for the influence of the type of TV content with regard to psychological reactivity to food cues, as watching a cooking segment, but not food commercials, affected hedonic eating goal accessibility. This finding might be explained by salience of the food cues, as exposure to the food cues in the cooking segment was much longer in duration compared to exposure to the food cues in the food commercials. This explanation is consistent with prior research suggesting that more salient food cues likely have stronger effects as it is more difficult to ignore them (Coelho, Jansen, Roefs, & Nederkoorn, 2009; Mann & Ward, 2004; Zhang & Seo, 2015). The differential effects of exposure to food commercials and the cooking segment could also be the result of differential viewing of both types of content. Based on literature on narrative transportation (Green, Brock, & Kaufman, 2004; Moyer-Gusé, 2008), it may be expected that the viewer is more immersed in the content when watching a cooking segment compared to commercials, as the former has a narrative and is likely more entertaining to watch, which could likely lead to stronger effects of food cues. This is supported by empirical research that found that the amount of experienced narrative transportation while watching TV predicted food intake (Lyons, Tate, & Ward, 2013; Wonderlich-Tierney, Wenzel, Vander Wal, & Wang-Hall, 2013). At the same time, knowledge of the persuasive intent of commercials may evoke resistance (Boush, Friestad, & Rose, 1994; Moyer-Gusé, 2008) and might therefore lead to weaker effects of food cues in commercials compared to food cues that are embedded in other types of content (Folkvord, Anschütz, Boyland, Kelly, & Buijzen, 2016).

Both salience of the food cues and a differential engagement with the content in general may explain why effects on goal accessibility were found after watching a cooking segment, but not food commercials. These potential explanations require further investigation. Along these lines, it would be interesting to also explore other types of TV content depicting more subtle food cues, such as talk shows, sitcoms, or movies. Here, the content is likely as entertaining as culinary content (or at least more than commercials), but the food cues are likely less salient because they are not central to the content. One previous study directly compared behavioral effects of food (vs. non-food related) commercials and a segment of a reality TV show with (vs. without) subtle food cues (i.e., people having dinner together), and found that TV commercials did not influence food intake whereas the TV show with food cues resulted in less food intake (Van Nee, Larsen, & Fisher, 2016). This indicates that less salient food cues may activate self-regulatory processes to counter the influence of these cues, perhaps through shifting attention towards non-food related cues. Future research could test whether this assumption holds.
The finding that food cues are likely processed differently depending on the TV content in which these cues are embedded is relevant, especially because previous research on the effects of TV content almost exclusively studied food commercials. Findings from the current dissertation highlight the importance to investigate different types of TV content to gain a more comprehensive understanding of the potential effects of food cues in TV content.

**Successful and Unsuccessful Restrained Eaters’ Behavioral Reactivity to Palatable Food**

As discussed, the current research is in accordance with some predictions of the goal conflict model of eating relating to the processing of food cues, as exposure to food on TV increased hedonic eating goal accessibility and visual attention to food in unsuccessful restrained eaters to some extent. However, these individual differences explained this reactivity only temporarily, only for one type of TV content (i.e., for goal accessibility, Chapter 3), and only for one component of the process (i.e., for visual attention, Chapter 5). Moreover, these differences in goal accessibility and visual attention, which are proposed to result in subsequent eating behavior (Stroebe et al., 2013), did not translate into differential food choices or increased food intake after watching TV content with food cues. This suggests that individual differences in eating restraint and PSRS, and the goal conflict model of eating, only provide a limited explanation for reactivity to food cues embedded in TV content. The strong influence of potential underlying processes other than goal accessibility or visual attention (i.e., processes that were not measured in the studies conducted in this dissertation) is unlikely, because this would still presume that unsuccessful restrained eaters would show increased unhealthy eating behavior in response to food cues, which was not found.

Previous research corroborating the goal conflict model of eating generally used isolated food cues, such as food words in a computerized task and real food (Fishbach et al., 2003; Houben, Nederkoorn, & Jansen, 2012; Papies et al., 2008a; Van Koningsbruggen, Stroebe, & Aarts, 2013b). Potentially, because food cues on TV are embedded in content together with other information that needs to be processed by the viewer, food cues in TV content might be less influential in comparison to isolated cues (Zhang & Seo, 2015). This could mean that even though unsuccessful restrained eaters’ motivation for unhealthy food was temporarily increased as a result of seeing palatable food on TV, activation of these potential processes was too weak to actually influence behavior. In line with what was suggested earlier in this chapter regarding cue salience, food cues embedded in media content may be less salient compared to isolated food cues, and therefore possibly less tempting. Future research should further test this.

At the same time, it should also be noted that some other prior research also found no differential reactivity between successful and unsuccessful restrained and unrestrained eaters.
using isolated food cues, for example on effort to obtain food (Van Koningsbruggen, Stroebe, & Aarts, 2012) or food intake (Nguyen & Polivy, 2014). In general, more research should test whether unsuccessful restrained eaters’ psychological reactivity following palatable food primes actually results in (unhealthy) food intake. With the current knowledge, it seems likely that in addition to differences in sensitivity to external food cues, dieting success is also (or perhaps more strongly) defined by other factors. For instance, successful restrained eaters may on a day to day basis avoid palatable food cues more often than unsuccessful restrained eaters (Cole, Dominic, & Balcetis, 2020; Ent, Baumeister, & Tice, 2015), and/or may be more flexible in their diets, so that a one-time violation of dieting goals is compensated for afterwards rather than resulting in giving up on dieting intentions (Meule, Westenhöfer, & Kübler, 2011; Reichenberger, Smyth, Kuppens, & Blechert, 2019). In general, successful restrained eaters adopt a range of psychological and behavioral strategies that make them more successful in weight management, relating to the planning of food purchases, portion size control, counting calories, and engaging in more physical activity (Keller & Hartmann, 2016; Keller & Siegrist, 2015), and their sensitivity to external food cues may perhaps not play a major role in this.

**Food on TV and its Contribution to Food Intake**

Taking together the findings of all chapters, no strong evidence was found for psychological nor behavioral reactivity to food cues in TV content. Results from the empirical chapters showed some evidence for increased psychological reactivity to food cues in TV content, but only for people who are highly susceptible to food cues, only for some types of TV content, and only briefly. This is corroborated by the systematic review, concluding overall inconsistent evidence of psychological (and physiological) reactivity to visual food cues – among which food cues in TV content. Findings from the systematic review did suggest that self-reported appetite could play a role in explaining potential effects of exposure to food cues on food intake. In all five studies in the empirical chapters, self-reported appetite was assessed before and after exposure to TV content. Exploratory analyses (not reported in the chapters) showed that only in one of these studies, one measure of appetite (i.e., hunger) was significantly higher after exposure to TV content with (vs. without) food cues (Chapter 3, Experiment 1). No evidence for increased appetite was found in the other four studies. The discrepancy between results of the systematic review and the empirical studies might indicate reporting or publication bias. More specifically, other previous research may also have measured appetite, but may have found no evidence of increased appetite in response to palatable food cues. Due to this non-significance, these results may not have been reported in the article, or the article may not have been published. As a result, previous
nonsignificant results may have been less likely to be included in the systematic review than significant results.

No evidence was found for the influence of food cues in TV content on behavioral reactivity, neither in a laboratory context, nor in a naturalistic setting. In addition, no evidence was found for the relationship between potential psychological responses to food cues on TV and behavioral reactivity. Individual differences were not able to explain behavioral reactivity either. In addition to eating restraint and PSRS as the most important individual difference variables studied, some other individual differences were also explored throughout this dissertation. In the study reported in Chapter 6, no differences in the time spent on food intake while watching food-related TV content (vs. non-food related TV content) were found based on demographic variables. Furthermore, exploratory analyses were conducted on the data in Chapters 4 and 5 to investigate whether in these studies, behavioral reactivity to food cues on TV could be explained by other individual characteristics that have sometimes been found to moderate effects of food on TV in prior research, such as BMI and external eating (Van Nee et al., 2016; Van Strien, Herman, & Anschutz, 2012). However, this was not the case.

Altogether, it seems that effects of exposure to food cues embedded in TV content are highly dependent on a range of factors relating to individual differences, the type of content, and other factors as well, at least in adults (stronger effects have been reported in children, e.g., Boyland et al., 2016; Mills et al., 2013; Russell, Croker, & Viner, 2019). This raises the question how influential palatable food cues embedded in TV content actually are in increasing immediate food intake. The consistently reported positive relationship between TV viewing and food intake as well as obesity, based on cross-sectional as well as longitudinal evidence (Cameron et al., 2003; Chapman, Benedict, Brooks, & Schiöth, 2012; Hu, Li, Colditz, Willett, & Manson, 2003; Salmon, Bauman, Crawford, Timperio, & Owen, 2000) suggests that other factors are likely more important than exposure to food cues. Findings from the study reported in Chapter 6 corroborate this notion, by showing that not exposure to food cues in TV content, but the activity of TV viewing in general was related to the time spent on food intake. This suggests that the activity of watching TV might contribute to food intake to a larger extent than the palatable food cues that people may be exposed to while watching TV.

This does not mean, however, that food on TV does not contribute to increased food intake and subsequent overweight and obesity at all. The addition of small influences on an individual level can eventually make a large difference (Boyland et al., 2016). In other words, one-time exposure to food cues may not have a strong effect, but repeated exposure to a range of food cues presented in a variety of types of content during an evening of TV viewing may contribute to increased food intake. It is also possible that the effect of exposure to food cues in TV content on food intake occurs via indirect rather than direct routes, for instance
by distributing social norms about the type and amount of food that are appropriate to eat (Boulos et al., 2012; Dickinson, 2000). Food advertising may also produce indirect effects on food intake through the purchase of more (unhealthy) food products (Pearson et al., 2014). These potential explanations should be explored in future research before concluding that palatable food cues embedded in TV content only have a weak influence on people's food intake.

**Limitations and Directions for Future Research**

Several limitations of the present research should be discussed alongside directions for future research to further improve the understanding of the relationship between TV viewing (and media use in general) and food intake. Regarding the potential effects of food cues embedded in media content, three directions are worth exploring.

First, the way food cues are presented in TV content could influence effects and therefore, its role could be further investigated. Based on the findings of the current as well as some previous research (e.g., Coelho et al., 2009; Folkvord et al., 2016), it could be expected that food cues that are more (vs. less) salient to the viewer and/or food cues presented in TV content that is perceived as more entertaining (vs. persuasive) would be most influential. As different types of TV content were not directly compared in the current research, future investigations should test these assumptions. Investigating whether food cues in different content types produce different effects is relevant, as research on effect of food cues presented in TV content other than commercials remains scarce. If salience of food cues and/or engagement with the TV content indeed appear influential, this would call for further investigations of effects of food cues presented in TV content other than commercials.

Second, it is recommended to conduct additional research in naturalistic settings to capture the relationship between exposure to food cues on TV and eating behavior in daily life. The vast majority of research in this domain has investigated immediate responses to a relatively short and one-time exposure to food cues in a laboratory setting, which also holds for most of the research reported in the present dissertation. Such a controlled environment has certain benefits, particularly when examining causal relations and underlying processes of which its measurement may be relatively sensitive to influences of the environment. However, in real life, exposure to food cues and its effects are likely more complex. During an evening of TV viewing, one may be repeatedly exposed to a variety of food cues which may elicit stronger effects on food intake compared to a single exposure session in the laboratory. At the same time, while watching TV at home people are not only exposed to palatable food cues, but also to a range of other cues, of which some could remind people of their dieting goals (e.g., slim bodies, healthy food) and thereby reduce effects of exposure food cues on food intake.
(Higgs, 2015). In this regard, a useful tool would be Ecological Momentary Assessment, which allows for a precise measurement of behavior and its influences at different moments across the day (Maugeri & Barchitta, 2019). Furthermore, as suggested earlier, it is likely that in addition to immediate responses to food cues, indirect effects of exposure to food on TV (e.g., via norms or via purchases of advertised food) play a role as well, which are difficult to assess in laboratory settings. To gain a more complete understanding of how exposure to food cues on TV and food intake are related, it is important to complement laboratory research with studies in naturalistic settings.

Third, most research on effects of food cues in media content, including the current research, has focused on TV content. Examining other types of media content in addition to TV will provide a more comprehensive view of how media use may be related to food intake and obesity (Boyce, 2007; Robinson et al., 2017; Whalen, 2015). Of particular interest would be social media. The use of social media has massively risen, together with the omnipresence of food cues in social media content (Barre, Cronin, & Thompson, 2016; Bragg et al., 2020). At the same time, these cues are very diverse, differing in purpose as well as salience (e.g., fast food advertisements, recipe videos, restaurant pictures shared by friends, product reviews by bloggers). It would be interesting to investigate whether food cues on social media, as well as in other types of media (e.g., magazines, games), produce effects similar to food cues in TV content.

As pointed out earlier, food cues are only one way by which TV viewing could contribute to food intake and eventually, obesity (Boulos et al., 2012; Marsh, Mhurchu, & Maddison, 2013), and based on the present research it is likely that other explanations play a larger role. One frequently proposed mechanism is distraction (Boulos et al., 2012; Braude & Stevenson, 2014; Marsh et al., 2013). When paying attention to the TV content, less attentional resources are likely available for internal signals that normally regulate the end of the meal, such as satiety, which could lead to overconsumption. Furthermore, the TV could also serve as a conditioned cue to eat (Braude & Stevenson, 2014; Chaput, Klingenberg, Astrup, & Sjödin, 2011). More specifically, resulting from learned associations between TV viewing and eating that have formed through repeatedly having combined the two behaviors in the past, turning on the TV could act as a cue that triggers food intake. A better mood, generally induced by TV viewing, could further contribute to eating (Braude & Stevenson, 2014; Köster & Mojet, 2015). However, strong empirical evidence on the (relative) impact of these various mechanisms is lacking (e.g., Cleland et al., 2018) and therefore needs further investigation. Another interesting, novel idea is to explore goal accessibility in response to TV content without food cues. As TV viewing is often an entertaining activity, it may serve a hedonic goal – just as eating palatable food often does. According to the theory of goals systems, two
means that are connected by a shared goal activate each other more easily than two means that belong to a different goal (Kruglanski et al., 2002). Watching TV might therefore trigger food intake via increasing the accessibility of (related) hedonic goals, and this effect could be expected to be stronger for entertaining (vs. informative or persuasive) content.

Conclusions and Practical Implications
Exposure to palatable food cues embedded in TV content may produce psychological reactivity, but this reactivity likely depends on a range of factors. Based on empirical investigation of two types of psychological responses (i.e., hedonic eating goal accessibility and visual attention), two of such influential factors are individual differences in eating restraint and perceived self-regulatory success, and (likely) the type of TV content. However, no evidence was found that heightened psychological reactivity in response to food on TV resulted in unhealthy food choices or increased food intake, nor that exposure to food cues in general was related to such behavioral reactivity. Taking results from the current research together with findings from previous investigations, it appears that the influence of palatable food cues on TV is less evident than is often thought. With the current knowledge there is no compelling evidence for the harmful effects of exposure to food cues in TV content on food intake, nor on processes that are thought to result in such behavior. At least in adults, governmental regulation of food advertising on TV, or advising people to avoid watching cooking shows, should therefore not be expected to have a major influence on controlling overconsumption. This does not mean that the frequent exposure to food on TV may not contribute to increased food intake at all. However, other influences are likely better able to explain the association between TV viewing and increased food intake, such as distraction, habits, and/or mood. It is therefore recommended to look beyond the influence of food cues in order to reduce overconsumption, and subsequent obesity, resulting from TV viewing.