Attitude-Based Self-Regulation: An Experience Sampling Study on the Role of Attitudes in the Experience and Resolution of Self-Control Conflicts in the Context of Vegetarians

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Abstract

The regulation of self-control conflicts is integral to exerting self-control and pursuing (long-term) goals. Nonetheless, prevailing conceptualizations of self-control conflict remain vague, and the mechanisms and boundary conditions through which self-control conflict emerges are rarely empirically tested. In the present research, we thus propose that self-control conflicts originate in accessible ambivalent attitudes. To examine our attitudinal perspective on self-control and self-regulation, we investigated how (ambivalent) attitudes influence self-control conflicts and how resolving these attitudinal origins may enhance self-control and avert future conflicts. We ran a 21-day diary study assessing daily inhibition conflicts about eating meat among conflicted vegetarians (N = 156, k = 2,346). Our findings suggest that holding (positive) attitudes that conflict with pre-dominant (negative) attitudes predicted heightened conflict frequency in people's daily lives; and the situational accessibility of both positive and negative attitudes is associated with conflict magnitude. Moreover, to cope with these conflicts, people often engaged in attitude-based self-regulation involving the affirmation of negative and the disaffirmation of positive attitudes towards eating meat, thereby successfully exerting self-control. Contrary to our prediction, however, we did not find evidence for the effectiveness of attitude-based self-regulatory strategies for mitigating subsequent conflict. In fact, various self-regulatory strategies, including the disaffirmation of positive attitudes, self-distraction, and thought suppression, even escalated subsequent conflict. These findings suggest that our attitudinal perspective on self-control and self-regulation provides a parsimonious and testable conceptualization of self-control conflicts.

Keywords: Self-Control, Conflict, Attitudinal Ambivalence, Self-Regulation, Diary Study

Introduction

People frequently encounter challenging situations in which they need to exert self-control, for instance, when it comes to eating, consuming alcohol or tobacco, sleeping, or exercising (Hofmann, Baumeister, et al., 2012; Hofmann, Vohs, et al., 2012). Self-control is thus indispensable across various situations that require inhibiting prepotent responses or initiating and persisting strenuous behavior (Milyavskaya et al., 2019; Werner & Ford, 2023). It is assumed that people exert self-control by resolving conflicts in a way that lets them pursue one of two competing goals, often favoring long- vs. short-term goals (Inzlicht et al., 2021; Werner & Ford, 2023). This way, self-control seems to benefit people's careers, health, and well-being (e.g., de Ridder et al., 2012; Tangney et al., 2004).

Despite the central role of conflict in self-control research, we still know little about how self-control conflicts are construed. In fact, self-control conflicts have been conceptualized in various ways, such as the presence of competing goals or the opposition of automatic vs. controlled processes (Milyavskaya et al., 2019). In a recent review of the self-control literature, Werner and Ford (2023) thus broadly defined self-control conflicts as a "discrepancy between goals, desires, thoughts, emotions, and/or behaviours that are simultaneously active, mutually exclusive, and compete for a single response". While this and other conceptualizations suggest various constellations of how self-control conflict may arise, these conceptualizations are often vague and rarely empirically tested.

The prominent process model of self-control (Duckworth et al., 2016) argues, for instance, that conflicts arise as impulses develop across four stages: Impulses form in a given situation, such as when people open the fridge (situation stage); in this situation, people's attention might get drawn to a doughnut (attention stage), which they appraise (appraisal stage), leading to an impulse to eat the donut (response stage). This process can lead to conflict when temptation-oriented and goal-oriented valuation systems indicate competition between impulses (Duckworth et al., 2016). However, the

process model of self-control does not specify these valuation systems and thereby does not delineate the actual origins of conflict.

The model of value-based choice provides important clues on the possible origins of conflict, arguing that conflicts are indeed shaped by the subjective value of competing options within a dynamically accruing decision-making process (Berkman et al., 2017). Specifically, Berkman and colleagues (2017) define self-control as "the process of selecting a behavior that is consistent with a focal goal when it conflicts with goal-inconsistent alternatives" (Berkman et al., 2017, p. 2) and propose that people assign value to the competing response options by dynamically integrating "gains" (such as money and social approval) and "costs" (like effort and opportunity costs) that come with each option. They also add multiple predictions about factors that may contribute to and shape the phenomenology of conflict (i.e., conflict strength), including attention-driven fluctuations and moral overtones (Berkman et al., 2017). This may suggest that conflict strength peaks when the subjective values of the two choice options are both high and "take close turns" in the dynamically dominating value accumulation process; however, the boundary conditions that promote conflict lack further specification.

The integrative Self-Control Theory (SCT; Kotabe & Hofmann, 2015) is similarly built on the idea that conflict may be a function of the strength of competing options. SCT takes a motivational force perspective on self-control and spells out the interplay of seven components in self-control, operating at a self-control activation and self-control exertion stage. The outcome of the self-control activation stage is the extent of desire-goal conflict, which is assumed to trigger self-control exertion. SCT makes the specific prediction that desire-goal conflict is a function of (a) desire strength, (b) goal strength, and (c) the degree of incompatibility between these two components. Thus, according to the SCT, self-control conflict should be strongest when desire strength and goal strength (i.e., commitment

to the self-control goal) are both high and when these motivational tendencies are maximally incompatible (opposing) with each other. For instance, whereas a desire for junk food may be fully incompatible with a dieting goal, it may only be partially incompatible with an exercising goal (Kotabe & Hofmann, 2015). However, it is unclear how exactly incompatibility is operationalized at a motivational level of analysis, and, as the authors note, determining the exact function by which conflict emerges remains an important goal for future research.

In summary, whereas multiple models have made predictions about the structure of self-control conflict and/or the origins of self-control conflict, the concept has remained obscure. Specifically, social-cognitive mechanisms and the boundary conditions through which self-control conflicts emerge have been largely underspecified. In the following, we address this gap by introducing a novel perspective building on the idea of attitudinal ambivalence as a key concept to understanding conflict.

Attitude-Based Self-Control Conflicts

We propose and test a parsimonious conceptualization of self-control conflicts, assuming self-control conflicts are rooted in simultaneously accessible conflicting attitudes. Attitudes can be thought of as evaluations of people, objects, events, or ideas, including cognitive, affective, and behavioral components (Eagly & Chaiken, 1993). An attitude informs people how the attitude object fits their goals and guides reactions towards them: Attitude objects that are evaluated positively align with people's needs and goals (Katz, 1960; Unkelbach et al., 2020). Thus, people's cognitive ("Doughnuts are sweet and tasty"), affective ("I like doughnuts"), and behavioral reactions ("I approach the donut with a watering mouth") towards the attitude object can be thought of as a reflection of people's current goals in a given situation (Unkelbach et al., 2020). For instance, when people evaluate an attitude object positively, it likely aligns with their immediate goals and needs, influencing their reactions accordingly.

Attitudes may, however, not only be univalent (i.e., positive or negative) but can also be ambivalent (i.e., both positive and negative; Cacioppo et al., 1997; Kaplan, 1972). When people are ambivalent, they might not only think of doughnuts as "Sweet and Tasty" but also as "Calorie Bombs" at the same time. This ambivalence leads some people to like and dislike doughnuts simultaneously, resulting in a dilemma of whether to approach or avoid them (Schneider et al., 2013, 2015; van Harreveld et al., 2015b). In fact, ambivalent attitudes can lead to a discomforting meta-cognitive conflict called felt ambivalence (Newby-Clark et al., 2002; Priester & Petty, 1996). People often experience felt ambivalence in self-control situations (Gillebaart et al., 2016; Schneider et al., 2019) and feel literally torn when they encounter and make decisions about attitude objects, like unhealthy food, meat, or environmental actions (Buttlar et al., 2021, 2023; Buttlar & Walther, 2018; Gillebaart et al., 2016; Schneider et al., 2019). Thus, from an ambivalence perspective on conflict, we argue that self-control conflicts can be conceptualized as a meta-cognitive conflict when encountering ambivalent attitude objects relevant to their goals.

Ambivalent attitudes do not always lead to felt ambivalence, and ambivalence research provides insights into the conditions under which ambivalent attitudes (do not) lead to felt ambivalence (e.g., Itzchakov et al., 2020; Petty et al., 2006; van Harreveld et al., 2009). In fact, the association between holding ambivalent attitudes (i.e., potential ambivalence) and experiencing felt ambivalence for various pre-selected and self-chosen (ambivalent) attitude objects is only moderate ($.21 < r < .58$; DeMarree et al., 2014; Pauer et al., 2023; Sargent & Newman, 2021; Thompson et al., 1995). Thus, it is not only the mere existence of equally strong positive and negative attitudes that determines conflict magnitude. Conflict magnitude is, for example, also determined by the anticipation of conflicting attitudes (Priester et al., 2007), the realization that others do not share one's attitude (Priester & Petty, 2001), or the desire to have a different attitude (DeMarree et al., 2014). Most crucially, however, the magnitude of conflict

increases when both attitude components are simultaneously accessible (McGregor et al., 2019). That is, felt ambivalence is experienced more strongly the faster people recall both their positive and negative evaluations and the stronger people report to elaborate on it (Itzchakov et al., 2020; Newby-Clark et al., 2002; Pauer et al., 2024). Thus, the frequency and magnitude of conflict increase when the accessibility of ambivalent attitudes increases.[1]

This way, an attitudinal perspective allows us to comprehend how information about the value of choice options is formed, mentally represented, and activated (e.g., Gawronski et al., 2014; Houwer et al., 2021) and why it leads to conflict (van Harreveld et al., 2015a). That is, by providing information on the alignment of the attitude object with one's goals (Katz, 1960), attitudes readily inform people about the evaluation of choice options. Notably, positive and negative attitudes about choice options are not only integrated within a singular evaluation when coming to attention (cf. Berkman et al., 2017), but they may conflict with each other in the form of ambivalence (Cacioppo et al., 1997; Kaplan, 1972). As such, we propose that people experience self-control conflicts if ambivalent attitudes become simultaneously accessible. For instance, when people's attention is drawn to a doughnut, accessible ambivalent attitudes make them realize that eating the doughnut aligns with the hedonic goal of eating tasty food but also that eating it contradicts their weight-watching goals. Consequently, we argue that self-control conflicts manifest in the form of felt ambivalence when positive and negative attitudes towards one and the same attitude object become accessible that are relevant to people's goals.

This conceptualization provides novel predictions regarding the situations that give rise to self-control conflict and its intensity that go beyond predictions outlined, for instance, in the process model of self-control (Duckworth et al., 2016), the model of value-based choice (Berkman et al., 2017), or the

[1] This does not implay that people cannot experience conflict due to implicit ambivalent atttides. In fact, implicit ambivalence attitudes have been found to result in similar downstream consequences as explicit felt ambivalence (e.g., Faure et al., 2022).

SCT (Kotabe & Hofmann, 2015). Most centrally, an attitudinal perspective on conflict provides the novel idea that conflict experiences may increase as a function of the intensity and inconsistency of the attitudinal component opposing the pre-dominant attitude (Priester & Petty, 1996). As attitudes inform people about their goals, we argue that strong and simultaneously accessible ambivalent attitudes elicit self-control conflicts: People experience self-control conflict when both positive and negative attitudes come to their minds in a given situation. That is, attitudes inform people that an attitude object, such as a donut, aligns with their hedonic goals (to eat tasty food), and they elicit consistent cognitive, affective, and behavioral reactions, for instance, the desire to approach the donut; however, they also inform them that the donut does not align with their long-term goal (to stay slim and healthy) and they elicit according responses such as restraint and avoidance. This helps to understand how self-control conflicts arise and under which conditions they do so. For instance, it extends prevailing theorizing on self-control conflicts, which often assumes that conflict mostly occurs when people are conflicted between similarly attractive alternatives (e.g., Berkman et al., 2017; Duckworth et al., 2016). An attitudinal perspective on self-control conflicts thus allows us to develop and test novel predictions of when and how self-control conflicts (do not) arise.

Attitude-Based Self-Regulation

As resolving self-control conflict is crucial to exert self-control (Inzlicht et al., 2021; Werner & Ford, 2023), we argue that our attitudinal perspective helps to understand how people resolve these conflicts effectively via self-regulatory strategies. Self-regulatory strategies are methods people use to adapt their cognitive, motivational, affective, or behavioral responses to exert self-control (Werner & Ford, 2023). Self-regulatory strategies are used at various stages during the development of a tempting or prepotent impulse (Duckworth et al., 2016; Hennecke & Bürgler, 2020). Thus, self-regulatory strategies can be categorized as preventive and interventive (Hofmann & Kotabe, 2012; see also

Duckworth et al., 2016). Preventive strategies include situation selection (e.g., avoiding passing a bakery), situation modification (e.g., locking doughnuts away), whereby people are assumed to avoid conflict from arising in the first place (Hofmann & Kotabe, 2012); interventive strategies include attentional deployment (e.g., looking away from the doughnut), cognitive change (e.g., thinking of the doughnut as a calory bomb), or response modulation (e.g., suppressing the impulse to eat the doughnut) whereby people stop unfolding conflict (Hofmann & Kotabe, 2012).

It has been suggested that the popularity and effectiveness of self-regulatory strategies vary depending on the stages at which they are applied during the development of self-control conflicts. Most prominently, the Process Model of Self-Control argues that it is better to intervene at earlier stages of a tempting impulse before the self-control conflict becomes too strong (Duckworth et al., 2016). Thus, people should prefer situation selection and modification strategies because they prevent the conflict from occurring at all; however, if preventing the conflict is not possible, it is best to intervene via attentional deployment or cognitive change strategies to resolve the conflict before people can only suppress the tempting impulse and withstand their conflict via response modulation. This assertion, however, received mixed empirical evidence: While some studies reveal strategies that seem more popular and effective than others in exerting self-control and its downstream consequences (Hennecke et al., 2019; Nielsen et al., 2019), other research indicates that there are no particular advantages of using specific self-regulatory strategies (Britton et al., 2023; Williamson & Wilkowski, 2020). We argue that the limited conclusiveness of this literature results from primarily descriptive research that rarely taps into the mechanisms of how self-regulatory strategies can address self-control conflicts and promote self-control success.

Based on our attitudinal perspective of self-control conflicts, we propose that self-regulatory strategies are particularly effective and popular if they are capable of regulating the attitudinal basis of

self-control conflicts and its accessibility. Preliminary evidence for this assertion comes from a recent experience-sampling study investigating the initiation and endurance of demanding tasks, such as learning or exercising, in daily life (Hennecke et al., 2019). In this study, cognitive change strategies were particularly popular compared to other typical self-regulatory strategies (Hennecke et al., 2019). This was especially the case for cognitive change strategies in which people who thought of the positive aspects of completing a strenuous task and the negative aspects of not doing so reported heightened subjective self-control success compared to other self-regulatory strategies. While this study did not shed light on the reasons for the popularity and effectiveness of self-regulatory strategies, we argue that their capacity to change attitudes plays a pivotal role in helping people align conflicted attitudes with their long-term goal of engaging in these demanding tasks. That is, by affirming the positive aspects of completing the task, people's attitude towards the task becomes more positive; and by affirming the negative aspects of not doing the task, the alternative of not persisting becomes more negative. By regulating attitudes situationally, people thus can resolve their conflict, helping them to make decisions in line with their goals (cf. Buttlar, Pauer, & van Harreveld, 2024).

Further insights into the mechanisms and direction involved in such attitude regulation come from laboratory research on inhibition conflicts, where people must resist temptations to exert self-control. For instance, when experiencing self-control conflicts about unhealthy food, people think faster of their *negative* attitudes towards unhealthy food if they are better at exerting self-control (i.e., have high trait self-control; Stillman et al., 2017). People even shift their attitudes when such self-control conflicts become accessible, such that they, for instance, evaluate fattening foods more negatively (Fishbach et al., 2010). In the face of inhibition conflicts, people thus seem to regulate their attitudes to resolve their conflicts, especially by affirming the *negative* attitudes; additionally, they could also disaffirm their positive attitudes to further resolve their attitudinal inconsistencies (Buttlar,

Pauer, & van Harreveld, 2024). Therefore, we hypothesize that people who need to refrain from tempting behaviors will affirm their negative attitude components more frequently than disaffirm positive ones; however, we expect that attitude regulation in both directions may facilitate self-control.

As such, attitude-based self-regulation differs from other self-regulation strategies due to its focus on changing the attitudinal basis regarding the attitude objects that elicit self-control conflicts. Attitude-based self-regulation helps people cope with self-control conflicts by changing at least one of the conflicting evaluations underlying an ambivalent attitude. In comparison, self-regulation more generally refers to thoughts, emotions, and behaviors whereby people can achieve self-control success in various ways (Werner & Ford, 2023). For instance, people can engage in cognitive change strategies, such as reappraisal directed at their perceptions of a given situation, e.g., considering postponing a snack or imagining that they are already full (Giuliani et al., 2013); in contrast, attitude-based self-regulation directly addresses the attitude, such as by focusing on the negative evaluation that the food is highly caloric (Giuliani et al., 2013). As attitude-based self-regulation either makes the attitude less accessible or changes the attitude directly, we argue that it occurs throughout the development of a self-control conflict (cf. Duckworth et al., 2016). That is, situation selection, situation modification, and attentional deployment help to reduce the accessibility of attitudes, and cognitive change strategies help to change the attitude itself (Buttlar, Pauer, & van Harreveld, 2024).[2] Attitude-based self-regulation thus occurs if specific strategies within these broader strategy families help to change the accessibility of the attitude or the attitude itself.

By extension, we propose that attitude-based self-regulatory strategies not only effectively resolve a conflict at hand but may even prevent future conflicts from arising: When people cope with

[2] Response modulation strategies seem to be an exception to the rule as these strategies only address the behavioral response.

conflict by changing the underlying ambivalent attitude (and not only its accessibility), this arguably results in a more univalent attitude and averts experiences of conflict in future encounters with the attitude object (Buttlar, Pauer, & van Harreveld, 2024; Pauer et al., 2023). For instance, by affirming the negative evaluations about a doughnut, people's overall attitudes about the doughnut might become more univalent, leading to less conflict in a subsequent encounter with a doughnut as positive and negative evaluations spread. Consequently, when people frequently resolve conflict in a domain by regulating its attitudinal basis, the attitude will become more univalent; this attitudinal change, in turn, could prevent the accessibility of conflicting associations of the attitude when encountering the attitude object in the future (Buttlar, Pauer, & van Harreveld, 2024). Therefore, we hypothesize that these attitude regulation strategies help prevent future self-control conflicts by successfully changing the attitudinal origin.

The Present Research

In the present research, we argue that our understanding of self-control conflicts and self-regulation may benefit from an attitudinal-ambivalence perspective in at least two important ways. First, such a lens provides a parsimonious, testable, and quantifiable conceptualization of self-control conflicts. Second, it explains why cognitive change strategies, which regulate the attitudinal roots of self-control conflicts, are popular and effective means of resolving self-control conflicts. Therefore, we conducted a 21-day diary study (Hofmann & Grigoryan, 2023; Trull & Ebner-Priemer, 2009) to test how daily fluctuations in the experience of conflicts are associated with dispositional positive and negative attitudes and with the momentary accessibility of these attitudes. Moreover, we aimed to quantify the popularity of cognitive change strategies that target people's attitudes and test how these strategies help exert self-control and reduce future conflict.

To ensure that participants in our study indeed hold conflicting attitudes corresponding to self-relevant goals (Milyavskaya et al., 2019), we investigated inhibition conflicts among vegetarians about eating meat—a prime example of an ambivalent attitude object (Buttlar & Pauer, 2024; Rozin, 2007; van Gent et al., 2024). Indeed, despite having the long-term goal to eschew meat (Ruby, 2012), vegetarians experience felt ambivalence about meat, especially due to positive attitudes tied to the social and sensory aspects of eating it (Buttlar et al., 2023). This felt ambivalence is associated with dietary violations among vegetarians (Buttlar et al., 2023). They attribute these failures to exert self-control to hedonic or social goals, like enjoying the taste of meat or making a social situation more comfortable (Rosenfeld & Tomiyama, 2019).

Notably, while vegetarians can feel ambivalent about eating meat, they have predominantly negative attitudes toward meat (Buttlar, Pauer, Ruby, et al., 2024). Thus, we hypothesized that conflicting positive attitudes that contradict this predominantly negative attitude increase the frequency of self-control conflicts in daily lives (on the person level) and that the accessibility of these attitudes increases the magnitude of conflict (on the situation level in daily life). Moreover, we investigated how popular the cognitive change strategies that regulate people's attitudes are and whether these coping strategies are particularly effective in exerting self-control. Specifically, we hypothesized that affirming negative attitudinal components and downplaying positive attitudinal components, as a form of cognitive change, helps people to exert self-control in the face of conflict and reduces future conflict. The specific hypotheses for the present research are outlined in Table 1.

This study was approved by the local ethics committee (EK#76/2022). We preregistered the study design, planned sample size, inclusion and exclusion criteria, and planned analyses using a specific preregistration template for experience-sampling research (Kirtley et al., 2019). A detailed

description of methods and materials as well as the analyses script and preregistration can be found on the OSF. Deviations from the preregistration are reported in the text and Table A1 (see Appendix A).

Table 1

Hypotheses for the Present Research

1. Vegetarians who hold more positive attitudes towards meat on a trait level more frequently experience conflict towards meat in daily life.[3]
2. Vegetarians whose positive attitudes towards meat come to mind more strongly on a situation level experience conflict more intensely[4] in daily life.
3. Vegetarians who hold more ambivalence towards meat on a trait level more frequently experience conflict towards meat in daily life.
4. Vegetarians who report experiencing meat-related conflict will more strongly regulate their attitudes towards meat by affirming negative aspects of eating meat than by downplaying positive aspects.
5. Vegetarians who regulate their attitudes towards meat to cope with a conflict by affirming negative aspects of eating meat eat less meat in the conflicted situation and experience less meat-related conflict on the subsequent day.
6. Vegetarians who regulate their attitudes towards meat to cope with a conflict by disaffirming positive aspects of eating meat eat less meat in the conflicted situation and experience less meat-related conflict on the subsequent day.

[3]We also explored whether the effects of positive attitudes and their accessibility depend on the domain of the positive associations, that is, the extent to which people perceive meat as nice, normal, natural, and necessary (see Motivations to Eat Meat Inventory; Hopwood et al., 2021), in H1 and H2, and whether the effect in H3 depends on the domain of ambivalence (see Meat Ambivalence Questionnaire; Buttlar et al., 2023).

[4]In our preregistration, we outlined that the state-level variables predict frequency of conflict. We intended, however, to refer to the extent of conflict. In fact, predicting the frequency via the state-level variables does not make sense, because the questions on the state-level referred to a specific, already experienced conflict.

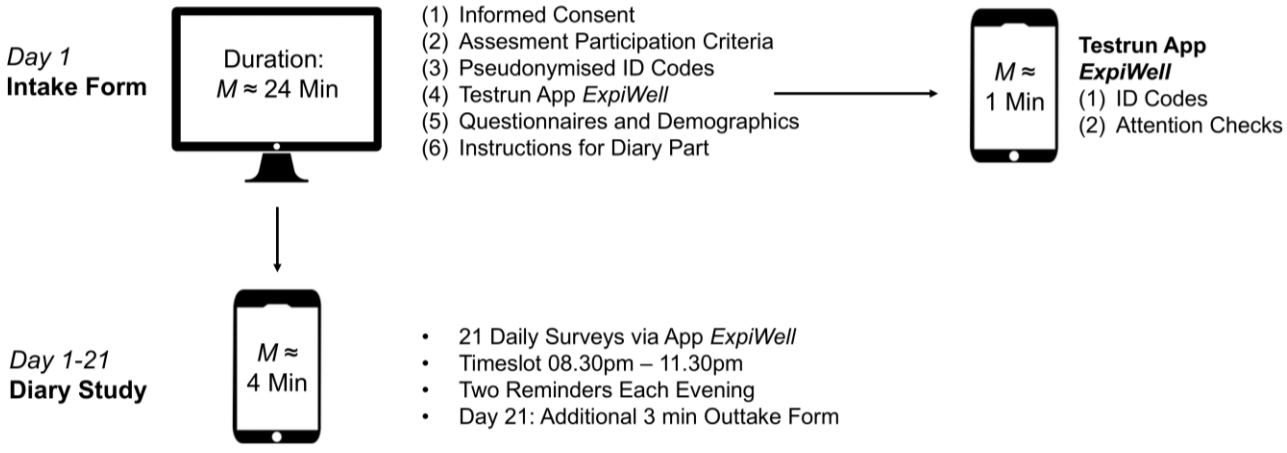
Method

Participants and Procedure

This study was conducted as a diary study using the experience-sampling methodology (Hofmann & Grigoryan, 2023; Trull & Ebner-Priemer, 2009). The study was introduced to the participants as the "Everyday Food Study" and comprised an intake form followed by 21 consecutive days in which we assessed smartphone-based diary surveys. In the intake form, participants provided informed consent, completed questions about their eligibility to participate, installed the experience-sampling survey app ExpiWell (https://www.expiwell.com/), and completed various questionnaires. The diary surveys investigated participants' daily experiences of conflict about meat consumption. The first diary survey was administered on the evening of the day they completed the intake form. Participants were able to submit these diary surveys from 08.30 pm to 11.30 pm, being reminded of the survey at 08.30 pm and 10.00 pm. On the last day of the diary period, participants were additionally asked to complete a feedback questionnaire that tapped into their perceptions of strain and fair compensation within the study. Figure 1 provides a visual overview of the study procedure.

Figure 1

Depiction of the Procedure of the Everyday Food Study



Based on feasibility, we preregistered to recruit $N = 200$ participants who completed at least 50% of the 21 potential diary surveys. We recruited participants across three waves using various incentives to foster high completion rates (see OSF for detailed description). We stopped collecting data on 30th November 2023 because the ExpiWell subscription expired, which resulted in a smaller sample size due to an earlier pause in data collection for a police investigation into fraudulent participation (see Table A1). All participants were able to finish all surveys across 21 days.

We achieved a final $N = 156$ who completed at least one survey (37 men, 108 women, 8 non-binary, 3 NAs). On average, participants completed $M = 15.04$ ($SD = 5.81$) surveys, with 125 participants completing more than 50% (11) of the surveys. The average age was $M_{\text{Age}} = 25.98$, $SD = 15.69$, age range = 18 – 69. Participants followed their vegetarian diet for $M_{Duration} = 70.75$ months on average ($SD = 80.48$, dietary duration range = 1 – 444), with 31 people in the action stage and 125 people in the maintenance stage. Two participants had no degree, 70 had a high school degree, six had an associate degree, 44 had a Bachelor's degree, 28 had a Master's degree, and three had a doctoral degree. Thirty-four participants resided in the United Kingdom (including England and Scotland), 74 in Germany, two in Australia, one in Austria, two in Belgium, one in Canada, two in the Czech Republic, one in Ireland, one in Luxembourg, two in the Netherlands, ten in Poland, four in Portugal, four in South Africa, one in Spain, and ten in the United States. Additionally, seven participants had missing data on their countries of residence.

After removing diary surveys in which participants failed the attention check (21 trials) or took less than 90 seconds to complete the survey (226 trials), as per the preregistration[5]. Additionally, 28 trials had to be excluded because we were not able to match the data with the intake form. This resulted

[5]These trials mainly stemmed from surveys where participants had to report conflict towards any food, and we presume that the low durations resulted from the fact that they indicated "not applicable" to all questions.

in k = 2,346 completed diary surveys. Of the 156 participants, 112 reported having experienced at least one meat-related conflict across the diary period, resulting in 501 observations of conflict situations (M = 3.24, SD = 3.34, range = 0 – 14). In 91 of these 501 surveys, participants reported having experienced multiple conflicts on a single day.

Materials

Intake Form

The intake form could be completed on either a computer or a smartphone. Participants provided informed consent, and we assessed their eligibility. The eligibility questions enquired about their envisioned completion rate of diary surveys, the operating system of their smartphone, their diet and its duration, the stages of (dietary) change, and their experience of conflict within the last seven days. Participants were eligible to participate if they indicated to be vegetarians and experienced at least one meat-related conflict within the last week (but see Table A1); they also had to envision completing more than 80% of the surveys, and they should use non-obsolete Android or Apple smartphones. Participants who met the participation criteria were guided through the installation of the Expiwell app and completed a one-minute test run on their smartphones, during which they provided a pseudonymized identification code for matching the ExpiWell data with the intake form (see Figure 1). After the test run, they continued with the intake form by completing various questionnaires and provided demographics. Lastly, participants received in-depth instructions on their participation, including additional explanations of the compensation and administration of the daily prompts across the next 21 days. On average, participants took M = 24 minutes and 6 seconds (SD = 11 minutes 21 seconds) to complete the intake form. A detailed description and overview of all measures assessed in the intake form can be retrieved from the OSF. Below, we provide more detail on the questionnaires used to test our preregistered hypotheses, including McDonalds Omega (ω) for multi-item measures.

Vegetarian Eating Motives Inventory. The Vegetarian Eating Motives Inventory (VEMI; Hopwood et al., 2020) was used to measure negative attitudes towards meat, comprising health (ω = .93), environmental (ω = .94), and animal welfare (ω = .97) associations. The VEMI consists of 15 items, and responses are assessed on a seven-point Likert scale ranging from "Not important" to "Very important." An example item of the VEMI (environmental subscale) is: "Eating meat is bad for the planet.". Consequently, higher scores reflect more negative attitudes towards meat.

Motivations to Eat Meat Inventory. The Motivations to Eat Meat Inventory (MEMI; Hopwood et al., 2021) was utilized to measure positive attitudes towards meat, including associations of meat as natural (ω = .88), normal (ω = .87), necessary (ω = .92), and nice (ω = .92), as proposed by Joy (2011) and Piazza et al. (2015). The MEMI comprises 19 items, and we assessed the responses using the same scale as for the VEMI. An example item of the "natural" subscale of the MEMI is "It is human nature to eat meat.". Thus, higher scores reflect more negative attitudes towards meat.

Meat Ambivalence Questionnaire. The Meat Ambivalence Questionnaire (MAQ; Buttlar, Pauer, Ruby, et al., 2023) was developed to quantify felt ambivalence in five domains regarding meat consumption. It comprises a general ambivalence factor including 25 items (the big MAQ: ω = .94) that can be split into five sub-factors: animal-based (ω = .91), socially-based (ω = .88), sustainability-based (ω = .88), health-based (ω = .85), and sensory-based ambivalence (ω = .78). The response options ranged from "Strongly disagree" to "Strongly agree" on a fully-labeled seven-point Likert scale. An example item of the "Socially-based ambivalence" factor is: "I feel conflicted about meat consumption when I find out that someone else has a different diet regarding meat." Therefore, higher scores reflect more felt ambivalence about eating meat.

Diary Surveys

The diary surveys comprised 23 Likert scale-like items, two multiple-choice items, and an open-ended item to comprehensively understand individuals' experiences with conflicting thoughts and feelings about eating meat. The surveys examined participants' experiences regarding a single instance of conflict about eating meat on the day of the survey. If participants experienced multiple conflicts that day, we asked them only about the most intense one. The diary survey included several questions about the conflict experienced, such as emotions experienced during the conflict situation, reasons for the conflict, coping strategies, and contextual factors. Additionally, we measured items beyond the specific instance of conflict and encompassed the entire day, including satisfaction with life, meat consumption, and frequency of meat-related conflicts. Each construct was assessed with one item, as is typical within experience-sampling research, to reduce participant burden (Myin-Germeys & Kuppens, 2021). A detailed description of all items can be found on the OSF; an overview of the relevant items for this study can be found in Table 2.

To ensure that participants were not able to save time by indicating having experienced no meat-related conflict, we asked additional questions, which were not used for further analyses (see preregistration). If participants did not have a conflict about meat, we asked if they had one about other animal products like dairy or eggs. If they did, they answered the same questions but for these products. If not, we inquired about conflicts with any other food. Regardless of their response, they completed a survey about a different food-related conflict. If they had no conflict here either, they were asked to indicate 'not applicable' for all questions. On average, participants took M = 4 minutes and 21 seconds (SD = 6 minutes 25 seconds) to complete a daily diary survey.

Table 2

Overview of Key Constructs on the Situation Level and Item Wordings and Scales.

Construct	Item Wording	Response Scale
Conflict Frequency	Please indicate how often you felt some conflict about eating meat today	[0 not once, 1 – once, 2 – twice, 3 – thrice, 4 – four or more].
Conflict Magnitude	To what extent did you have conflicting thoughts and feelings about eating meat? [1 not at all to 6 very much].	[1 not at all to 6 very much].
Accessibility General Positive Attitudes	I felt this conflict because positive aspects of eating meat came to my mind	[1 strongly disagree to 6 strongly agree].
Accessibility General Negative Attitudes	I felt this conflict because negative aspects of eating meat came to my mind	[1 strongly disagree to 6 strongly agree].
Accessibility Specific Associations	Please indicate the specific reasons that made you feel conflicted towards meat in the reported situation today. "Because I thought that eating meat…." - …harms animals. - …is detrimental to my health. - …is bad for the environment. - …makes me belong to others. - …is part of human nature. - …tastes good. - …is necessary for good health.	For each item: [1 strongly disagree to 6 strongly agree]
Disaffirm Positive	I downplayed the positive aspects of eating meat.	[1 strongly disagree to 6 strongly agree]
Affirm Negative	I reminded myself of the negative aspects of eating meat	[1 strongly disagree to 6 strongly agree]
Thought Suppression	I suppressed my thoughts about eating meat	[1 strongly disagree to 6 strongly agree]
Situation Avoidance	I avoided the situation that made me think of eating meat	[1 strongly disagree to 6 strongly agree]
Self-Distraction	I distracted myself from thinking about eating meat	[1 strongly disagree to 6 strongly agree]
Meat Consumption	In the situation when you felt this conflict, how much meat did you eat?	[0 no meat at all to 6 a lot of meat]

Analytic Strategy

We tested our hypotheses based on the surveys on meat-related conflict via multi-level regressions in R (lme4; Bates, 2018). We first estimated intercept-only models for our preregistered outcome variables and those used in exploratory analyses to test the proportion of variances within and between participants. All ICCs were considerably above 0, indicating that a substantial proportion of the total variance is attributable to differences between participants, ranging from 18% in Conflict Frequency to 40% in Affirmation of Negative Attitudes; however, an even greater proportion of the variance can be attributed to differences within participants ranging from 60% in Affirmation of Negative Attitudes and 82% in Conflict Frequency (see Table 3). Therefore, using random intercepts within the multi-level models is warranted. For all models with level-1 predictors, we additionally tested whether adding a random slope for the predictor variable improved the model fit via likelihood ratio tests (LRT). If so, we added the random slope to the respective model. We stayed with the random-intercept models if a model did not converge when adding the random slope.

Notably, the effects of all reported analyses were not systematically affected when controlling for demographic variables on the person level, such as age, political orientation, dietary duration, social context, centrality of diet for identity, dietary strictness, and a scale on dispositional attitude stability (see OSF methods for more detail on these variables and OSF code for more detail on the analyses). Interestingly, dietary duration emerged as an independent factor, besides people's dispositional positive attitudes, for conflict frequency in the analyses on H1. That is, vegetarians who adhered to their diet for a longer time experienced less conflict (in line with Buttlar, Pauer, Ruby, et al., 2024). However, dietary duration did not moderate the effects reported below.[6]

[6]Dietary duration did not correlate with positive and negative attitudes as well as ambivalence on the trait level. An overview of the zero-order correlations can be found in Table S1 on the OSF.

Table 3

Intraclass Correlation Coefficients and Descriptive Statistics for the Main Outcome Variables in the Multi-level Regressions.

	ICC	*M*	*SD*
Conflict Frequency	.18	-	-
Conflict Magnitude	.30	3.61	1.36
Conflict Magnitude Next Day	.37	3.72	1.39
Affirmation Negative	.40	4.12	1.73
Disaffirmation Positive	.29	3.05	1.59
Situation Avoidance	.30	2.75	1.63
Self-Distraction	.37	3.24	1.65
Thought Suppression	.36	3.46	1.77
Meat Consumption	.33	1.85	1.26

Note. Descriptive statistics on the situation level are not reported for Conflict Frequency because it was not measured on a continuous scale (see Table 2). Therefore, descriptive statistics on Conflict Frequency are reported at the participant level in the ”Participants and Procedure” section.

Results

Attitude-Based Self-Control Conflicts

We first tested H1 and examined how dispositional attitudes on the person level predict the self-reported frequency of meat-related conflict per day in vegetarians' daily lives. In line with H1, people who had more positive attitudes toward meat reported experiencing conflict more frequently within separate Poisson multi-level models (see Table 4). Within a simultaneous prediction of the frequency of conflict via all four positive associations towards meat, no specific predictor emerged that explained this effect above and beyond others. Because vegetarians predominantly have a negative attitude towards meat (Buttlar et al., 2023)[7], this supports the assumption that self-control conflicts are elicited

[7]We ran a paired sample t-test comparing positive and negative attitudes towards meat (assessed via the full scales of the MEMI and the VEMI in the intake form), confirming that vegetarians in our sample indeed held negative attitudes more strongly (M = 5.75, SD = 0.87) than positive attitudes (M = 2.49, SD = 0.92), $t(152)$ = 30.65, p < .001. This pattern replicated when analyzing positive (M = 3.44, SD = 1.42) and negative attitudes towards meat (M = 5.75, SD = 1.37) via split semantic scales in the intake form, $t(152)$ = 13.37, p < .001.

by attitudes that conflict with people's pre-dominant attitudes. Notably, we also aimed to explore if specific negative associations towards meat on the person level predicted conflict frequency; however, these models did not converge.

Then, we tested H2 and examined how the situational attitude accessibility (i.e., the attitudes that came to people's minds when feeling conflicted) contributes to the magnitude of daily conflict. We used the conflict magnitude instead of conflict frequency as the criterion as we only assessed attitude accessibility when people indicated to have experienced conflict to begin with (see Table A1). In preregistered separate and simultaneous multi-level regressions, we found that conflict magnitude was higher the more people's positive association that eating meat is normal was accessible (see Table 5). This suggests that the magnitude of conflict is predicated on whether positive attitudes become accessible, especially if that attitude is tied to positive social aspects of eating meat.

Table 4

Prediction of Conflict Frequency by Dispositional Positive and Negative Attitudes (Level 2)

	Step 1: Separate prediction		Step 2: Simultaneous prediction	
	B *95% CI*	*p*	*B* *95% CI*	*p*
Positive Attitudes				
General	**.31** [.12, .50]	.002	-	-
Natural	**.19** [.03, .34]	.016	.10 [-.11, 31]	.362
Nice	**.17** [.04, .30]	.011	.13 [-.01, .26]	.071
Normal	.15 [-.00, .30]	.052	.15 [-.12, .23]	.532
Necessary	**.13** [.00, .26]	.046	.03 [-.13, .20]	.688

Note. N = 153, k = 2,298; this analysis did not include all k = 2,346 surveys because 3 participants did not complete the full intake form.

Interestingly, in separate exploratory multi-level analyses predicting the magnitude of conflict by negative attitudes, we also found that the accessibility of general negative attitudes predicted conflict magnitude (see Table 5). To investigate this in more detail, we ran another multi-level regression that included both positive and negative general attitudes as well as their interaction. This analysis revealed that general positive (B = 0.21, 95% Confidence Interval [0.02, 0.40], p = .027) and negative attitudes (B = 0.28, 95% CI [0.13, 0.44], p < .001) positively predicted the magnitude of conflict that vegetarians experienced about eating meat; however, these effects seemed to be independent of each other as the interaction was not significant (B = -.03, 95% CI [-.07, .01], p = .121). This suggests that people experienced more conflict as the positive and negative attitudes about meat became more accessible. This aligns with the notion that the accessibility of both positive and negative attitudes elicit experiences of conflict (cf. Newby-Clark et al., 2002) and extends our initial hypothesis that especially the accessibility of conflicting attitudes (in this case, the positive component, considering that vegetarians have a predominantly negative attitude) leads to self-control conflicts.

Table 5

Prediction of Conflict Magnitude by Momentarily Accessible Positive and Negative Attitudes (Level 1)

	Step 1: Separate prediction		Step 2: Simultaneous prediction	
	B *95% CI*	*p*	*B* *95% CI*	*p*
Positive Attitudes				
General	$.05_{rs}$ [-.04, .13]	.267	-	-
Natural	.10 [-.00, .24]	.058	.07 [-.06, .21]	.262
Nice	.04 [-.04, .12]	.340	.04 [-.04, .12]	.280
Normal	**.12** [.03, .21]	.008	**.11** [.02, .20]	.017
Necessary	.05 [-.05, .15]	.339	.00 [-.10, .11]	.918
Negative Attitudes				
General	**.15** [.07, .23]	< .001	-	-
Animal	$.06_{rs}$ [-.04, .15]	.269	.05 [-0.05, 0.14]	.312
Health	.03 [-.05, .12]	.464	.03 [-0.06, 0.11]	.549
Environment	.03 [-.06, 0.11]	.527	.00 [-0.09, 0.09]	.975

Note. $N = 112$, $k = 501$. The subscript $_{rs}$ refers to the inclusion of the random slope as indicated by a significant LRT test.

As the association between potential ambivalence (i.e., the co-existence of positive and negative evaluations) and felt ambivalence (i.e., the meta-cognitive awareness about a conflict) is typically only moderate, we tested H3 and examined whether dispositional felt ambivalence on the person level predicts the frequency of self-reported daily conflict as preregistered (see Table 6). The results of separate Poisson multi-level models suggested that felt ambivalence on the person level predicts the frequency of daily meat-related conflicts across various domains; a simultaneous regression revealed

that this is especially the case for sustainability- and health-based ambivalence. This suggests that people experience conflict more often when they more generally feel ambivalent on the trait level.

Table 6

Prediction of Conflict Frequency by Dispositional Meat-Related Felt Ambivalence (Level 2)

	Step 1: Separate prediction		Step 2: Simultaneous prediction	
	B *95% CI*	*p*	*B* *95% CI*	*p*
General Factor Ambivalence	**.53** [.38, .68]	< .001	-	-
Animal-Based Ambivalence	**.17** [.08, .27]	< .001	-.03 [-.14, .07]	.540
Socially-Based Ambivalence	**.34** [.21, .46]	< .001	.12 [-.02, .27]	.082
Sustainability-Based Ambivalence	**.32** [.21, .43]	< .001	**.18** [.04, .32]	.010
Health-Based Ambivalence	**.36** [.24, .48]	< .001	**.18** [.04, .31]	.009
Sensory-Based Ambivalence	**.35** [.21, . 48]	< .001	.11 [-.04, .27]	.146

Note. N = 153, k = 2,298; this analysis did not include all k = 2,346 surveys because three participants did not complete the full intake form, including all questionnaires.

Attitude-Based Self-Regulation

To investigate H4, we examined how common cognitive change strategies that regulate people's attitudes are used, preregistering that people would more often affirm negative rather than disaffirm positive attitudes about eating meat. For that purpose, we ran a multi-level regression model and predicted how strongly people used the respective self-regulatory strategies by a dummy-coded variable indexing either the affirmation of negative or the disaffirmation of positive attitudes (this alternative analysis was employed to improve the preregistered analysis; see Table A1). In line with our hypothesis, vegetarians more strongly reminded themselves of the negative aspects of eating meat compared to downplaying the positive aspects of eating meat when experiencing conflict (B = 1.06,

95% CI [0.89, 1.24], $p < .001$). We further explored how people used other typical self-regulatory strategies relative to the (dis-)affirmation of attitudes. These analyses suggest that people cope with their conflict more often by reminding themselves of the negative aspects of eating meat than by situation avoidance ($B = 1.37$, 95% CI [1.18, 1.55], $p < .001$), self-distraction ($B = 0.88$, 95% CI [0.69, 1.06], $p < .001$), and thought suppression ($B = 0.66$, 95% CI [0.47, 0.85], $p < .001$); likewise people downplayed the positive aspects more than they avoided the situation ($B = 0.30$, 95% CI [0.13, 0. 48], $p < .001$) to cope with conflict, but used this strategy less than self-distraction ($B = -0.19$, 95% CI [-0.36, -0.01], $p = .035$) and thought suppression ($B = -0.40$, 95% CI [-0.58, -0.22], $p < .001$). Table 7 depicts the means and standard deviations for strategy use for all five strategies assessed in the present study. Overall, our findings suggest that attitude regulation as a cognitive change strategy is commonly used, especially when it comes to affirming negative attitudes.

Table 7

Means and Standard Deviations for the Respective Coping Strategies

	M	*SD*
Affirmation Negative Attitudes	4.12	1.73
Disaffirmation Positive Attitudes	3.05	1.59
Situation Avoidance	2.75	1.63
Self-Distraction	3.24	1.65
Thought Suppression	3.46	1.77

Note. These *M* and *SD* are based on descriptive statistics across participants.

Lastly, we were interested in how these strategies help people exert self-control and resolve self-control conflicts. To this end, we tested whether attitude regulation via affirming negative (H5)[8]

[8]To test preliminary assumptions about the affective correlates of attitude regulation, we additionally hypothesized that people would experience more disgust when they affirm negative associations with meat. However, no strategy was associated with experienced disgust in the multi-level models, with disgust as the binomial outcome (see OSF code).

and disaffirming positive attitudes (H6) helps exert self-control in the situation at hand and reduce future self-control conflicts. As expected, the preregistered multi-level regressions (see Table 8, first column) revealed that greater affirmation of negative attitudes and disaffirmation of positive attitudes towards meat was associated with lowered meat consumption. Similarly, exploratory analyses showed that situation avoidance and self-distraction were associated with lowered meat consumption. In line with previous research, this suggests that various strategies can be used to successfully exert self-control in a given situation, including attitudinal disaffirmation and affirmation (Hennecke et al., 2019).

Additionally, we examined the impact of regulation strategies on the experience of conflict the following day (i.e., lagged analysis). While we expected that attitudinal (dis-)affirmation strategies resolve conflict and thereby avert the conflict from recurring, one could also argue that people employ these strategies only to regulate their attitudes in a given situation without eliciting more persistent attitudinal change when not used consistently (Buttlar, Pauer, & van Harreveld, 2024). Separate preregistered lagged (Poisson) multi-level models showed that neither of the two cognitive change strategies predicted conflict magnitude on the subsequent day in the expected direction (see Table 8, middle and right columns). Interestingly, however, we found that people who disaffirmed the positive attitudes more often experienced conflict the next day. Exploratory analyses similarly revealed that thought suppression was positively related to the frequency and magnitude of conflict experienced the next day, while self-distraction was only related to conflict magnitude. These effects remained significant in lagged models that included strategy use as well as conflict frequency or magnitude on the same day as predictors (Viechtbauer, 2021). Taken together, this seems to suggest that self-regulatory strategies only help to exert self-control within the respective situation and do not carry over time. Despite these benefits, some self-regulatory strategies ironically seem to make people prone to experiencing conflict and increase the frequency and magnitude of conflict in subsequent situations.

Table 8

Prediction of Meat Consumption, Conflict Frequency, and Magnitude on the Subsequent Day by the respective self-regulatory strategies.

	Meat Consumption k = 501 (N = 112)		Conflict Frequency Next Day k = 426 (N = 108)		Conflict Magnitude Next Day k = 132 (N = 51)	
	B *95% CI*	*p*	*B* *95% CI*	*p*	*B* *95% CI*	*p*
Disaffirmation Positive	**-.07** [-.17, -.00]	.039	**.12** [.01, .22]	.031	.09 [-0.06, .25]	.233
Affirmation Negative	**-.22** [-.28, -.16]	< .001	-.00 [-.10, .10]	.950	-.04 [-.20, .12]	.650
Thought Suppression	-.06$_{rs}$ [-.14, .02]	.160	**.12** [.02, .21]	.021	**.17** [.03, .31]	.020
Situation Avoidance	**-.12$_{rs}$** [-.26, -.06]	.001	.03 [-.08, .13]	.613	.09 [-.05, .24]	.209
Self-Distraction	**-.08$_{rs}$** [-.18, -.00]	.041	.10 [-.00, .20]	.072	**.26** [.11, .45]	.001

Note. *k* is smaller in the lagged models with conflict frequency and magnitude because people did not complete a survey or did not report a meat-related conflict on a subsequent day. The subscript $_{rs}$ refers to models in which the random slope was added to the model as indicated by a significant LRT test.

General Discussion

Effective self-control often requires individuals to resolve conflicts in a given situation (Hofmann, Baumeister, et al., 2012; Inzlicht et al., 2021; Werner & Ford, 2023). While this assertion has been prominent in self-control research, less is known about how self-control conflicts originate and how they are resolved. In the present research, we propose a parsimonious conceptualization of self-control conflicts, arguing that accessible ambivalent attitudes are at the core of the experience of self-control conflicts. We argue that attitudes readily inform people about the alignment of attitude objects with their goals and, thereby, the value of certain choice options (cf. Berkman et al., 2017; Duckworth et al., 2016). Thus, self-control conflicts manifest in the form of felt ambivalence if ambivalent attitudes provide contradictory information about the alignment of the attitude object with

one's goals (Katz, 1960). We propose that this explains why some self-regulatory strategies have been found to be more popular and effective than others in previous studies (e.g., Hennecke et al., 2019): People will more often use self-regulatory strategies that are capable of resolving the attitudinal origins of conflict because ultimately resulting univalent attitudes help them to pursue their goals effectively.

In the present research, we tested these assumptions in the context of inhibition conflicts about eating meat among vegetarians. As expected, our results show that holding attitudinal components that conflict with one's pre-dominant attitude predicts a higher conflict frequency in daily life. People also indicated to experience more intense conflict due to more accessible positive and negative attitudes about meat. This suggests that the accessibility of conflicting positive attitudes in everyday life (especially the belief that eating meat enhances social connectedness) increased the magnitude of experienced self-control conflict. Extending this hypothesis, exploratory analyses revealed that accessible negative attitudes also increased the experience of conflict. This supports the notion that ambivalent attitudes contribute to the emergence of self-control conflict and that the simultaneous accessibility of these attitudes determines how the conflict is experienced (Newby-Clark et al., 2002).

Our results also replicated the findings from previous research (Hennecke et al., 2019), showing that cognitive change strategies that help to regulate attitudes are popular. This was especially the case when people aimed to resolve their unfolding conflict by reminding themselves of negative attitudes, which was more commonly used than the cognitive change strategy that relied on downplaying the positive attitudes or situation modification (situation avoidance), attentional deployment (self-distraction), or response modulation strategies (thought suppression). People who relied on attitude regulation strategies to increase their negative attitudes and decrease positive attitudes towards meat also seem successful at exerting self-control, among other strategies, including situation avoidance and self-distraction.

Going beyond prior research, we tested whether cognitive change strategies that regulate attitudes may prevent and reduce subsequent conflict (Buttlar, Pauer, & van Harreveld, 2024). Lagged multi-level regressions did not show that attitude regulation was associated with reduced (frequency and magnitude of) conflict the following day; instead, conflict on the ensuing day was positively related to the disaffirmation of positive attitudes, self-distraction, and thought suppression. Taken together, this suggests that self-regulatory strategies especially help to resolve conflict momentarily to exert self-control in a given situation; however, these efforts may come with a cost as some self-regulatory strategies may have an adverse effect and increase future conflict. Recent research shows similar ironic effects, detailing that when people resolve an inhibition conflict, such as about eating meat, they might experience negative affect; when people regulate the resulting negative affect, this reduces their success in coping with future self-control conflicts (Wenzel, Rowland, et al., 2024). Our results might add to this, showing that people experienced conflict more frequently and intensely when using certain self-regulatory strategies. Escalated conflict experiences may thus provide an explanation for why self-control success may ironically set people up for subsequent self-control failures. Notably, these findings should be interpreted carefully as the lagged analyses, especially on conflict magnitude, might be underpowered and limited to a short-term time window (Bleidorn et al., 2022).

These findings suggest that conceptualizing self-control conflicts as being rooted in attitudes helps to understand how self-control conflicts are elicited, experienced, and resolved. Notably, this attitudinal perspective on self-control conflicts is compatible with a more classical motivational perspective on self-control. While each perspective emphasizes distinct facets contributing to self-control conflicts, we posit that the role of attitudinal ambivalence can be seen as the nucleus of self-control conflicts, which offers several novel insights into the experience and resolution of self-control conflict. In specific, attitudes shed light on how the evaluations of certain choice options (cf. Berkman

et al., 2017; Duckworth et al., 2016) are formed, mentally represented, and retrieved (e.g., Gawronski et al., 2014; Houwer et al., 2021). Approaching self-control conflicts from an attitudinal perspective thus provides added value as it facilitates the dissection of conflicts into their attitudinal components, akin to breaking down a molecule into its constituent atoms. Specifically, it enables the extraction of key concepts from attitude research, such as attitude strength—including attitude accessibility as in the present study, or additional features such as attitude certainty, centrality, or moralization (Howe & Krosnick, 2017)—to comprehend and evaluate how self-control conflicts manifest and resolve.

Future Research

Based on our understanding that self-control conflicts are rooted in people's attitudes, novel predictions can be derived. For instance, we hypothesized that cognitive change strategies stop unfolding and prevent future conflict, softening the distinction between interventive and preventive coping strategies (Hofmann & Kotabe, 2012). Specifically, we argue that when cognitive change strategies help to change the attitude to exert self-control, this might reduce conflict in future encounters with the attitude object. However, attitude change presumably happens incrementally over multiple consistent decisions (Buttlar, Pauer, & van Harreveld, 2024), which might have made it difficult to observe these effects within the current diary study in which we investigated the most intense conflict, reported at the end of each day. Thus, future research could rely on more fine-grained analyses that assess the real-time effects of self-regulatory strategies more generally and attitude regulation more specifically (see, for instance, Pauer et al., 2024).

It also stands to reason how the pre-dominant valence of attitudes contributes to the experience and resolution of self-control conflicts. We showed that cognitive change strategies involving affirming negative attitudes are popular and beneficial for exerting self-control, as expected. This hypothesis was based on research showing that negativity more strongly impacts attitudes and conflict experiences than

positivity (Cacioppo et al., 1997; Snyder & Tormala, 2017). However, this effect might not arise due to valence but because we investigated inhibition conflicts. In fact, by investigating meat-related conflicts in vegetarians, we ensured that our participants had the long-term goal of not eating meat. This goal aligns with their pre-dominant negative attitude towards meat (Buttlar, Pauer, Ruby, et al., 2024). Thus, for inhibition conflicts, the recruitment of negative attitudes that are already abundantly available might be easier and thereby help more strongly in the resolution of the conflict than attempts to get rid of the less prevalent positive attitudes. However, these effects might reverse for initiation and persistence conflicts, where people have ambivalent but predominantly positive attitudes that align with their long-term goal, for example, to exercise (Conner et al., 2021). It is thus crucial to investigate how attitude regulation works across various self-control conflicts, including inhibition and initiation or persistence conflicts, to understand how attitude valence affects the experience and resolution of self-control conflicts. This is especially important given that the popularity and effectiveness of self-regulatory strategies vary in regard to different conflict types (Wenzel, Bürgler, et al., 2024).

In our investigation, we focused on two popular and seemingly effective cognitive change strategies in the disaffirmation of positive and the affirmation of negative attitudes to provide preliminary evidence for the effectiveness of attitude regulation in exerting self-control. Going beyond cognitive change strategies, we argue that conceptualizing self-control conflicts as being rooted in accessible ambivalent attitudes helps to understand how other self-regulatory strategies may help to exert self-control throughout the development of self-control conflicts. Specifically, situation selection and modification strategies might prevent attitudes from becoming accessible in the first place as people thereby might avoid encountering the attitude object completely. Similarly, attentional deployment strategies might help people make attitudes less accessible when diverting attention away from the attitude object. In fact, our exploratory analyses revealed that situation avoidance and self-

distraction were also associated with less meat consumption and, therefore, seem to help to exert self-control (see Table 8). Crucially, we suppose that these strategies only change the accessibility and not the attitude itself compared to cognitive change strategies; this may help to prevent the conflict before it even arises or intervene if it already unfolds. In the present study, however, we only assessed these strategies after participants already experienced self-control conflicts. Thus, future research should investigate how the various self-regulatory strategies affect attitudes and help prevent and cope with conflict.

Limitations

Within this study, we provide initial evidence of how attitudes contribute to self-control conflicts in daily life. While our within-person analysis allows us to surpass the constraints of traditional correlational survey data, we cannot infer causality, preventing us from fully understanding the role of attitudes in the experience and resolution of self-control conflicts. Therefore, we did not analyze how self-regulatory strategies are associated with conflict on the same day but only on the subsequent day. To provide more causal evidence for the role of attitudes in the genesis and resolution of self-control conflicts, it would thus be necessary to manipulate attitudes or their accessibility. In fact, we asked participants to indicate whether accessible attitudes were the reasons for their conflict in order to gain tentative insights into the causal role of attitudes as a determinant for self-control conflicts; however, this assessment conflates attitude accessibility and people's self-reported attributions of conflict. Future research should thus manipulate attitude accessibility and employ alternative measures to provide converging evidence, such as tracking reaction times to measure attitude accessibility implicitly (Fazio et al., 1982; van Harreveld et al., 2004). This would help to provide more causal evidence for the role of attitudes in self-control and self-regulation.

By leveraging meat consumption as an exemplary attitude object in ambivalence research (Buttlar & Walther, 2018; Rozin, 2007), we aimed to explore boundary conditions and shed light on how specific associations contribute to the experience of self-control conflicts (see footnote 3). However, even if the specific subscales in our simultaneous multi-level regressions seemed to explain variance beyond the other subscales, the confidence intervals of the subscales mostly overlap. Thus, we argue that the most robust inferences from our research can be drawn from the overall scales, and the results of specific subscales should be interpreted with care.

Lastly, our sample mostly resided in so-called western, educated, industrialized, rich, and democratic countries (WEIRD, Henrich et al., 2010), which may affect the generalizability of the findings of the present study, especially given its focus on vegetarianism. This overrepresentation of people from WEIRD countries may introduce bias, as dietary practices and attitudes towards meat and vegetarianism vary across the world (Northrope et al., 2024; Ruby, 2012; Ruby et al., 2016). For example, Germany and the United Kingdom, from which we recruited most participants, have relatively high rates of vegetarianism and considerable social support for it within the general public, which may not reflect global experiences (Ruby, 2012). A more diverse sample, including participants from different cultural, economic, and social contexts, would thus be desirable for future research.

Conclusion

In the present research, we hypothesized that self-control conflicts emerge when ambivalent attitudes become accessible and provided evidence for this assumption in a 21-day diary study. Our results indicated that people who have the goal to abstain from meat experienced conflicts more often, the stronger their dispositional positive attitudes. These people also stated that they experienced more conflict because positive and negative attitudes became momentarily more accessible to them. As attitudes inform people about the alignment of an object with their goals, we argue that this is the

reason why people often favor self-regulatory strategies that regulate these attitudes. Indeed, people in our study often and effectively exerted self-control by regulating attitudes, particularly by affirming negative attitudes aligned with their long-term goals to abstain from meat.

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Appendix A

Table A1

Deviations from the Preregistration and Reasons for it.

Deviation	Reason
Updated participation criteria and recruitment strategies	We recruited participants in three waves twice to overcome issues within the recruitment of the participants (see updated preregistration on OSF. In the first wave (starting March 2023), we aimed to recruit only vegetarians who have recently adopted their diet, that is, since the beginning of 2023. Due to low participation (N = 13), the selection criteria were extended in the second wave (starting June 2023), and we recruited vegetarians who experienced at least one meat-related conflict in the past seven days (see updated preregistration). Due to fraudulent participation, including multiple participation by a small group of people in the second wave, we had to stop data collection in August 2023, only being able to recruit N = 20 participants. To avoid further fraudulent participation in the third wave (starting October 2023), we recruited N = 126 participants via Prolific (prolific.com) and the participant pool SONA of the local university.
Final $N < 200$ with 50% completion rate	The investigation was delayed due to fraudulent participation. Due to this, the ExpiWell license expired before we were able to gather the envisioned sample size. With the remaining funding, we were not able to collect the final sample and extend the license. Thus, we decided to stop data collection on 31st November 2023. Data was not analyzed prior to this date.
Analyses H3	In H3, we mistakenly predicted the frequency (as in H1 and H2) by the accessibility of positive and negative associations in people's daily lives. However, the predictor variables in H3 were assessed regarding the most intense conflict specifically, whereas the dependent variable could have referred to no conflict at all or multiple conflicts. Therefore, we used the extent of conflict as a dependent variable in these analyses because it also referred to this specific conflict.
Analyses H4	We realized that the analyses preregistered for H4 did not make any sense. Because we were interested in the popularity of coping strategies when vegetarians experience conflict, we now test whether the degree to which participants use the respective strategies to deal with conflicts differs. Note that these analyses include all trials in which participants coped with conflict irrespective of the extent of conflict.