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Abstract

In Western societies, the prevalence of plant-based diet and veganism is rising; however, existing prejudice against vegans suggests underlying tensions in their relations with meat eaters. As a novel approach, the study introduces spontaneous imagined contact, an underexplored form of imagined interaction, to this intergroup dynamic. By examining the impact of spontaneous imagined contact on meat eaters' attitudes towards vegans and the underlying mechanisms, this research aims to contribute to effective strategies for mitigating such prejudice. Through an online survey of 114 UK-based meat eaters and the use of hierarchical regression and mediation analyses, the findings indicate that the quality of spontaneous imagined contact positively predicts meat eaters' attitudes and behavioural intentions towards vegans. Frequency of contact also predicts social distance, even when controlling for the effect of intergroup contact. Notably, the mediation effect of intergroup stereotype is observed in the relationship between spontaneous imagined contact and attitudes. These findings are useful inform policymakers to tailor interventions aiming to reduce meat eaters' prejudice towards vegans.

Key words: spontaneous imagined contact, vegans, intergroup contact, plant-based diet, prejudice

Introduction

In 2020, a legal victory marked the first time an ethical vegan's rights were protected from discrimination. Jordi Casamitjana, an ethical vegan, claimed unfair dismissal after raising concerns about his pension fund's investments in companies involved in animal testing. The judge ruled in his favor, recognizing ethical veganism as a protected belief under the Equality Act 2010 (The Vegan Society, n.d.). This landmark case sheds light on the discrimination faced by vegans, a minority group often negatively depicted in the media (Cole & Morgan, 2011; Brookes & Chalupnik, 2022). Some researchers interested in the social circumstances surrounding this group revealed that meat-eaters exhibited comparable or even more negative ratings of vegans compared to other commonly stigmatized groups (MacInnis & Hodson, 2017). The legal recognition of ethical veganism as a protected belief signifies an increasing societal acknowledgment of veganism's ethical stance. However, the discrimination faced by vegans underscores the need for broader awareness and understanding to challenge the negative prejudice that persists against vegans within society.

Moreover, the vegan trend is becoming unstoppable, driven by increased awareness of the importance of health, animal protection, and environmental sustainability. In addition to the health and longevity benefits of a plant-based diet (Herpich et al., 2022), consumers are increasingly aware of their crucial role in reducing the burden on the environment and animal welfare through their food choices (Sanchez-Sabate & Sabaté, 2019). Although vegans still belong to a minority, with only 2.78 percent of the population self-identifying as vegans (Stastita, 2023), the number of vegans in the UK quadrupled from 2014 to 2020, as demonstrated by Statista (2021). The growing minority of vegans indicates an increasingly

pressing need to tailor prejudice interventions to improve intergroup relations among dietary groups.

As research in the field continues to explore the origins and magnitude of prejudice between meat-eaters and vegans, there remains a notable knowledge gap regarding effective strategies to mitigate them. The present study, therefore, proposes spontaneous imagined contact (Stathi et al., 2019) as a promising intervention to enhance intergroup relations between vegans and meat-eaters. Spontaneous imagined contact, a newly explored form of intergroup contact derived from imagined contact, is designed to examine the effect of imagined contact occurring in a natural setting without external prompting. In 2019, the study by Stathi and team successfully discovered the effectiveness of spontaneous imagined contact in improving outgroup attitudes and behavioural intentions with immigrants in three different national samples. However, spontaneous imagined contact, as a scarcely studied contact theory, has not been widely applied in broader intergroup contexts. Hence, the current research seeks to address these gaps by extending the previous study (Stathi et al., 2019), examining its effect on reducing intergroup prejudice between omnivores and vegans.

The present study has dual objectives. Firstly, it aims to revisit the impact and underlying mechanisms of spontaneous imagined contact on attitudes and behavioral tendencies within the realm of dietary groups, thus enriching our understanding of spontaneous imagined contact. Secondly, the study seeks to advance the current understanding of strategies for improving intergroup relations between vegans and meat-eaters. Building upon the groundwork laid by Stathi and colleagues (2019), this research will explore the relationships between imagined contact and expected outcomes, encompassing attitudes, contact intentions, and social distance. Diverging from the prior study, this research will delve into

the roles of intergroup stereotypes and meta-stereotypes as potentially significant mediators in this specific context.

To achieve the goals, the present study will aim to address the research questions below:

1. *Whether meat eaters' spontaneous imagined contact positively predicts attitudes towards, social distance and behavioural intention with vegans, beyond and above intergroup contact?*
2. *Whether empathy and stereotypes (i.e., intergroup stereotype, meta-stereotype) mediate the relationships between spontaneous imagined contact and outgroup attitude, social distance, behavioural contact?*

This study will employ quantitative methodology by using an online survey to investigate groups of meat-eaters based in the UK. The online survey comprises several pre-existing scales that measure spontaneous imagined contact, intergroup stereotypes, meta-stereotypes, empathy, social distance, contact intention, extended and direct contact.

Through this innovative application of spontaneous imagined contact to dietary groups, the research will expand the existing literature on spontaneous imagined contact and enhance our understanding of the nature of intergroup perception between meat-eaters and vegans. The implications of this study also benefit policymakers in developing interventions tailored to meat-eaters' natural psychological processes.

To provide a more in-depth background and theoretical framework, this study will first scrutinize the current literature on the social interactions between vegans and meat-eaters. It will then proceed to explore the underlying mechanisms in relation to spontaneous imagined contact. The methodology used in the study will be elaborated on in detail in the method

section. The results will also be discussed, and limitations and implications for future research and intervention will be addressed at the end.

Literature review

Importance of plant-based diet

The increasing prevalence of plant-based food is largely attributed to its beneficial role in promoting human health, environmental sustainability, and animal welfare. Much research published over the past decades has suggested that a plant-based diet features anti-inflammatory properties and is associated with a reduced risk of all-causes diseases such as obesity, cardiovascular disease, and chronic diseases (Jafari et al., 2021; Adair & Bowden, 2020; Minich, 2019). Equally important, increased intake of plant-based food improves human psychological well-being, as supported by a longitudinal study that illustrated a significant correlation between the consumption of plants and enhanced life satisfaction and happiness over the course of 24 months (Mujcic & Oswald, 2016). Given the benefits of a plant-based diet on both physical and psychological well-being, health considerations are an important reason for which a considerable number of people are following a plant-based diet (Fehér et al., 2020; Azhar et al., 2023).

In addition to health, plant-based food is an indispensable part of initiatives aimed at sustaining an eco-friendly environment, as plant-sourced protein involves significantly fewer greenhouse gas emissions and less land use compared to animal-sourced protein (Willett et al., 2019). The UK Climate Change Committee has therefore quantified goals for dietary changes to plant-based diets from carbon-intensive diets (2020). Some scientists, like

Sadhukhan (2020), have envisioned a sustainable food circular economy in which plant-based food plays an essential role, aiming to integrate food into the sustainable system.

A plant-based diet holds significant importance for animal welfare, as it actively addresses the ethical concerns surrounding animal treatment in the food industry. Traditional perspectives on animal welfare in relation to diet emphasize the direct harm caused to livestock by factory farming practices (Fraser, 2011). Additionally, research indicates that livestock industries not only impact agricultural animals but also indirectly harm wildlife. Hampton et al. (2021) found that industries like dairy, relying on a secondary food production system, impose the most significant breadth of harm on wildlife animals within agroecosystems. These findings highlight the extensive range of harms involved. Opting for plant-based alternatives allows individuals to contribute to the reduction of animal suffering and promote a more compassionate approach to food consumption.

These environmental, health, and ethical reasons are already attracting a significant number of individuals in Western societies to adopt meat curtailment strategies, with 14 in every 100 Britons adopting a plant-based diet (Stastita, 2023). Moreover, Statista (2023) revealed that the global market size of plant-based food doubled from 2020 to 2023, and is anticipated to reach 77.8 billion U.S. dollars in 2025. As a result, many profit-driven traders and merchants, are scrambling to join this grand vegan party, including McDonald's and Greggs. Moreover, some firms have managed to grow meat in bioreactors using animal cells, and got the regulatory approval in Singapore and then in the U.S. (Poinski, 2023). The technological development, together with capital investment, fuelled the trend of going vegan.

However, while the push of business may seem to accelerate the dietary shift towards meat-reduced diet, the resistant attitude towards vegans becomes an unneglectable obstacle on the way of wider adoption of sustainable diet. A few studies report that interpersonal pressure accounts for one of the difficulties for people to maintain or take on meat-free diets (Hirschler, 2011; Markowski & Roxburgh, 2019). They explained that dietary change produces a dramatic negative impact on their relationship with significant others, which drove them to discontinue the vegan or vegetarian diet. Considering the potential social challenges vegans and vegetarians currently face, researchers call for psychologists to develop strategies of interventions to foster harmonious relations between dietary groups (Bagci & Olgun, 2019). The next chapter will then be focused on the literature on how meat-eaters' view vegan and what causes it.

Current literature on attitudes towards vegans

To begin, this study has a specific focus on the vegan group, rather than encompassing all types of meat abstainers. This choice is justified by previous research that has emphasized the distinct challenges faced by vegans (Judge & Wilson, 2018) and the need for differentiated investigations into both vegans and vegetarians (Salehi et al., 2023). Given that vegans often encounter heightened discrimination due to their ethical dietary choices (Randler et al., 2021), it is plausible that they may also face increased bias from omnivores. This study thus aims to explore the experiences within the vegan group and investigate omnivores' attitudes towards vegans specifically.

In social domain, vegans face lots of difficulties, as they are often stigmatized and pathologized due to their diet deviates from the norm and their counter-normative identities (Reuber & Muschalla, 2022). Historically, meat abstainers were ridiculed and ostracized in

the 19th century and considered absurd and socially problematic during the counterculture era of the 1960s-70s (Iacobbo & Iacobbo, 2004). Moving into the 21st century, although there has been a positive shift in how omnivores view vegans (Bryant, 2019; Judge & Wilson, 2019), they are simultaneously seen as morally principled yet eccentric and lacking in sociability (De Groot et al., 2021).

The stereotypes that meat eaters hold of vegans also carry complexity and ambivalence, influencing areas like employment. Groot and Rosenfeld (2022) found that while meat eaters tend to view vegans as moral, this moralistic perception is coupled with the perception of arrogance and excessive commitment. Similarly, MacInnis and Hodson (2017) found that vegans were often viewed as competent but less warm, potentially exposing them to feelings of envy. Interestingly, this study also revealed that omnivores did not exhibit a reduced willingness to hire vegans compared to other stigmatized groups. However, this willingness was dampened when it came to male vegans, as adopting a meatless diet was linked to perceptions of reduced masculinity, particularly impacting the perceived competence of male vegans (Adamczyk & Maison, 2022). Beyond the workplace, instances of discrimination and hostility occur in various contexts, such as hospitals, evoking emotions of exclusion, powerlessness, and dismissal among vegans (Rowley, 2015). These findings underscore the intricate nature of meat eaters' perceptions of vegans, revealing the psychological risk they encounter in their lives.

Current research on discrimination against vegans has been focused on identifying specific demographic profiles associated with stronger biases. Vandermoere et al. (2019) found that prejudice against vegans is more prevalent among individuals with lower education levels and in older age groups. Additionally, gender differences play a role, as male non-vegetarians

tend to exhibit more negative attitudes toward both vegans and vegetarians compared to their female counterparts (Judge & Wilson, 2018).

Despite the increasing popularity of meatless diets and the overall improvement in attitudes towards vegans, prejudice persists. This bias has taken on subtler forms, often appearing on less visible platforms. Wrenn (2023) conducted an analysis revealing that those opposed to veganism have congregated on online platforms like Reddit to form anti-vegan communities. In these digital spaces, they openly express their negative attitudes towards vegans while solidifying their own group identity (Gambert & Linné, 2018; Reynolds, 2019). Offline, this opposition translates into actions such as staging protests at vegan food festivals or engaging in symbolic acts like publicly consuming raw meat (Reynolds, 2019). These behaviours reflect an underlying tension and resistance within the status quo, where differing dietary choices can lead to implicit prejudice and the reinforcement of group identity.

Potential explanations for the prejudice against vegans

Efforts to uncover the reasons behind anti-vegan prejudice have been significantly pursued in recent years. Current literature presents two potential explanations for this phenomenon.

Bagci and colleagues (2022) argue that the perceived symbolic threat to meat eaters' established norms could prompt negative attitudes towards vegans among omnivores. This arises from the deviation from long-standing eating cultures dominated by carnism (Zaraska, 2016) and prevailing ideologies of speciesism and human supremacy (Hodson et al., 2019).

On the other hand, De Groot and Rosenfeld (2022) propose that cognitive dissonance might affect meat-eaters who enjoy their meat consumption but also hold concerns about animal welfare. This inconsistency between their positive moral self and their actual behavior could lead omnivores to belittle meat-avoiders as a way to safeguard their moral self-concept and alleviate discomfort (Cramwinckel et al., 2013; Minson & Minon, 2012).

While a consensus on the theory explaining discrimination and prejudice against vegans remains elusive, many scholars identify derogation as a barrier to achieving sustainable transformation (Zane et al., 2015). De Groot and her team (2021) demonstrated that omnivores who choose to remain "willfully ignorant" about the ethical considerations behind their food choices tend to belittle vegans, perceiving them as boring or socially unattractive in their dietary choices. Disturbingly, this belittling behaviour has downstream effects, leading to reduced anger toward unethical practices or companies and decreased engagement with ethical consumer alternatives. They further supported this conjecture with evidence in 2022, revealing that greater inconsistency between individuals' actual behaviour and their ethical beliefs indeed leads to a more frequent utilization of moral disengagement strategies. As a result, both derogation and moral disengagement impede the widespread adoption of sustainable innovations like sustainable diets.

Theoretical approaches to reduce prejudice

Given the negative consequences stemming from prejudice against veganism, several theoretical approaches aimed at mitigating perceived threats offer potential pathways for reducing prejudice towards vegans. For instance, Rios and colleagues (2018) propose highlighting shared similarities between groups as a means to diminish the perception of symbolic threat. This approach is rooted in the Common Ingroup Identity Model (CIIM) (Gaertner et al., 1993), a prejudice-reduction theory that advocates creating a shared and encompassing group identity. This shift aims to transition the perception of group boundaries from 'us vs. them' to a more inclusive 'we' (Gaertner & Dovidio, 2000). However, the application of CIIM to the context of meat-eaters (the majority) requires careful examination due to the complexities and debates surrounding its effectiveness.

The compatibility issue between dual identities resulting from CIIM and the majority group's preference for a One-group identity raises questions about its suitability in the context of meat-eaters. Dual identity refers to individuals not universally forsaking their pre-existing identities upon adopting a shared group identity, while the perception of dual identities between subgroups potentially results in ingroup projection. In this phenomenon, subgroups expect the superordinate identity to align with their beliefs (Schofield, 1986), leading to discrepancy and, for some groups, reactance (Wenzel et al., 2007). Notably, in-group projection is more likely to occur within the Majority, as suggested by the tendency of Majority groups to favor a one-group representation to reduce subgroup identification and avoid challenging the status quo. Conversely, minorities tend towards dual identity to acknowledge distinctiveness (Gaertner et al., 2016; Tyler & Blader, 2003). This implies that CIIM's emphasis on unity might not effectively address biases within majority groups like meat-eaters.

In comparison, imagined contact, another well-studied prejudice-reduction strategy, appears to be a better fit to majority group. Imagined contact, involving the mental simulation of positive interactions with an outgroup without requiring actual face-to-face contact (Crisp & Turner, 2009), is an effective approach for improving intergroup attitudes, particularly within the majority group. Bagci and colleagues' study (2018) demonstrated that the positive impact of imagined contact is more pronounced among the majority compared to the minority in the Turkish-Kurdish context. This aligns with the current study's focus, suggesting that the positive influence of imagined contact could have more potent effect on meat-eaters (majority) than on vegans (minority), thereby making it a better suit for the omnivore-vegan context and compensate for the weakness of CIIM.

Within majority groups, imagined is fairly effective, with its utility and effectiveness being validated across diverse intergroup settings. In Turner and Crisp's study (2010), young participants exhibited more positive attitudes towards elderly people overall after imagining conversations with unfamiliar elderly strangers. Similarly, they discovered that imagining interactions with Muslims improved non-Muslim participants' attitudes towards Muslims afterward. This effectiveness of imagined contact spans age groups, from adults to children. For example, a 3-week study involving 215 Italian elementary school children demonstrated that imagining scenarios of befriending disabled children significantly enhanced children's intentions to combat exclusion and bullying (Vezzali et al., 2019).

Despite extensive research showcasing the potential of imagined contact to enhance intergroup attitudes in diverse scenarios, limited attention has been directed towards its application in dietary groups. Similarly, behavioral tendencies and the factors influencing interactions between meat-eaters and vegans remain understudied. Given the current gaps in knowledge, it is essential to address these areas by investigating the behavioral patterns and influential factors within meat-eater and vegan interactions, with a specific focus on the role of imagined contact.

It is worth noticing the limited effectiveness of imagined contact within the minority, constraining its applicability to the vegan community. Scholars explain that due to concerns about their low and marginalized social position, minorities and disadvantaged individuals may anticipate discriminatory encounters and experience heightened emotional responses and anxiety during contact, thus hindering positive outcomes (Pettigrew & Tropp, 2006; Ron et

al., 2017). Therefore, the present study is limited in explaining the intergroup dynamics from the perspective of vegans.

The intergroup contact strategy

Intergroup Contact theory is widely acknowledged as a potent tool to counter the adverse effects of intergroup prejudice (Allport, 1954). An indirect contact strategy stemming from the direct intergroup contact approach, imagined contact emerges as an effective alternative for fostering intergroup relations, especially in contexts where direct interactions are limited. This holds particular relevance in the case of omnivores, where interaction opportunities with vegans are constrained due to the relatively low prevalence of vegan identification.

Additionally, Paxman (2021) notes that vegans often adopt avoidance strategies to prevent dietary conflicts and minimize the overt expression of their identity. Similarly, Guerin's research (2014) reveals that omnivores anticipate hostile encounters with vegans, potentially reducing their willingness to engage due to negative expectations. In this scenario of limited meaningful contact between vegans and omnivores, the utility of employing imagined contact to bridge the gap between these two groups becomes pronounced.

Imagined contact theory involves similar mechanism to real contact. Imagined contact is theorized to involve psychological and cognitive processes that mirror those in real intergroup contact (Crisp et al., 2009). When simulating a positive contact experience, individual automatically activate the concept associated with that social context, and consciously think about what they would learn and feel about the interaction. Thus, the process plays an important role in generating the perception and the evaluation of the outgroup, influencing peoples' outgroup attitude (Crisp et al., 2009).

Outcomes of imagined contact

Imagined contact serves a pivotal role in preparing to reduce prejudice, encouraging individuals to approach outgroups and foster future direct interactions. Meta-analyses have consistently demonstrated the consequential impacts of imagined contact, including reductions in implicit and explicit attitudes (Vezzali et al., 2011) and the promotion of positive behaviors towards outgroup members (Turner & West, 2011). Notably, Crisp and Turner (2009) emphasized that the key strength of imagined contact is not in directly altering attitudes, but in cultivating interest and intention for future intergroup interactions. Early support comes from Anderson's (1983) study, indicating envisioning specific scenarios like blood donation enhance intentions. Subsequently, studies have broadened their focus from attitudes to behavioural intentions. For instance, Ginevra et al. (2021) found that children exhibited increased desire for positive interaction with peers with disabilities, while Kuchenbrandt et al. (2013) discovered enhanced intentions for cooperation among German university students after exposure to cooperative scenarios.

Meanwhile, behavioural consequences of imagined contact also extend to social distance. Turner and West (2011) investigate a sample of British undergraduates, both experiments (N = 50, N = 41) found reduced physical social distancing to the Muslim and obese people after being asked to imagine a positive interaction with a stranger. In addition to physical closeness, imagined contact could decrease perceived psychological distance between the self and the outgroup members (Stathi & Crisp, 2008). For example, within the context of two hostile Chinese groups, Han students (dominant group) who engaged in positive imagined contact with a Uygur individual exhibited closer distance and more favourable attitude (Wei-Hua et al., 2019).

Mediating process

Imagined contact yields positive effects through affective and cognitive processes. While past studies emphasize affective processes, cognitive aspects remain less explored. In cognition, imagery studies often reference "mental scripts," where individuals draw on pre-formed scripts to enhance perception and decision-making. This aligns with the "availability heuristic" (Tversky & Kahneman, 1973), suggesting that readily accessible psychological concepts influence judgments. When it comes to social interactions, pre-existing stereotypes act as scripts, which may potentially reinforce negative biases when tied to unfavourable perceptions of a group (FitzGerald et al., 2019), bringing harm to intergroup relations.

However, imagined contact has been demonstrated to effectively combat bias by modifying stereotypes. Brambilla et al. (2011) illustrated how imagining contact with immigrant groups led to a more positive stereotype shift. This phenomenon extends to stigmatized categories like severe mental health illnesses; individuals imagining positive interactions with people with schizophrenia experienced reduced stereotypes, improved attitudes, and enhanced contact intentions (Stathi et al., 2012).

In the context of prevailing stigmatization and stereotyping of vegans, understanding stereotypes becomes essential when exploring the effects of spontaneous imagined contact. However, the existing quantitative research on vegan stereotypes has been confined to the Stereotype Content Model (SCM) (Fiske et al., 2007, 2002), which employs a simplified two-dimensional approach to assess warmth and competence. Despite its practicality, this model has been critiqued for its oversimplification for its inability to sufficiently describe the multi-faceted nature of stereotype focusing only on two dimensions (Nett et al., 2020). Therefore,

this study will delve into meat-eaters' perceived stereotypes of vegans using alternative measures to discern their influence on outgroup attitude and prejudice.

To understand the stereotypical dynamics between vegans and meat-eaters, considering intergroup stereotypes and meta-stereotypes is crucial. Intergroup stereotypes (Livingstone et al., 2019) involve general perceptions of outgroup members based on traits and behaviors. Media portrayals often depict vegans as activists, intolerant, or overly arrogant (Wrenn, 2017; De Groat & Rosenfeld, 2022). For omnivores with limited direct interactions with vegans, these portrayals could act as scripts shaping negative perceptions and fostering biased attitudes towards vegans.

Meta-stereotype consists of individuals' perceptions of how outgroups view their ingroups, which significantly influences people's expectations of social interactions (J. Kim & Oe, 2009). Negative beliefs (meta-stereotype) about outgroups' understanding of the ingroup's values could lead to cautious or hostile behavior when anticipating interactions. While previous research has tapped into omnivores' moral pressures linked to meat dilemma (Stephan & Stephan, 1985; Plant and Devine, 2003), the influence of other meta-stereotype aspects on behaviours and attitudes in this context remains unclear

Imagined contact, as a strategy previously found to alter pre-existing stereotypes, is expected to bring about positive changes in meat-eaters' perceived stereotypes of vegans. By investigating various components of stereotypes, the present study aims to delve deeply into the dynamic between stereotype and imagined contact, as well as multifaceted aspects of intergroup dynamics between these two dietary groups.

Intergroup anxiety and empathy were disclosed to be the two common affective mechanisms underlying the contact effect (Pettigrew & Tropp, 2008; Pettigrew & Tropp, 2006). Extensive studies demonstrated the link between imagined contact and improved attitudes was mediated by a decrease in intergroup anxiety (Turner et al., 2007; Stephan, 2014). Empathy, on the other hand, also plays a crucial role as it fosters understanding, perspective-taking, and emotional connection between individuals from different groups (Crisp & Turner, 2012). Empathy is equally vital, fostering understanding and emotional connection across groups (Crisp & Turner, 2012). For instance, empathy toward outgroups like asylum seekers increases with instructions to imagine interactions or cooperate (McWaters & Hawkins, 2018; Kuchenbrandt et al., 2013).

However, anxiety has been a focal point in existing research on imagined contact, number of research on positive affective variables such as empathy, remained relatively low. Previous studies on the relation of imagined contact with stereotypes mainly focused on anxiety, leaving empathy unexplored. Yet, outside intergroup contact theory, empathy has been shown to mediate connections between altruistic attitudes and stereotypes (Johnson et al., 2009). Acknowledging this gap, the current study centers on empathy, integrating it as a positive mediator within the model.

Moderation of intergroup contact

Intergroup contact has been consistently identified as a key factor influencing the effectiveness of mental imagery of contact, as evidenced by several meta-analyses (Shamo-Nir & Razpurker-Apfeld, 2023; Crisp & Turner, 2012). This contact includes both cross-group friendships and extended contact, with research indicating that developing friendships with outgroup members can effectively reduce intergroup prejudice by fostering self-

disclosure and empathy (Turner et al., 2013). Even when direct friendships are not feasible, simply knowing an ingroup member with close outgroup connections can significantly diminish negative outgroup attitudes (Wright et al., 1997). Empirical support for these findings is demonstrated in studies like the one on Italian school children, where extended contact increased intentions to connect with new school friends (Vezzali et al., 2016). Similarly, a year-long study involving Northern Irish Catholic and Protestant adults found that extended contact consistently predicted increased intentions to support the other group, both concurrently and longitudinally (Christ et al., 2010).

Considering the considerable influence of intergroup contact, which might potentially intersect with spontaneous imagined contact's effects on other outcomes, the present study aims to investigate how spontaneous imagined imagery operates in moderating the impact of intergroup contact. In essence, this study seeks to examine the unique contribution of spontaneous imagined contact beyond the influence of intergroup contact itself.

Spontaneous imagined contact

Although the imagined contact theory has been widely recognized for enhancing intergroup relations, its limitations call for a more refined approach to address these constraints. Firstly, imagined contact is traditionally a positivity-based approach in current literature. Prior research suggests that imagined contact is most effective when positively framed. For instance, Turner and Crisp (2008) demonstrated that participants instructed to envision positive outgroup interactions experienced more favorable attitude changes compared to those with neutral instructions, with neutral approaches potentially fostering negative expectations and subsequent unfavorable attitudes (West et al., 2011). However, a meta-analysis by Miles and Crisp (2014) suggests that the superiority of positive imagined contact

over neutral versions is not consistently supported. Furthermore, Husnu and Paolini (2018) argued that participants often gravitate towards positive visualizations when given a choice, indirectly hinting that neutrality might incline towards positive outcomes rather than negative ones.

A concern emerges from imagined contact research conducted in controlled settings, raising questions about its authenticity and real-world relevance (Lemmer & Wagner, 2015). Brown and Paterson (2016) discovered limited and unreliable effects of experimentally induced imagined contact, due to the artificial facilitation. Similarly, Ülger et al. (2018) found the school-based effect was largely facilitated by teachers, inflating the actual effect. Moreover, Paluck et al. (2018) emphasized the challenge of translating controlled findings to real-life divided societies, as the contact in reality is infrequent and often involves casual interactions rather than meaningful connections. Hence, many researchers pointed to a need to re-examine the effect of imagined contact in natural settings (Smith & Minescu, 2021; Lemmer & Wagner, 2015)

Thirdly, another dimension to consider is the potential downside of positive contact in driving social change. While positive imagined contact enhances intergroup harmony and improves outgroup attitudes, it has been argued to divert attention from intergroup inequality among White Americans (Cakal et al., 2011; Jackman & Crane, 1986). Yet, promoting social justice requires in-groups' awareness of illegitimate aspects of inequality (Van Zomeren et al., 2008). Hence, these researchers contend that positive imagined contact may not inherently promote social change, but rather reinforce existing social inequalities, thus advocating for genuine group relations over solely focus on harmony in future intergroup contact approaches. (Sengupta & Sibley, 2013; Saguy et al., 2009).

To authentically explore imagined contact and its potential for social change, researchers are advised to move beyond controlled lab settings and delve into realistic scenarios (Stathi et al., 2019). This transition is supported by Stathi and colleagues (2019), who found comparable effects between spontaneous imagined and positive imagined contact. Affective mediators, empathy and anxiety, crucial in the imagined contact model, were also significant in the spontaneous imagined context (Stathi et al., 2019). These advancements prompt further exploration of imagined contact's mechanisms across diverse intergroup contexts

Exploring spontaneous imagined contact within the dietary context holds promise. The evolving portrayal of vegans in media towards neutrality (Kley et al., 2022) makes the neutral nature of spontaneous imagined contact apt to investigate how this impacts omnivores' attitudes. This approach aligns with the genuine nature of everyday imagined contact, enabling meat-eaters to authentically understand vegans' motivations. By stepping into the shoes of vegans, this non-forced imagined contact provides insight into the underlying reasons behind dietary choices. Additionally, the study's findings have potential implications for reshaping how vegans are represented.

Nonetheless, the efficacy of spontaneous imagined contact might be constrained in certain aspects. Crisp and Turner (2012) emphasize the potential for negative tones to arise if participants lack guidance and resort to negative stereotypes while engaging in imagined interactions. This effect is especially pronounced when participants are asked to imagine a neutral intergroup contact, leading to a weakening of positive outcomes (West et al., 2011). However, the validity of this potential drawback remains largely unexplored. The present study will replicate and build upon pioneering work (Stathi et al., 2019), examining the

influence of imagined contact occurring in daily life settings on meat-eaters, while further investigating the mechanisms and limitation previously explored.

The current study

The objective of the present study is seeking to understand the role of spontaneous imagined contact in shaping intergroup dynamics between meat eaters and vegans. Building upon previous literature revealing the underlying mechanisms of imagined contact, and a summary of existing studies on attitudes toward vegans, we hypothesized that

1. Meat-eaters' spontaneous imagined contact with vegans would positively predict outgroup attitudes towards, behavioural contact intention and social distance with vegans, beyond and above intergroup contact
2. Two types of stereotypes (e.g., intergroup stereotypes and meta-stereotype), and empathy would mediate the relationships between spontaneous imagined contact and outgroup attitude, social distance and behavioural contact.

Method

This study employs a cross-sectional survey design to examine the relationships between spontaneous imagined contact and social distance, attitudes, as well as behavioural intentions among meat-eaters. The design allows the researchers to collect data at a single point in time and analyse the associations between variables using appropriate statistical tests.

Participants

Participants (N=114, 70 % female, 25% male, 5% non-binary and undisclosed; $M_{age} = 30.4$, $SD = 26$) were self-identified meat-eaters. Amongst, over a quartre (30%) of them revealed that they had previously adopted a meat-reduced diet such as vegetarian and pescatarian. Data were collected through convenience sampling with the researcher who advertised the study on various social media channels (i.e., Facebook, Twitter), survey participants pool (i.e., St. Andrew's Participant pool), and survey exchange platform (SurveyCicle) from the end of June 2023 to the mid of July 2023.

The exclusion criteria were that participants were required to be meat-eater over the age of 18, and currently live in the UK for more than 12 months. Participants were predominantly white (63.2%), among which, more than half were British. Asians accounted for another 24.6%, and Black accounted for 4.4%, the rest were from the other ethnic groups unspecified.

Materials

Meat eaters' spontaneous imagined intergroup with vegans

To assess participants' spontaneous imagined contact, the researcher used a 7-item scale adapted from SIICS in the existing research on spontaneous imagined contact (Stathi et al., 2020). SIICS is a three-dimensional scale that focuses on three aspects previously shown to impact imagined contact. Two items assess the frequency of imagined contact (e.g., "In everyday life, how frequently do you imagine interacting with vegans? 1 = Never/almost never, 5 = Always/ almost always); Two items assess the quality dimension (e.g., "When you imagine interacting with vegans, these encounters are (1) Unpleasant—Pleasant (5), (1) Hostile— Friendly (5); the rest of three items assess the elaboration (vividness) of imagined contact (e.g., "When you imagine interacting with vegans, do you imagine the reason behind

this contact? 1 = Never/almost never, 5 = Always/almost always). The scale's overall reliability is indicated by an alpha coefficient of 0.66, with individual dimensions showing a reliability of 0.81 for frequency, 0.78 for quality, and -0.73 for elaboration.

Meat-eaters' extended contact and existing contact with vegans

Eight items adapted from previous research (Turner et al., 2008) were used to ask participants about their cross-group friendship with vegans as well as extended contact. Two example items are “How many close friends do you have who are vegans?” and “How often do you spend time with friends who are vegans?” Participants indicated the number of close vegan friends by choosing 0 = none, 1 = one friend, 2 = 2–5 friends, 3 = 5–10 friends, 4 = more than 10 friends. Scale reliability of cross-group friendship and extended contact respectively is 0.82 and 0.86. The composite scale that combines two types of contact also indicates a robust reliability, with alpha coefficient of 0.88.

Stereotypical beliefs about vegans

Stereotype was assessed using 2 subscales adapted from existing research (Livingstone et al., 2019) to evaluate participants' intergroup stereotypes and meta-stereotype respectively. Intergroup stereotypes scale includes 6 items by asking the questions such as “In general, vegans tend to be competent or incompetent?” Response utilized Likert scale ranging from 1 (competent) to 7 (incompetent). Meta-stereotype scale (Livingstone et al., 2019) also used 7-point Likert scale to measure the extent to which participants agree with the statements such as, “In general, vegans have good understanding of the meat-eaters”. The response ranged from -3 (completely disagree) to 3 (completely agree). Alpha coefficient of intergroup stereotype is 0.91, and meta-stereotype is 0.76.

Empathy

To measure meat-eaters' empathic responses towards vegans, the study utilized three items adapted from Swart et al. (2011). One example item is: "If I heard that a vegan was upset and suffering in some way, I would also feel upset." The response was based on Likert scale ranging from 1 (Strongly disagree) to 5 (strongly agree). The scale reliability of empathy is 0.81.

Outgroup attitude

Participants completed a single item feeling thermometer to assess the valence in which they had favourable or unfavourable attitudes towards vegans, using the scale adapted from previous study (Haddock et al., 1993). The item read, "How favourable do you feel towards the vegans?" Responses ranged from 0 (extremely unfavourable) to 100 (extremely favourable).

Behavioural intentions

Participants' behavioural intentions to approach or having contact with vegans were gauged by the 4-item scale adapted from existing research (Asbrock et al., 2013). Participants were measured by indicating the degree to which they agree with the questions, such as "If opportunities arise, I would probably start a conversation with vegans." The answers were also based on 7-point Likert scale, ranging from 1 (don't agree at all) to 7 (completely agree). Alpha coefficient indicating the scale reliability of behavioural intention is 0.85.

Social distance

Participants were asked to rate their perception of perceived distance from the vegans in six different situations (e.g., classmates, neighbours, in-laws) using a scale ranging from 1 (Not at all) to 5 (Very much). Alpha coefficient social distance is 0.93.

Procedures

Participants were recruited via personal referral, Facebook, and SurveyCircle. They completed an online survey, Qualtrics. The online survey (Appendix A) was taken in participants' own time. Participants were informed about the study's focus on assessing meat-eaters' attitudes towards social interactions with vegans at the beginning of the survey (PLS; Appendix B). After which, they were given a Privacy notice (Appendix C) that informed their rights related to their data and how it would be processed and storage. Lastly, they were provided with informed consent (Appendix D) to consent their participation in this research. Following, demographics were collected related to gender, age, length of residence in the UK, the diets they followed, ethnicity. After questions on demographics variables, participants answered to the measures in the sequence of spontaneous imagined contact, extended contact, stereotype, empathy, contact intention, social distance, and outgroup attitude. Upon completion, participants were debriefed and thanked for their participation. The overall process took about 7 minutes to complete.

The topic and design of this research was approved by the School of Education Ethics Committee of University of Glasgow (Appendix E). The study has been considered as low risk, given that it adheres to stringent ethical guidelines and involves minimal potential harm or discomfort to participants.

Moreover, the recruiting channel predominantly relied on online survey exchange platforms, university channels, and personal referrals. While this approach facilitated the collection of data, it also introduces potential biases associated with self-selection, since participants who choose to engage in online surveys might differ from those who do not (Duda & Nobile, 2010).

Data collection was conducted with the objective of attaining a minimum sample size of 45 participants, which would enable the detection of a small effect size of 0.30 with a statistical power of 0.80 in a multiple regression analysis involving four predictors. Out of the initial 141 participants who started the survey, 116 successfully completed it until the end, with an average completion time of approximately 7 minutes. To accommodate participants who preferred not to respond to certain questions, an option of "prefer not to say" was included, allowing them to leave those questions blank. However, this voluntary approach led to a considerable number of missing values in certain observations. Consequently, 2 observations with missing data exceeding 70% were excluded to mitigate data loss. For the remaining observations with less than 30% data missing, if the variables being analysed within those observations which have missing values, the algorithm detected and automatically removed them.

Design & Statistical analysis

To analyse the data, various statistical tests were conducted using Software R (Version 4.0.2, R Core Team, 2020) and IBM SPSS Statistics (Version 27). Pearson correlation coefficients were calculated to explore the associations among all relevant variables, including three dimensions of spontaneous imagined contact (frequency, quality and elaboration), outgroup attitude, social distance, contact intentions, and the selected mediators. Once the correlational tests were done, the variables with significant associations were chosen to further investigate the relationships between the spontaneous imagined contact and the three dependent variables. To achieve it, three structural multiple regression analyses were carried out, simultaneously including the control variables of intergroup contact to minimise its confounding effects.

Lastly, mediation analyses were performed to test the indirect effects of spontaneous imagined contact on attitudes towards vegans, social distance and behavioural intention through intergroup stereotypes. To estimate the statistical significance of the indirect effects, the mediation analysis employed nonparametric Bootstrapping methods with 500 resamples, considering its flexibility allowing for non-parametric conditions (Alfons et al., 2021).

Results

Scale reliability were assessed to ensure the reliability of the measurement scales used in this study, using Cronbach's alpha coefficient. The results of the scale reliability analysis indicated satisfactory internal consistency with Cronbach's alpha coefficients for almost all the multi-item scales exceeded the commonly accepted threshold of 0.70 (Taber, 2018). Except for the three-dimensional scales of spontaneous imagined contact with alpha coefficient of 0.66, which overall indicated a poor reliability index. However, each individual dimension showed good reliability (quality: alpha = .78, frequency: alpha = .81, elaboration: alpha = .73). Hence, the study investigated spontaneous imagined contact using separate dimensions rather than considering it as a composite variable.

Preliminary analyses of assumptions were performed before conducting inferential analysis. The normality of the residuals was examined through visual inspection of Q-Q plots and Shapiro-Wilk test. The results indicated that the residuals of all measures approximately followed a normal distribution. Scatterplots of the residuals against the predictive values were inspected to assess the linearity and homoscedasticity assumption. The plots displayed a

roughly linear pattern supporting the assumption of linearity. However, while all the other residual plots showed consistent spread of residuals, meeting the assumption of homoscedasticity, the plots such as those related to meta-stereotype displayed patterns that were not consistent. Yet, it is considered that parametric tests can also be applied when the sample size greater than 100, regardless of the data distribution (Politi et al. 2021). Therefore, the present analyses carried on using parametric test.

Descriptive analyses

Descriptive statistics for all variables of interest are presented in Table 1 and Table 2. Table 1 includes the mean and standard deviation of each variable. From the mean, it appears that participants had a low amount of contact who were vegans ($M = 2.45$, $SD = 1.00$), with majority of participants only having one vegan friend ($Mdn = 1$, $SD = 1.00$). Also, participants on average reported spending little to occasional time with their vegan friends ($M = 1.07$, $Mdn = 2$, $SD = 1.05$). Furthermore, participants reported feeling a fair amount of empathy towards vegans ($M = 3.74$, $SD = .89$) when imagining having contact with vegans. Respondents hold relatively favourable and positive stereotypes about vegans, with a mean closer to the positive end of the scale ($M = 2.96$, $SD = 1.11$, $Range = [1, 7]$). Concerning meta-stereotype, participants displayed a minor tendency to perceive a slightly lower level of understanding from the outgroup, without a strong negative sentiment ($M = -.38$, $SD = .72$, $Range = [-3, 3]$). In Table 2, Pearson correlation coefficients were computed to examine the correlations between all the studied variables.

Based on the correlational analyses, certain significant associations were observed between several variables to serve as the basis for testing the first hypothesis that whether all dimensions of imagined contact would predict attitude, social distance and behavioural

intention respectively. Intergroup contact showed strong associations with spontaneous imagined contact except for the dimension of elaborations (Frequency: $r(95) = .49, p < .01$; Quality: $r(96) = .39, p < .05$; Elaboration: $r(96) = -.01, p = 0.90$), indicating a substantial shared variance. Furthermore, two dimensions of spontaneous imagined contact were found to be significantly and positively correlated with contact intention (Frequency: $r(107) = .27, p < .01$; Quality: $r(108) = .25, p < .05$), while only quality was significantly associated with attitude, $r(109) = .50, p < .01$, and frequency with social distance, $r(104) = .50, p < .01$. However, no significant correlation was found between elaboration and any of these three outcome variables.

The second hypothesis is to examine whether empathy and stereotypes (i.e., intergroup stereotypes and meta-stereotype) would mediate the relationships between spontaneous imagined contact and the three outcome variables. As seen in Table 1, while both empathy and meta-stereotype displayed significance solely in relation to elaboration (Empathy: $r(110) = -.21, p < .05$; meta-stereotype: $r(108) = .50, p < .01$), they did not show significance in association with any of the outcome variables. Therefore, due to not meeting the criteria for mediation analysis in relation to the outcome variables, neither empathy nor meta-stereotype were included in the subsequent mediation analysis.

In contrast, intergroup stereotypes displayed significant correlations with all variables related to imagined contact as well as the dependent variables, excepting for social distance (Quality: $r(107) = -.21, p < .05$; Frequency: $r(108) = -.41, p < .01$; Elaboration: $r(108) = .21, p < .05$; Attitude: $r(106) = -.40, p < .01$; Behavioural intention: $r(105) = -.23, p < .05$). Given these notable associations, and considering the significant links found between attitude and both quality and frequency of imagined contact, as well as between quality and behavioural

intention, the subsequent mediation analyses focused solely on intergroup stereotypes as the mediating factor within these connections.

Table 1.

Descriptive Statistics For All Study Variables

Variable	<i>M</i>	<i>SD</i>	<i>Range of scale</i>
1. Spontaneous imagined contact	2.92	0.71	[1, 5]
2. Frequency	3.42	1.56	[1, 5]
3. Quality	3.52	0.82	[1, 5]
4. Elaboration	2.21	0.91	[1, 5]
5. Intergroup contact	2.20	0.95	[1, 5]
6. Intergroup stereotypes	2.90	1.11	[1, 7]
7. Meta-stereotype	-0.38	0.72	[-3, 3]
8. Empathy	3.74	0.89	[1, 5]
9. Outgroup attitude	57.11	22.59	[0, 100]
10. Social distance	2.93	1.07	[1, 5]
11. Behavioural intention	4.25	1.37	[1, 7]

Note. M and SD are used to represent mean and standard deviation, respectively

Table 2. *Correlations For All Study Variables*

Variable	1	2	3	4	5	6	7	8	9	10
1. Spontaneous imagined contact										
2. Frequency	.83** [.76, .88]									
3. Quality	.44** [.28, .58]	.31** [.13, .47]								
4. Elaboration	.62** [.49, .72]	.19* [.01, .37]	-.14 [-.32, .05]							
5. Intergroup contact	.38** [.20, .54]	.49** [.32, .63]	.25* [.06, .43]	-.01 [-.21, .19]						
6. Intergroup stereotypes	-.16 [-.34, .03]	-.21* [-.39, -.03]	-.41** [-.56, -.25]	.21* [.02, .38]	-.14 [-.33, .06]					
7. Meta- stereotype	.16 [-.03, .34]	.13 [-.06, .31]	.25** [.07, .42]	.02 [-.16, .21]	.27** [.07, .45]	-.05 [-.24, .14]				
8. Empathy	.02 [-.17, .20]	.12 [-.06, .30]	.12 [-.06, .30]	-.21* [-.38, -.02]	.18 [-.02, .36]	-.25** [-.42, -.06]	-.13 [-.31, .06]			
9. Outgroup attitude	.23* [.05, .40]	.17 [-.01, .35]	.50** [.35, .63]	-.08 [-.26, .11]	.14 [-.06, .33]	-.40** [-.55, -.23]	.10 [-.09, .28]	.31** [.13, .47]		
10. Social distance	.26** [.08, .43]	.39** [.22, .54]	.16 [-.04, .34]	-.06 [-.24, .13]	.41** [.22, .56]	-.19 [-.37, .00]	.14 [-.06, .32]	.21* [.03, .39]	.26** [.07, .43]	
11. Behavioural intention	.33** [.15, .48]	.27** [.08, .43]	.21* [.02, .38]	.19 [-.00, .36]	.23* [.03, .41]	-.23* [-.40, -.04]	.03 [-.16, .21]	.42** [.25, .56]	.24* [.05, .40]	.22* [.03, .39]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Inferential analysis

Hypothesis 1: meat-eaters' spontaneous imagined contact with vegans would predict positively outgroup attitude, social distance and behavioural contact intention, beyond and above intergroup contact.

To address the first hypothesis, three hierarchical multiple regression analyses were conducted to evaluate the prediction of each outcome variable (i.e., Outgroup attitude, social distance, Behavioural Intention) from three independent variables (i.e., Quality, Frequency, Elaboration of spontaneous imagined contact), while holding the intergroup contact constant. The operation in SPSS involved a sequential entry: three predictors associated with spontaneous imagined contact were first to entered in the first block, and the second block introduced the moderator, intergroup contact. Consequently, two separate models were yielded, each corresponding to the models with and without intergroup contact. This described procedure was repeated across all three regression analyses.

For outgroup attitude (Table 3), the result of the first block hierarchical linear revealed a model to be statistically significant ($p < .001$). Among three dimensions of spontaneous imagined contact, only the beta coefficient of quality was statistically significant ($B = 16.10$, $p < .001$). Additionally, the R^2 value of 0.31 associated with this regression suggest that the quality of imagined contact accounts for 31% of the variance in attitude. For the second block analysis, intergroup contact was added to the analysis. A similar outcome was found in the second block analysis. The results of the second block hierarchical linear revealed a model to be statistically significant ($p < .001$). Quality remained significant in this step. Additionally, the R^2 change value of 0 associated with this regression suggests that the addition of intergroup contact accounts none of the variance in attitude, which means that quality still

accounts for the 31% of the variance in attitude. Controlling for intergroup contact, the regression coefficient [$B = 16.14$, C.I., (10.77, 21.5), $p < .01$] associated with quality, suggests that with each additional unit of quality, the attitude increases by approximately 0.56 units.

Table 3. Regression Analysis Of Intergroup Contact Between Spontaneous Imagined Contact And Outgroup attitude

Predictors	<i>B</i>	<i>95%CI</i>	<i>SE B</i>	Outgroup attitude		
				<i>beta</i>	<i>R</i> ²	ΔR^2
Step 1						
Frequency	.90	[-1.81, 3.60]	1.36	.062		
Quality	16.104	[10.79, 21.42]	2.67	.56***	.31***	
Elaboration	-.49	[-4.91, 3.95]	2.23	-.020		
Step 2						
Frequency	1.01	[-2.05, .4.08]	1.54	.070		
Quality	16.135	[10.77, 21.50]	2.69	.56***	.31***	0.00
Elaboration	-.50	[-4.97, 3.96]	2.24	-.021		
Intergroup contact	-.40	[-5.25, 4.44]	2.44	-.017		

Note. $n = 114$. *CI = Confidential interval Control Variable (Intergroup Contact)*. * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$.

As to social distance (Table 4), the result of the first block hierarchical linear revealed a model to be statistically significant ($p < .001$). Among three dimensions of spontaneous imagined contact, only the beta coefficient of frequency was statistically significant ($B = .29$, $p < .001$). Additionally, the R^2 value of 0.15 associated with this regression suggests that the frequency of imagined contact accounts for 15% of the variance in attitude. For the second block analysis, intergroup contact was added to the analysis. A different outcome was found. The results of the second block hierarchical linear revealed a model to be statistically significant ($p < .01$). Frequency remained significant ($p < .05$), while the strength was decreased. Intergroup contact shown to be significant as well ($p < .01$). Additionally, the R^2 change value of 0.06 associated with this regression suggests that the addition of intergroup contact accounts for 6% of the variance in attitude, which means that 6% of the variance in

attitude cannot be accounted by frequency of imagined contact. Controlling for intergroup contact, the regression coefficient [$B = .19$, C.I., (.039, .34), $p < .01$] associated with frequency suggests that with each additional unit of frequency, the perceived proximity of self from vegans increases by approximately 0.19 units.

Table 4. *Regression Analysis Of Intergroup Contact Between Spontaneous Imagined Contact And Social distance*

Predictors	<i>B</i>	<i>95%CI</i>	<i>SE B</i>	Social distance		
				<i>beta</i>	<i>R</i> ²	ΔR^2
Step 1						
Frequency	.29	[.15, .42]	.070	.43***		
Quality	.014	[-.26, .29]	.14	.10	.15***	
Elaboration	-.15	[-.37, .081]	-.12	-.13		
Step 2						
Frequency	.19	[.039, .34]	.076	.28*		
Quality	-.011	[-.28, .15]	.13	-.008	.21**	.06*
Elaboration	-.13	[-.35, .087]	.11	-.12		
Intergroup contact	.33	[-.088, .57]	.12	-.30**		

Note. $n = 114$. *CI = Confidential interval Control Variable (Intergroup Contact)*. * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$.

Concerning behavioural intention (Table 5), the result of the first block hierarchical linear revealed a model to be statistically significant ($p < .001$). Among three dimensions of spontaneous imagined contact, only beta coefficients of frequency ($B = .20$, $p < .05$) and quality ($B = .50$, $p < .01$) were statistically significant. Additionally, the R^2 value of 0.16 associated with this regression suggests that frequency and quality of imagined contact together account for 16% of the variance in behavioural intention. For the second block analysis, intergroup contact was added to the analysis. A different outcome was found. The results of the second block hierarchical linear revealed a model to be statistically significant ($p < .001$). Quality remained significant, yet frequency did not. However, the R^2 change value

of 0.02 associated with this regression is non-significant. Controlling for intergroup contact, the regression coefficient [$B = .48$, C.I. (.13, .83), $p < .01$] associated with frequency, suggests that with each additional unit of frequency, the perceived proximity of self from vegans increases by approximately 0.48 units.

Table 5. *Regression Analysis Of Intergroup Contact Between Spontaneous Imagined Contact And Behavioural Intention*

Predictors	B	95%CI	SE B	Behavioural intention		
				beta	R ²	ΔR ²
Step 1						
Frequency	.20	[.017, .38]	.091	.23*	.16***	
Quality	.50	[.15, .86]	.18	.29**		
Elaboration	.19	[-.11, .49]	.15	.13		
Step 2						
Frequency	.11	[.089, .32]	.10	.13	.18***	.02
Quality	.48	[.13, .83]	.18	.28**		
Elaboration	.20	[-.090, .50]	.15	.14		
Intergroup contact	.29	[-.028, .60]	.16	.20		

Note. $n = 114$. CI = Confidential interval Control Variable (Intergroup Contact). * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$.

The observed patterns in the analyses indicate that, under the moderation of intergroup contact, quality uniquely and positively predicts both meat eaters' outgroup attitude and behavioural intention with vegans, while elaboration appears to be irrelevant in predicting any of these outcomes. Moreover, frequency uniquely predicts social distance and had a moderate effect on social distance ($\beta = .28$).

Furthermore, intergroup contact is a significant moderator having unique impact on the frequency of spontaneous imagined contact. In the model forecasting social distance and behavioural intention, the significance and strength of frequency diminished when intergroup

contact was added to the analyses. Notably, in the model concerning behavioural intention, the significance of frequency vanished in the presence of intergroup contact, while neither intergroup contact variable displayed statistical significance. However, there was only minor change in the strength and significance in quality. This suggests that the impact of frequency on behavioural intention is contingent upon the level of intergroup contact, whereas quality was less likely to be influenced. However, despite it being moderated by intergroup contact, frequency is still the unique predictor of social distance.

Taken together, the first hypothesis is accepted. Quality of spontaneous imagined contact is a significant predictor of attitude and behavioural intention, frequency is a predictor of social distance, above and beyond the influence of intergroup contact.

Hypothesis 2: Whether stereotypes (i.e., intergroup stereotype and meta-stereotype) and empathy would mediate the relationships between spontaneous imagined contact and outgroup attitude, social distance, behavioural intention?

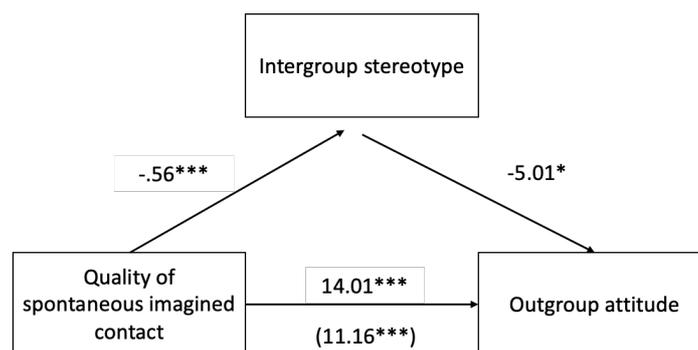
The researcher conducted multiple mediation analyses using the mediation package in R. The analysis explored the mediating effect of intergroup stereotypes for the relationships between the frequency and quality (IVs) and attitude (DVs), as well as quality (IV) and intention (DV). Out of the 3 mediation analyses performed, only one yielded significant result.

The only significant mediation analysis examined the mediating effect of intergroup stereotype on the relationship between the quality of imagined contact and outgroup attitude. As Figure 1 illustrates, the regression coefficient between quality and attitude, the regression coefficient between quality and intergroup stereotype, ($p < .001$) and the coefficient between intergroup stereotypes and outgroup attitude ($p < .05$) were all significant. The indirect effect

was tested significant using the bootstrap estimation approach ($ab = 2.81, p < 0.05, 95\% \text{ CI } [.52, 5.58], p < .05$). Quality was still a significant predictor even controlling for the mediator. This indicates that intergroup stereotype partially mediated the association between quality and attitude. Therefore, the second hypothesis of is only partially accepted, as only intergroup stereotype mediating the relationship between spontaneous imagined contact and outgroup attitude.

Figure 1.

Intergroup stereotype mediation of the quality of spontaneous imagined contact on outgroup attitude



Discussion

The findings of this study offer valuable insights into the relationships between spontaneous imagined contact and outgroup attitudes, social distance, and behavioural intentions. For the most part, the first research question has been answered, as the present research found that all outcome variables, including social distance, attitude, and behavioural intention, were positively predicted by spontaneous imagined contact, beyond the effects of intergroup

contact. Specifically, the quality of spontaneous imagined contact significantly predicts meat eaters' attitudes and behavioural intentions, while frequency predicts social distance. These results suggest that the utilization of imagined contact strategies is likely to have a positive impact on intergroup relations between meat-eaters and vegans.

The second research question, which pertained to the mediation pathway, was partially accepted. Only intergroup stereotypes were found to play a mediating role between the quality of imagined contact and attitude. Contrary to expectations, however, neither empathy nor meta-stereotypes mediated the hypothesized relationships. These findings highlight the significance of intergroup stereotypes as mediators in this process.

Examining the impact of spontaneous imagined contact above and beyond intergroup contact: quality and frequency as key determinants

The current study has revealed that participants reported having relatively few opportunities for direct social interactions with vegans, as indicated by the notably low level of extended contact with vegans. The data suggested that only a small number of participants had a close friend who identified as a vegan. Additionally, interactions with vegans were reported to be infrequent, ranging from never to only occasional encounters. These findings emphasize the importance of exploring alternative avenues for fostering intergroup understanding when opportunities for direct contact are limited. Crisp and Turner (2009) have suggested imagined contact as an effective alternative to direct contact for reducing prejudice. This study underscores the potential significance of examining spontaneous imagined contact as a means to bridge the gap between meat-eaters and vegans, particularly in cases where direct contact opportunities are scarce.

The measurement of spontaneous imagined contact in this study focused on three key dimensions: frequency, quality, and elaboration. Our investigation demonstrates that the quality dimension plays a particularly significant role in predicting meat-eaters' behavioral intentions and attitudes when they mentally simulate interactions with vegans. This influence remains mostly unaffected by intergroup contact. This finding aligns with earlier research (Stathi et al., 2019), which similarly underscored the prominence of the quality of spontaneous imagined contact, revealing its unique predictive capacity across all three anticipated outcomes, including social distance. Furthermore, Kim and Harwood (2019) revealed that spontaneous imagined contact triggered by media can elicit the desire for face-to-face intergroup contact. These implications suggest that the nature of imagined interactions with vegans, whether characterized by positivity and affability or otherwise, may exert a distinct influence on meat-eaters' attitudes and behavioural tendencies toward vegans.

However, while previous research (Stathi et al., 2019) emphasized that only the quality of spontaneous imagined contact matters, the present study reveals that frequency is also relevant, although it is influenced by intergroup contact. This discrepancy may arise from varying levels of outgroup engagement within the samples. Prior investigations involved individuals with a moderate level of contact with the outgroup, while meat eaters in this study exhibited weaker intergroup engagement. It is suggested that real-world experiences offer tangible scripts for individuals to draw upon as reliable information sources (Crisp & Turner, 2012). Consequently, the perceived authenticity of these real interactions may overshadow the impact of imagined interactions, leading meat eaters to rely less on the frequency of imagined experiences to form perceptions of vegans.

The changing dynamic of frequency, as observed in the process of introducing intergroup contact, also supports the conjecture mentioned earlier. It has been observed that the

significance and strength of frequency diminish in the presence of intergroup contact. This effect was particularly evident in relation to behavioural intention, where the impact of frequency disappeared with the addition of intergroup contact. This highlights that when individuals already possess direct or indirect relationships with vegans, the role of frequency in shaping attitudes might become less influential. This phenomenon aligns with Crisp and Turner's perspective (2009) that imagined contact should be viewed as a supplementary tool rather than a substitute for direct contact. However, it does not necessarily mean that frequency is irrelevant. However, the spontaneous imagined contact approach might remain useful when meat-eaters lack substantial prior intergroup contact with vegans.

This newly explored role of frequency challenges previous research that highlighted the significance of quality alone, and provides new insights that both quality and frequency should be taken into account when examining the effects of spontaneous imagined contact on intergroup relations. The need to test these dimensions in different contexts also arises to fully understand individual differences for the distinctive dimensions of imagined contact to operate.

The role of elaboration seemed irrelevant regarding attitude, social distance, and behavioural intention beyond controlled settings, in line with the research of Stathi et al. (2019). Despite prior studies showcasing the positive influence of enhancing the vividness of envisioned scenarios on the willingness to form connections with the outgroup (Husnu & Crisp, 2010), the current investigation could not confirm this outside a controlled environment. This divergence could be attributed to the absence of positive elaboration instructions. Aligned with West and colleagues' contention (2011), the lack of positive guidance during intensive mental simulation might trigger rumination on negative intergroup encounters, subsequently leading to negative attitudes and intentions. This study further supports such a notion, as

elaboration exhibits a negative association with empathy. This suggests that when spontaneously contemplating the specifics of contact with vegans without an emphasis on the positivity of the imagined scenario, such detailed elaboration might impede empathy, consequently detrimentally impacting both attitudes and behaviors among meat-eaters.

Overall, the findings discussed above indicate that engaging in mental simulations of interactions with vegans can lead to positive changes in omnivores' attitudes and potentially reduce their prejudice, beyond and above the impact of intergroup contact.

Empathy

Contrary to initial expectations, the role of empathy as a significant mediator in the context of spontaneous mental simulation of contact was not supported by the results, diverging from earlier research conducted by Stathi et al. (2019). One possible explanation for this discrepancy could be that approximately 30% of the participants had prior experience with adopting a meat-reduced diet. This shared experience might have provided a basis for empathizing with the vegan group, as they may have a higher level of empathy towards animals or a stronger identification with the values associated with veganism. Moreover, given that the sample was predominantly composed of females, who have been reported to exhibit more favorable attitudes towards vegans compared to male omnivores (Modlinska et al., 2020), this also potentially indicates that the participants involved in this study may have had a higher baseline level of empathy to begin with. As a result, their attitudes towards vegans may have been more positive from the outset, making it less likely for spontaneous imagined contact to produce significant changes in attitudes.

Nevertheless, the outcomes related to empathy could be contextualized through an analogy to a study on political partisanship by Wojcieszak & Warner (2020), yielding an alternative perspective. In their study, empathy and anxiety were not consequential even when imagined contact was positively portrayed. Being a vegan, as a social dietary identity, is also politicized to some extent (Stuart et al., 2013), with 89% citing political reasons for their dietary choices (Kalte, 2021). The social identity of vegans is often intertwined with activism and social justice advocacy, motivating them to engage in related campaigns (North et al., 2021). For the omnivores with strongly conservative speciesist beliefs, the shift to a non-meat diet might threaten their core ingroup beliefs, leading to resistance against meat consumption refusal (Hodson et al., 2019). Many studies suggest ideology significantly shapes negative attitudes towards vegans (Judge & Wilson, 2019), particularly among right-wing adherents (MacInnis & Hodson, 2017; Grünhage & Reuter, 2021). The shared commonality in social identity between dietary and political groups could explain the limited role of empathy in both studies.

On the other hand, the mediating role of perceived commonality was observed in Wojcieszak and Warner's study (2020), which may suggest an alternative avenue for exploration.

Perceived commonality is synonymous with the sense of interconnectedness (Aron et al., 1992), which was later found to mediate indirect contact effects among elementary school children (Vezzali et al., 2011). It is plausible to posit that, within the realm of groups characterized by political and ideological affiliations, the extent to which an interaction engenders a sense of closeness to the outgroup might carry greater significance than empathy in the context of spontaneous imagined contact. Nonetheless, in order to definitively ascertain whether the nature of social identity indeed constitutes a pivotal determinant for the efficacy

of imagined contact, it is advisable to design a comparative experimental framework that juxtaposes the dynamics between political and dietary groups.

Intergroup stereotype as a strong mediator, yet meta-stereotype appeared to be irrelevant

One of the strengths of the present study lies in the novel role of intergroup stereotype, which contributes to the growing literature on the factors underlying spontaneous imagined contact and provides a different lens to examine the impact of stereotypes of vegans. This research found that intergroup stereotypes, representing meat-eaters' beliefs and generalizations about vegans, are a notable mediator for the relationship between spontaneous imagined contact and their attitudes towards vegans. This suggests that when meat-eaters engaged in spontaneous imagined contact with vegans, it led them to either challenge their pre-existing stereotypes, subsequently shaping their overall attitudes and willingness to engage in positive behaviours towards them.

Interestingly, this study did not observe a significant mediating effect of meta-stereotype, which pertains to meat-eaters' perceptions of how vegans view them. This indicates that meat-eaters' attitudes towards vegans are more influenced by their own stereotypes about vegans rather than their perceptions of how vegans may stereotype them. A similar pattern was observed in a study conducted on behalf of vegans in Turkey, where the perception of social stigma did not deter them from adhering to a vegan lifestyle (Brouwer et al., 2022). In other words, both omnivores and vegans' attitudes and behaviours seem to be shaped more by their own internalized stereotypes and beliefs than by how they think the outgroup views them.

Taken together, both vegans and meat-eaters are primarily influenced by their own internalized beliefs and generalizations about the dietary outgroups, as opposed to the perception of others. These findings underscore the important role of intergroup stereotypes in shaping attitudes towards vegans. Future research may be interested in investigating the potential bidirectionality between spontaneous imagined contact and intergroup stereotypes or adopting a repeated cross-sectional design to explore the differences in stereotypes before and after spontaneous mental imagery.

Limitations and future directions

In addition to the limitations previously mentioned with the results, a few more limitations are inherent in the study. While it has explored the context between vegans and meat-eaters, it only represents the reaction of meat-eaters to spontaneous imagined contact. It is unknown whether vegans would demonstrate similar patterns to meat-eaters when they mentally simulate having contact with omnivores. The effect might be attenuated for vegans, as Bagci and colleagues (2018) stated that imagined contact works better for the majority than the minority. Therefore, it is worth considering a separate investigation into the potential role of imagined contact within the vegan community in the future.

The generalizability of the present study's findings should be considered within the context of its methodological and demographic characteristics. The sample primarily involved British females, which could potentially limit the extent to which the findings can be extrapolated to populations of different cultural backgrounds and gender identities. Furthermore, the

recruitment channel predominantly relied on online survey exchange platforms, university channels, and personal referrals. While this approach facilitated data collection, it also introduces potential biases associated with self-selection, as participants who choose to engage in online surveys might differ from those who do not (Duda & Nobile, 2010).

The study's short data collection duration of approximately three weeks offers a unique snapshot of attitudes and perceptions within a compressed timeframe. It is important to exercise caution when applying them to broader timeframes or distinct periods of social change. It is recommended that future researchers could conduct longitudinal studies in a wider range of ethnic intergroup contexts to increase generalizability.

The current study, while aiming to explore the role of empathy in the process of spontaneous imagined contact influencing prejudice, did not yield significant evidence of emotional factors influencing this process. It remains uncertain which specific emotions might be elicited, mitigated, or even intertwined with the mediation of intergroup stereotypes in relation to the effects of spontaneous imagined contact. Consequently, the emotional dimensions involved in this intricate process remain relatively unexplored. This underscores the need for future research endeavours to delve into the potential emotional factors that could contribute to or mediate the relationships between spontaneous imagined contact and prejudice. For example, this paper did not further validate the role of anxiety, which has been found to be a significant mediator of imagined contact (R. N. Turner et al., 2007; Stathi et al., 2019). Subsequent investigations could consider integrating a range of latent affective variables, such as anxiety, into their research framework, to better comprehend the intricate relationships between emotional experiences and intergroup dynamics during the course of spontaneous imagined contact.

Implications

The outcomes of this investigation provide a noteworthy contribution to the existing body of literature by pioneering the incorporation of intergroup contact strategies aimed at cultivating favourable attitudes towards the vegan community. Furthermore, this study lends empirical support to the initial proposition that interventions integrating non-experimental imagined contact could serve as innovative instruments for enhancing constructive intergroup relations between vegans and omnivores.

This research provides additional support for the study conducted by Stathi and colleagues (2019), demonstrating that imagined contact occurring in everyday situations effectively predicts outgroup attitudes within the dietary context, surpassing the influence of intergroup contact. By incorporating the stereotype variable, the current study also provides a useful extension to past literature. Previous research in this domain primarily focused on the common affective mediators investigated in experimentally induced imagined contact, notably empathy and anxiety (Stathi et al., 2019). In contrast, the present investigation additionally explores the novel role of intergroup stereotypes as a significant cognitive mechanism of imagined contact beyond the laboratory setting, filling a research gap in this respect. Furthermore, the newly explored role of frequency also suggests that the frequency of spontaneous imagined contact remains pertinent, particularly when the level of intergroup contact is low.

Having established the predictive power of omnivores' spontaneous thoughts about interactions with the outgroup in relation to attitudes, this study offers insights into customizing prejudice-reduction interventions to incorporate these spontaneous thoughts that

arise beyond controlled lab settings. For instance, recognizing the pivotal role of media in shaping public perceptions, prior research (Kim & Harwood, 2019) has shown that media can effectively trigger spontaneous imagined contact in everyday life. Therefore, crafting messages that resonate with the frequency and quality dimensions of imagined contact could be pivotal in mitigating prejudice. It is suggested that media portrayals of vegans should emphasize intergroup experiences marked by high qualitative value, such as cooperation and support. Furthermore, elevating the frequency of veganism's presence in media could be instrumental. Balanced portrayals of vegans that defy stereotypes can contribute to a more accurate and compassionate depiction of individuals adhering to plant-based diets, challenging existing biases.

Nonetheless, the interplay of frequency and intergroup contact emphasizes the need for customized interventions based on individuals' current contact background. Tailoring interventions to meat eaters' existing contact levels could enhance attitude change effectiveness, particularly for those with limited real-world interactions with vegans. For individuals with few direct contacts, interventions could target both frequency and contact quality. On the other hand, those with higher direct exposure might benefit from interventions emphasizing contact quality rather than solely increasing the frequency of imagined interactions.

Furthermore, policymakers can leverage these insights to inform discussions related to dietary diversity and discrimination prevention. For instance, authoritative institutions can collaborate with media or advertising companies to produce ads that use personal narratives as a form of spontaneous imagined contact. Sharing stories that depict meat-eaters and vegans

engaging in empathetic conversations, finding common ground, and overcoming stereotypes in these ads can help prompt the audience to imagine themselves in similar situations.

Conclusion

In this investigation, the present research delved into the context of interactions between meat-eaters and vegans within the UK. The primary focus was to ascertain whether spontaneous imagined contact could be similarly predictive of outgroup attitudes compared to previous research. The findings support that spontaneous imagined contact has significant impact on outgroup attitudes, which persisted even when accounting for other influential factors like established forms of contact such as cross-group friendships and extended contact. The insights gleaned from this study shed light on the potential efficacy of leveraging spontaneous imagined contact as a viable tool for enhancing omnivores' attitude, including social distance and behavioural intention. As further research moves forward, it becomes essential to direct more attention towards examining the everyday thought processes and imaginative experiences of both meat-eaters and meat abstainers. This deeper exploration is crucial for gaining a thorough understanding of how these processes influence intergroup relations in reality, and providing more real-world relevance.

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Appendices

Appendix A: Ethics Approval Letter

Approval

Thank you for completing this form.

Please enter your email in the box below.

Please save the document for your records.

You can now begin your data collection.

Date 5th May 2023

School of Education Research Ethics Committee

Project Title: Cohort Approval for MSc Psychological Studies

Application No: 402220108 and 402220109 (Group Approval)

The School of Education Research Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed group application. It is happy therefore to approve this application, subject to the following conditions:

- Start date of ethical approval: 05/05/2023
- End date of ethical approval: 31/12/2024
- Any proposed changes in the protocol should be submitted for reassessment as an amendment to the original application. The *Request for Amendments to an Approved Application* form should be used: <https://www.gla.ac.uk/schools/education/research/ethics/forms/>

Yours sincerely,

Dr Paul Lynch

School of Education Ethics Officer

Appendix B: Plain Language Statement

Plain Language Statement

Study title: Meat eaters' Imagined interactions with, and attitudes towards vegans

Researcher Details: Xiaochun Ou, [REDACTED]

Supervisor details: Dr Leyla De Amicis, leyla.deamicis@glasgow.ac.uk

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of the study?

The study intends to examine the relation between imagined interactions with vegans and attitudes towards them, in meat- eaters. .

Why have I been chosen?

You have been chosen to participate because you are an adult living in the UK for over one year and a meat eater.

Do I have to take part?

You are free to decide whether you want to take part in this research. It is completely up to you.

What will happen to me if I take part?

If you choose to take part in this study, you will complete an online questionnaire. The questionnaire will include questions exploring non-vegetarians imagined contact with vegans, together with their stereotypes and meta-stereotype on vegetarians, and will take around 15 minutes to complete. All data you provide will be anonymous.

You do not need to answer any questions you do not want to and can leave them blank. However, once your data has been submitted, we will not be able to remove it from the study as it will be anonymous.

Will my taking part in this study be kept confidential?

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases the University may be obliged to contact relevant statutory bodies/agencies.

What will happen to the results of the research study?

Your data will be combined with the anonymous data from all other participants in the research and will be analysed. The results of this study will be written up as part of my MSc dissertation. The results may also be presented at academic conferences or in academic journals. It is also likely that the data will be of interest to other researchers, therefore the anonymised dataset will also be made available to other researchers for example on the Open Science Framework website. We can also make a summary of the results available to participants. Please contact me using the details below if you would like to request this.

Your anonymous data will be securely stored on a Onedrive file hosted at the University of Glasgow and will be deleted after 10 years.

Who has reviewed the study?

This study has been approved by the College of Social Sciences Ethics Committee.

Contact for Further Information

Study title: Social interaction with vegetarians: whether non-vegetarians' spontaneous imagined contact would affect outgroup attitude

Researcher Details: [REDACTED]

Supervisor details: leyla.deamicis@glasgow.ac.uk

If relevant, please include the following. We do not expect participating in this research to cause any undue distress, however, if you would like to talk to someone about your feelings, please contact (e.g. **Samaritans**).

If you have any concerns regarding the conduct of this research project, you can contact the School of Education Ethics Officer, via email: education-ethics@glasgow.ac.uk

End. _____

Appendix C: Consent Form



Consent Form

Title of Project: Meat eaters' Imaged interactions with, and attitudes towards vegans

Name of Researcher:Xiaochun Ou.....

Name of Supervisor:Dr. Leyla De Amicis.....

Please tick as appropriate

Yes No I confirm that I have read and understood the Participant Information for the above study and have had the opportunity to ask questions.

Yes No I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

I agree that:

Yes No The material will be treated as confidential and kept in secure storage at all times.

Yes No The material may be used in future publications, both print and online.

Yes No Other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.

Yes No I acknowledge the provision of a Privacy Notice in relation to this research project.

Consent clause, tick box format

I agree to take part in this research study

I do not agree to take part in this research study

..... End of consent form

Appendix D: Privacy Notice

Privacy Notice for Participation in Research Project: Meat eaters' Imaged interactions with, and attitudes towards vegans

Researcher: Xiaochun Ou

Supervisor: Dr. Leyla De Amicis

Your Personal Data

The University of Glasgow will be what's known as the 'Data Controller' of your personal data processed in relation to your participation in the research project - Social interaction with vegetarians: whether non-vegetarians' spontaneous imagined contact would affect outgroup attitude. This privacy notice will explain how The University of Glasgow will process your personal data.

Why we need it

We are collecting basic personal data such as demographic information including your gender, ethnicity, nationality etc. in order to conduct our research. We use this information to report on the sample of people who participated.

We only collect data that we need for the research project and all data will be anonymous. Please see accompanying **Participant Information Sheet**,

Legal basis for processing your data

We must have a legal basis for processing all personal data. As this processing is for Academic Research, we will be relying upon **Task in the Public Interest** in order to process the basic personal data that you provide. For any special categories data collected we will be processing this on the basis that it is **necessary for archiving purposes, scientific or historical research purposes or statistical purposes**

Alongside this, in order to fulfil our ethical obligations, we will ask for your **Consent** to take part in the study Please see accompanying **Consent Form**.

What we do with it and who we share it with

All the personal data you submit is processed by: researchers at the University of Glasgow in the United Kingdom. In addition, security measures are in place to ensure that your personal data remains safe, including: secure storage. Please consult the **Consent form** and **Participant Information Sheet** which accompanies this notice.

Due to the nature of this research, it is very likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be shared in this way.

We will provide you with a copy of the study findings and details of any subsequent publications or outputs on request.

What are your rights?*

GDPR provides that individuals have certain rights including: to request access to, copies of and rectification or erasure of personal data and to object to processing. In addition, data

subjects may also have the right to restrict the processing of the personal data and to data portability. You can request access to the information we process about you at any time.

If at any point you believe that the information we process relating to you is incorrect, you can request to see this information and may in some instances request to have it restricted, corrected, or erased. You may also have the right to object to the processing of data and the right to data portability.

Please note that as we are processing your personal data for research purposes, the ability to exercise these rights may vary as there are potentially applicable research exemptions under the GDPR and the Data Protection Act 2018. For more information on these exemptions, please see [UofG Research with personal and special categories of data](#).

If you wish to exercise any of these rights, please submit your request via the [webform](#) or contact dp@gla.ac.uk

Complaints

If you wish to raise a complaint on how we have handled your personal data, you can contact the University Data Protection Officer who will investigate the matter.

Our Data Protection Officer can be contacted at dataprotectionofficer@glasgow.ac.uk

If you are not satisfied with our response or believe we are not processing your personal data in accordance with the law, you can complain to the Information Commissioner's Office (ICO) <https://ico.org.uk/>

Who has ethically reviewed the project?

This project has been ethically approved via the College of Social Sciences Research Ethics Committee or relevant School Ethics Forum in the College.

How long do we keep it for?

Your **personal** data will be retained by the University only for as long as is necessary for processing and no longer than the period of ethical approval (31.12.2024). After this time, personal data will be securely deleted.

Your **research** data will be retained for a period of ten years in line with the University of Glasgow Guidelines. Specific details in relation to research data storage are provided on the Participant Information Sheet and Consent Form which accompany this notice.

End of Privacy Notice _____

Appendix E: The interactions between vegans and meat eaters. Online Survey

5 Would you describe your diet as:

- A meat-eater/an omnivore (2)
 - Someone following a meatless diet (6)
-

6 Where do you currently live?

- England (1)
 - Scotland (2)
 - Wales (3)
 - Northern Ireland (4)
 - Outside of the UK (5)
-

7 How long have you been living here?

- More than 12 months (2)
 - Less than 12 months (4)
-

8 What is your gender?

- Male (1)
 - Female (2)
 - Non-binary / third gender (3)
 - Transgender (5)
 - A gender not listed here (6)
-

- Unsure how to describe myself (7)
 - Prefer not to say (8)
-

9 What is your ethnicity / nationality?

- White- British (4)
 - White - other (please specify) (17)
-

Asian (please specify) (14)

Black (please specify) (15)

None of the above (please specify) (16)

Prefer not to say (18)

Page Break



10 How old are you?

11 Have you ever changed your diet before? For example, you are currently a meat-eater but were a vegan or vegetarian for a few months, some time ago. Please specify how:

Yes - please specify how (1)

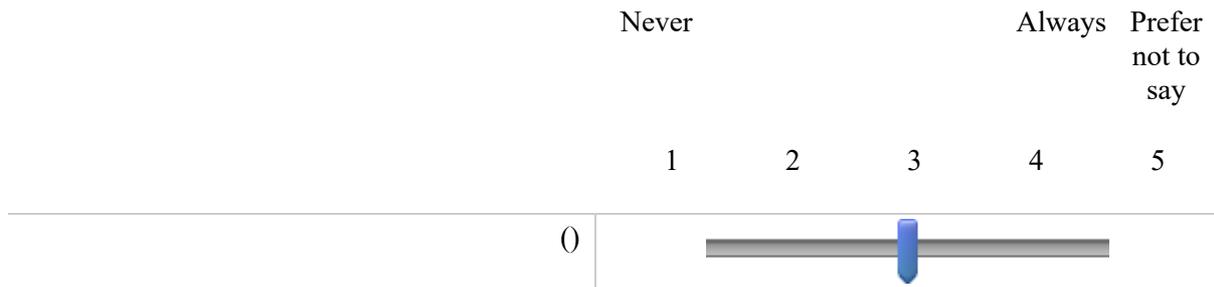
N/A (2)

End of Block: Default Question Block

Start of Block: Block 1

12 Please answer the following questions imagining having contact with vegans or contact with friends and friends of friends.

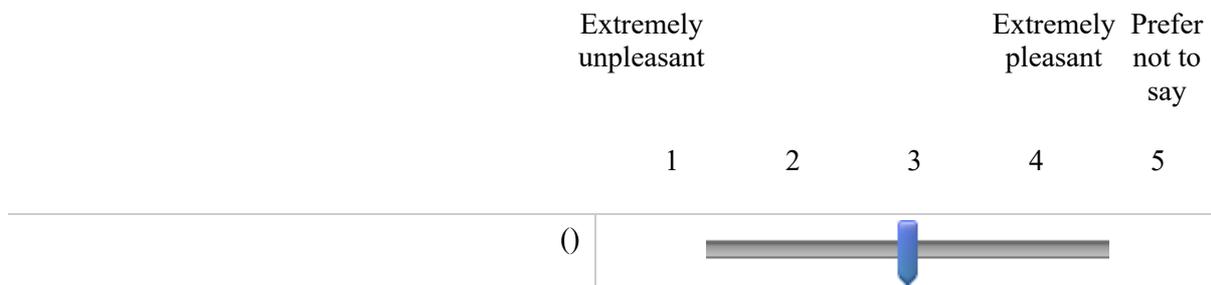
12 In everyday life, how frequently do you imagine interacting with vegans?
Please rate on a scale from 1 (never) to 5 (always)



13 Specifically, how often do you imagine having contact with vegans, rating on a scale from 1 to 8?

- 1 – less than once per year (1)
- 2 – once or twice per year (2)
- 3 – once every two months (3)
- 4 – once or twice a month (4)
- 5 – approximately once per week (5)
- 6 – approximately twice a week (6)
- 7 – three to four times a week (7)
- 8 – at least once a day (8)
- Prefer not to say (9)

14 When you imagine interacting with vegans, these encounters are unpleasant or pleasant? Please rate on a scale from 1 (extremely unpleasant) to 5 (extremely pleasant).



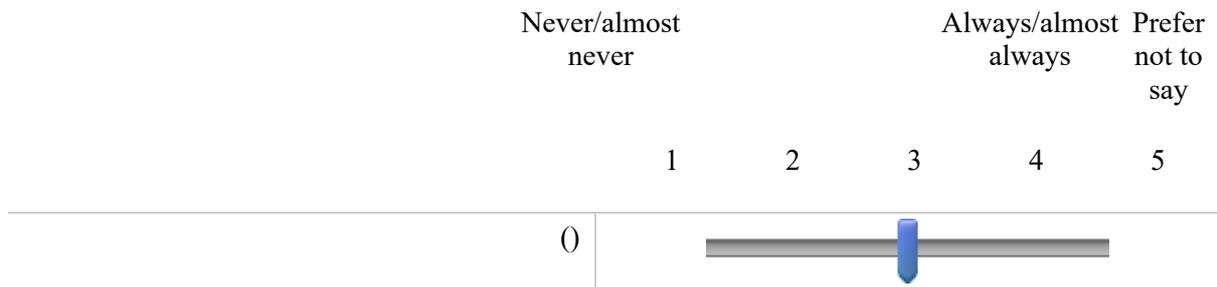
15 When you imagine interacting with vegans, these encounters are hostile or friendly? Please rate on a scale from 1 (extremely hostile) to 5 (extremely friendly).





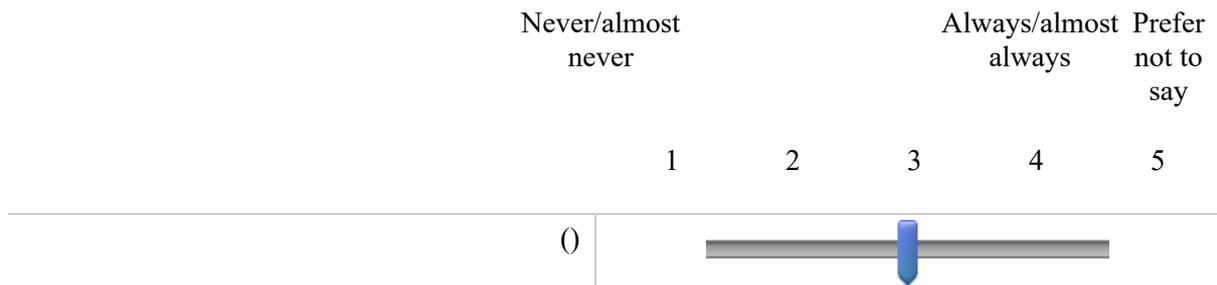
16 When you imagine interacting with vegans, do you imagine the reason behind this contact?

Please rate on a scale from 1 (never/almost never) to 5 (always/almost always)



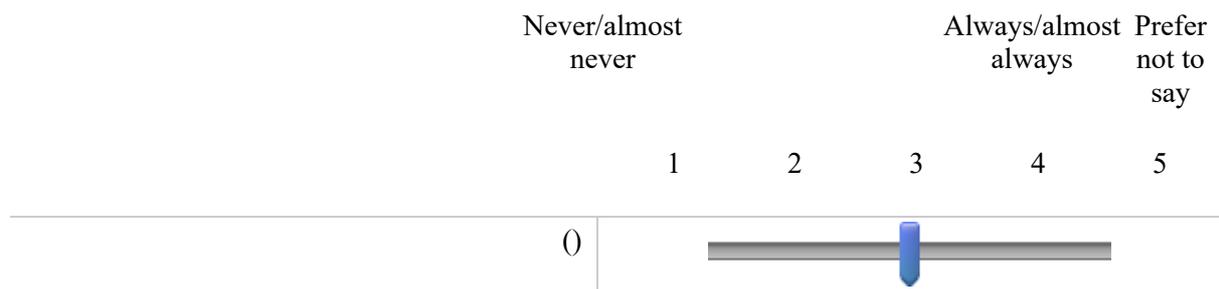
17 When you imagine interacting with vegans, do you think about the details of where and when this contact takes place?

Please rate on a scale from 1 (never/almost never) to 5 (always/almost always)



18 When you imagine interacting with vegans, do you share this interaction with your friends?

Please rate on a scale from 1 (never/almost never) to 5 (always/almost always)



End of Block: Block 1

Start of Block: Block 2

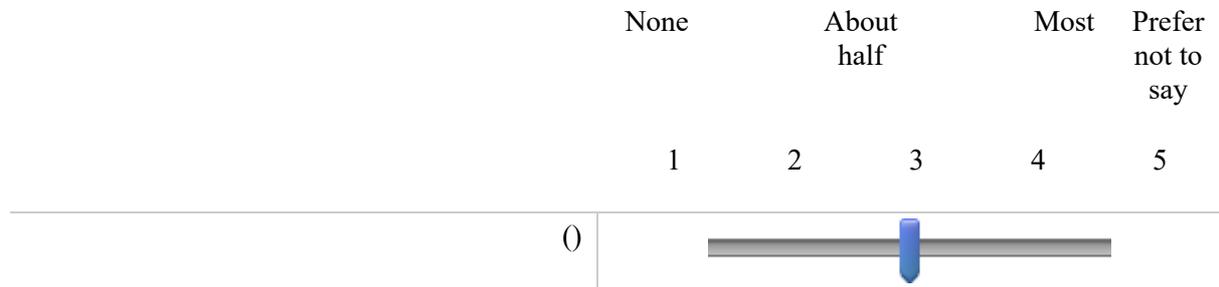
19 Approximately, how many close friends do you have who are vegan?

- none (1)
- one friend (11)
- 2–5 friends (12)
- 5-10 friends (13)
- more than 10 friends (14)
- Prefer not to say (15)

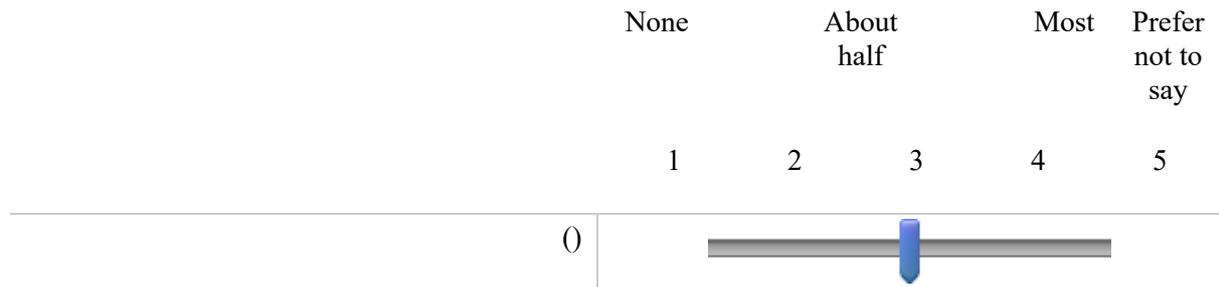
20 How often do you spend time with your friends who are vegan?

- 1= never (1)
- 2= occasionally (6)
- 3 = sometimes (7)
- 4 = quite a lot (8)
- 5 = always (9)
- Prefer not to say (10)

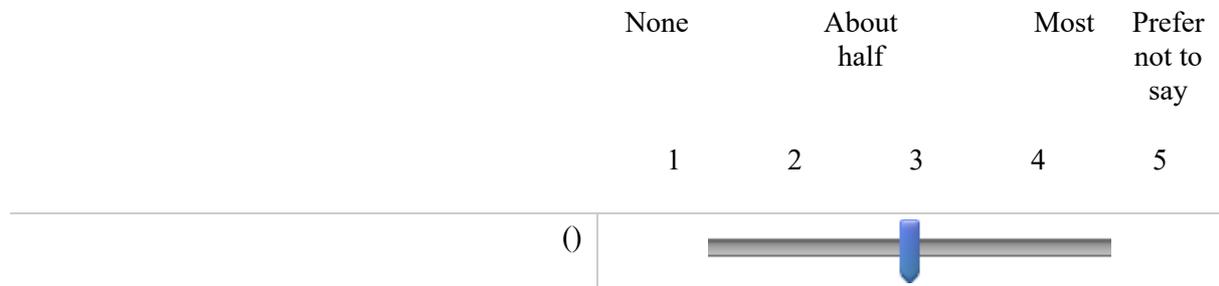
21 Approximately, how many meat-eaters do you know who have friends who are vegan?



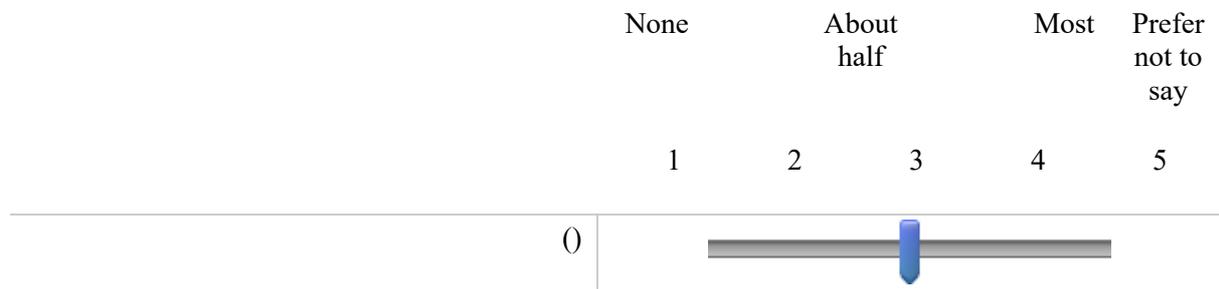
22 Approximately, how many meat-eater **neighbours** do you know who have friends who are vegan?



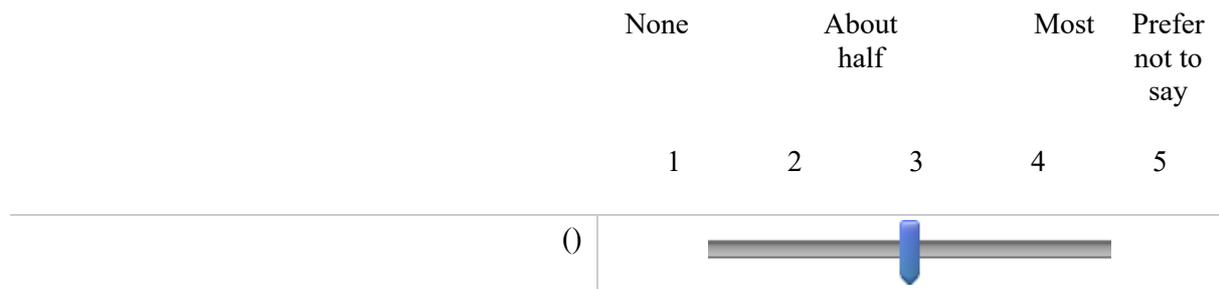
23 Approximately, how many of your meat-eater **friends** have friends who are vegan?



24 Approximately, how many of your very best meat-eater friends have friends who are vegan?



25 Approximately, how members of your family (including parents, brothers and sisters, cousins, etc.) have friends who are vegan?



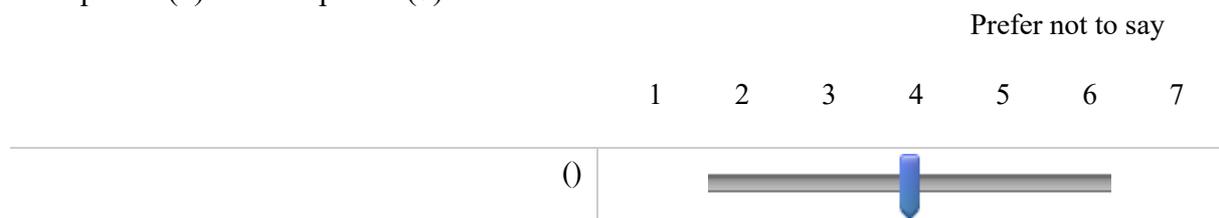
End of Block: Block 2

Start of Block: Block 3

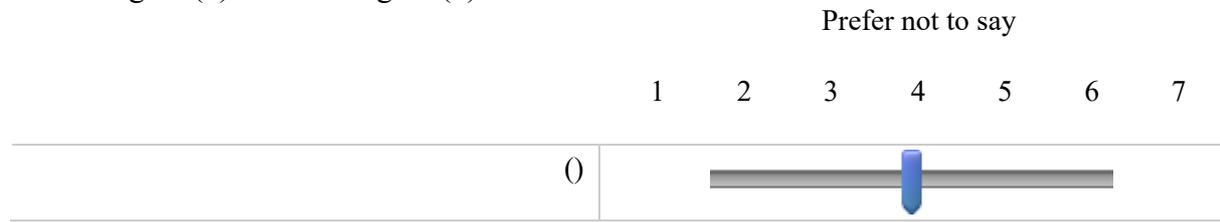
20 Please answer the following questions imagining having contact with vegan. How would you rate it on a scale from 1 to 7?

26 In general, vegan tend to be...

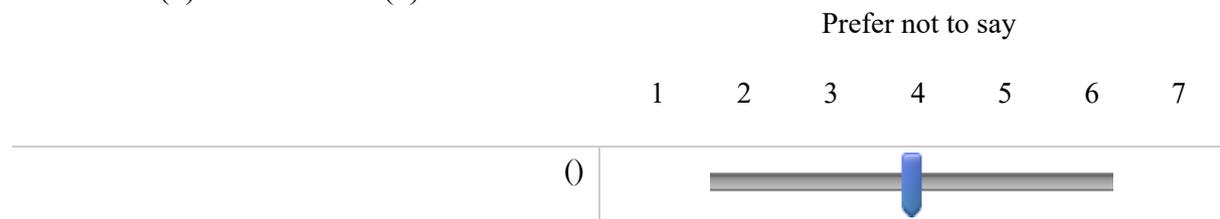
Competent (1) – Incompetent (7)



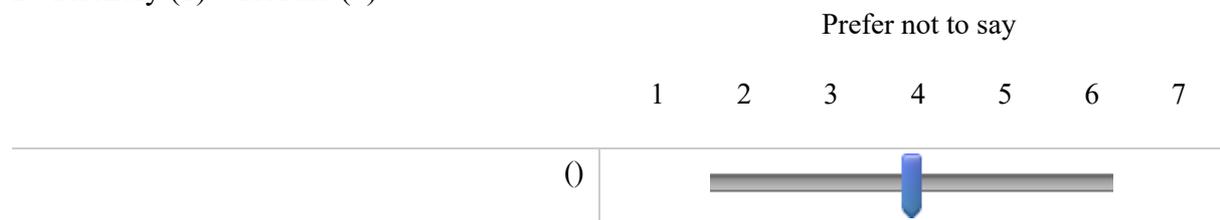
27 Intelligent (1) – Unintelligent (7)



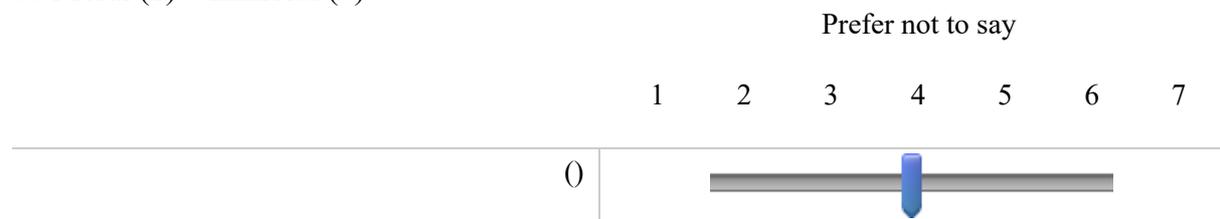
28 Likable (1) – Dislikeable (7)



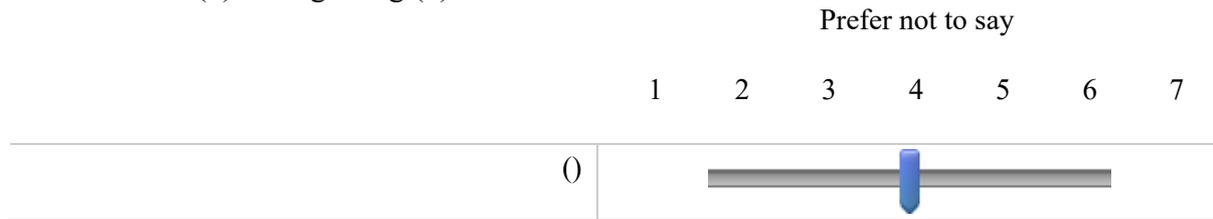
29 Friendly (1) – Hostile (7)



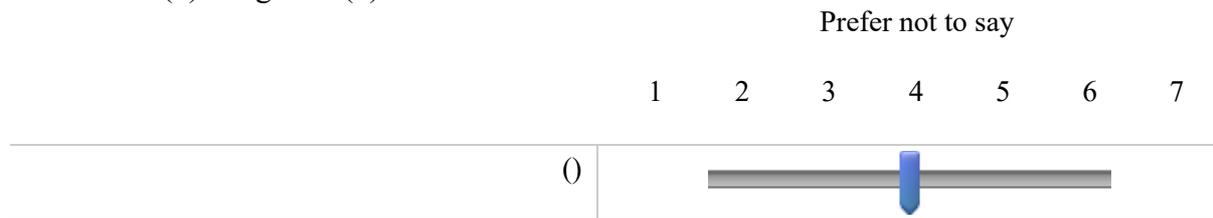
30 Moral (1) – Immoral (7)



31 Admirable (1) – Disgusting (7)



32 Positive (1)- Negative (7)

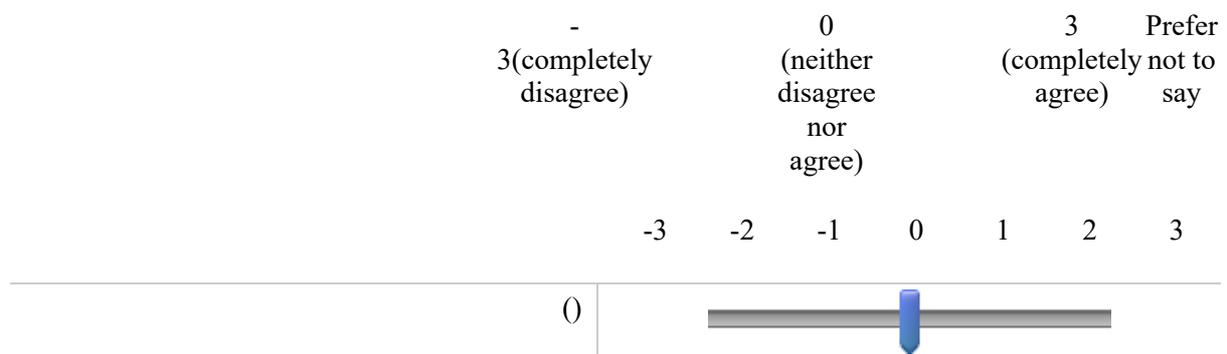


End of Block: Block 3

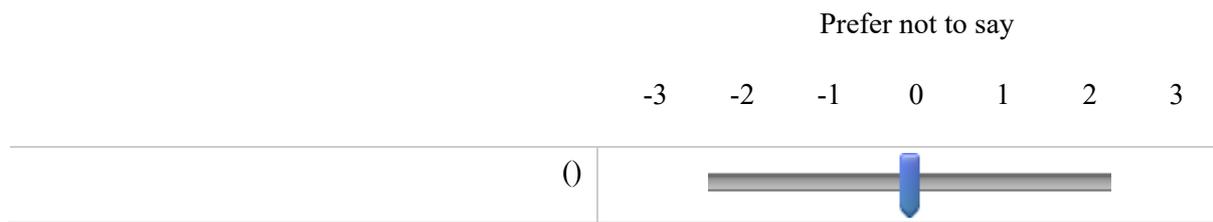
Start of Block: Block 4

Q24 Please imagine the interaction with vegans, answer the following questions on a scale from -3 (completely disagree) to 3 (completely agree), from which 0 is neutral.

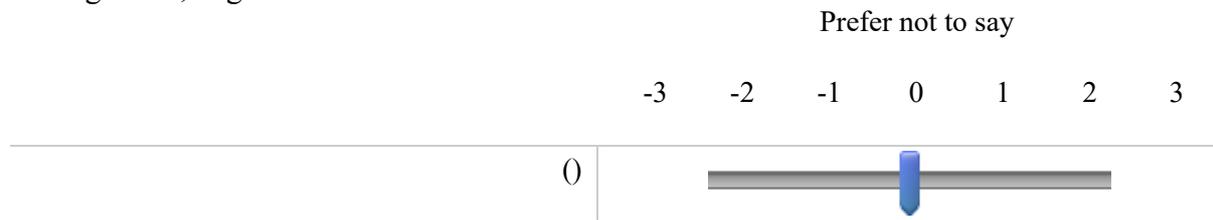
33 In general, vegans have a very good understanding of the meat-eaters



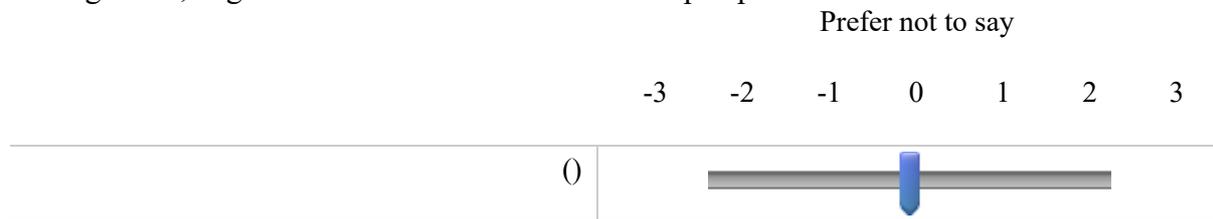
34 In general, vegans could learn more about the views of meat-eaters



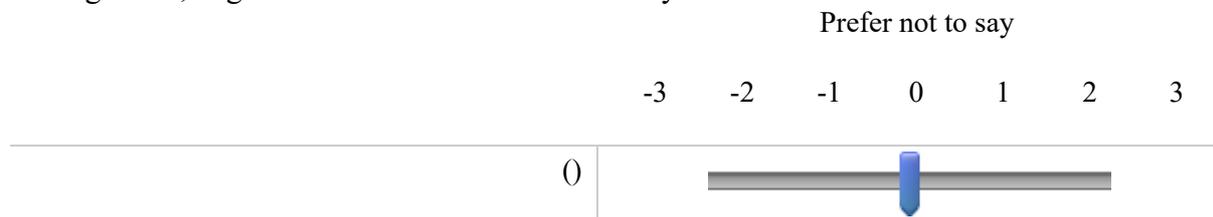
35 In general, vegans understand meat-eaters' values



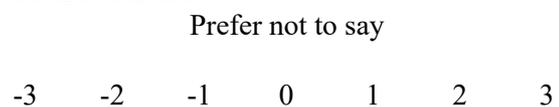
36 In general, vegans know a lot about meat-eaters' perspectives



37 In general, vegans do not understand the identity of meat-eaters



38 In general, vegans have little idea about meat-eaters' culture





39 In general, vegans think that meat-eaters are prejudiced against them

Prefer not to say

-3 -2 -1 0 1 2 3



40 In general, vegans think that meat-eaters look down on them

Prefer not to say

-3 -2 -1 0 1 2 3



41 In general, vegans think that meat-eaters do not like them

Prefer not to say

-3 -2 -1 0 1 2 3



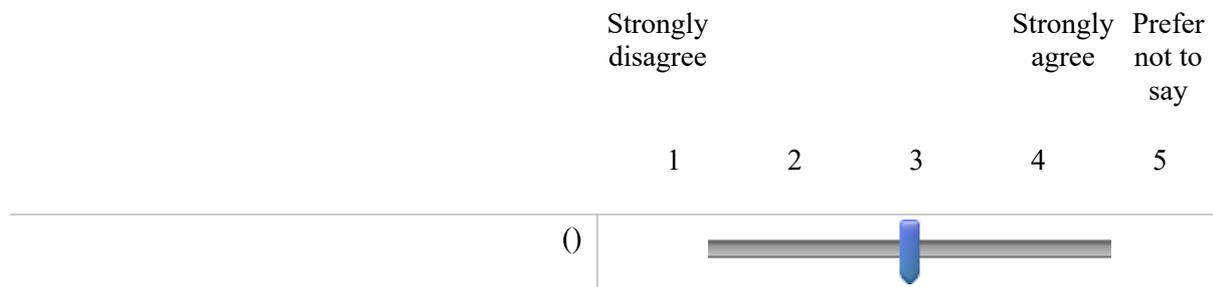
42 In general, vegans think that meat-eaters have positive views about them

Prefer not to say

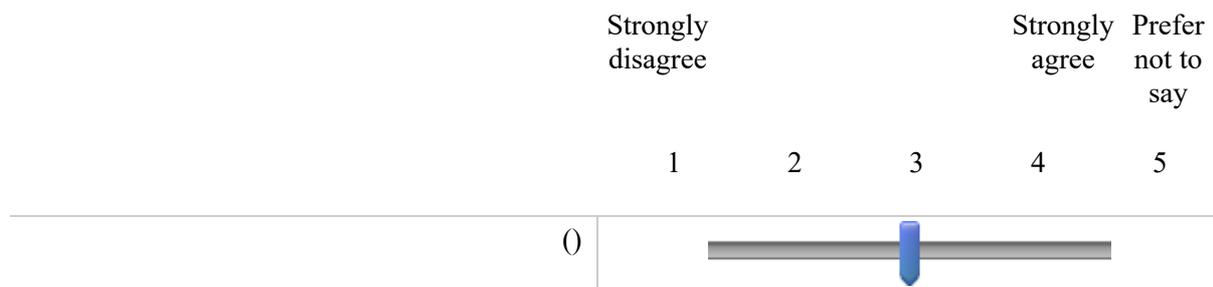
-3 -2 -1 0 1 2 3



46 If I saw a vegan being treated unfairly, I think I would feel angry at the way they were being treated



47 If a vegan I knew was feeling sad, I think that I would also feel sad

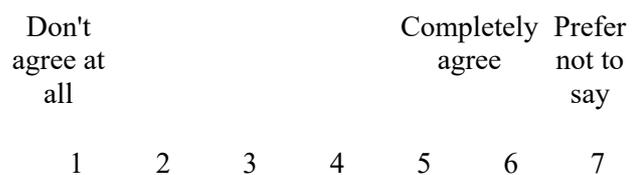


End of Block: Block 5

Start of Block: Block 6

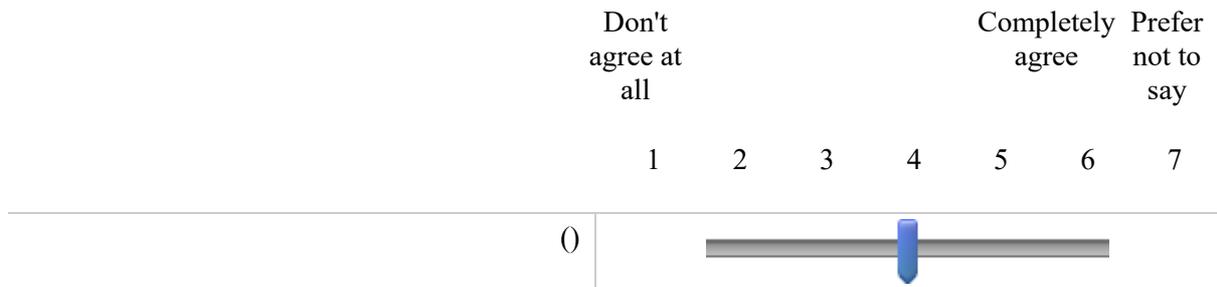
To what extent do you agree or disagree with the following statements in imagining the interaction with vegans? Please rate on a scale from 1 (don't agree at all) to 7 (completely agree).

48 If the opportunities arise, I would probably **start** a conversation with vegans

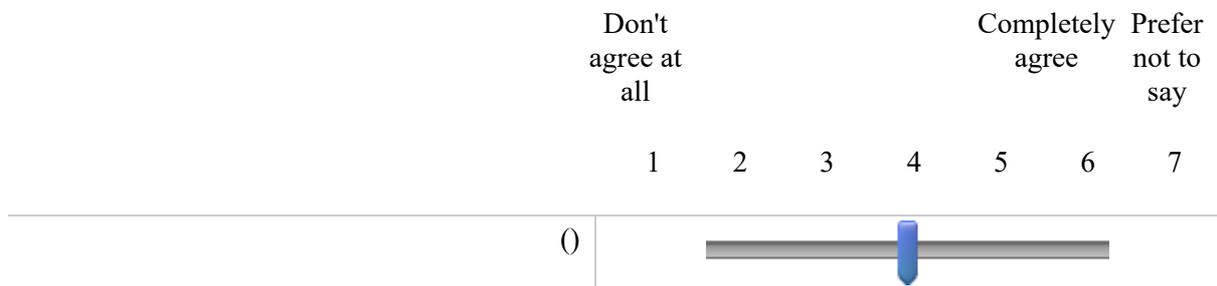




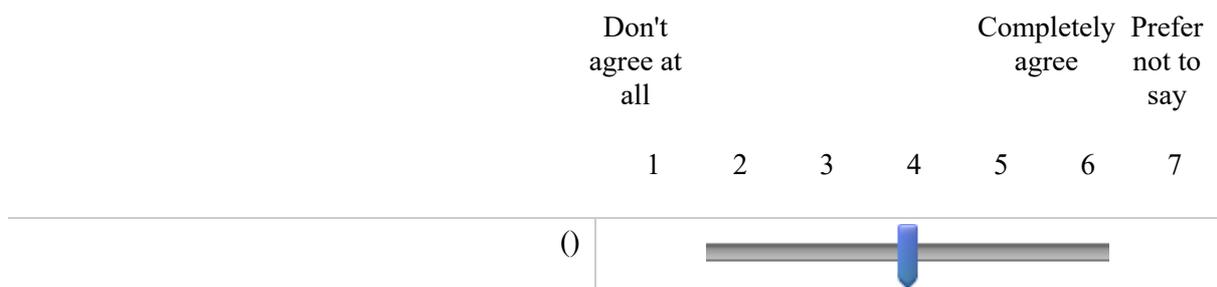
49 If the opportunities arise, I would like to **have** a conversation with vegans



50 In the future, I will deliberately approach to get in touch with vegans



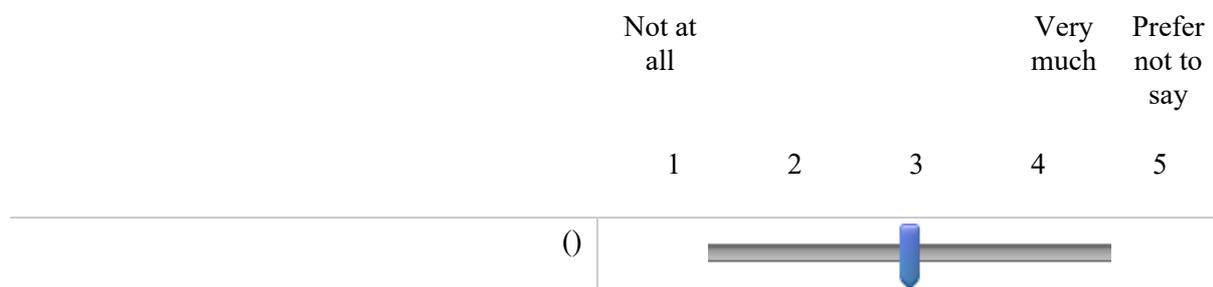
51 If the opportunities arise, I would like to have more contact with vegans



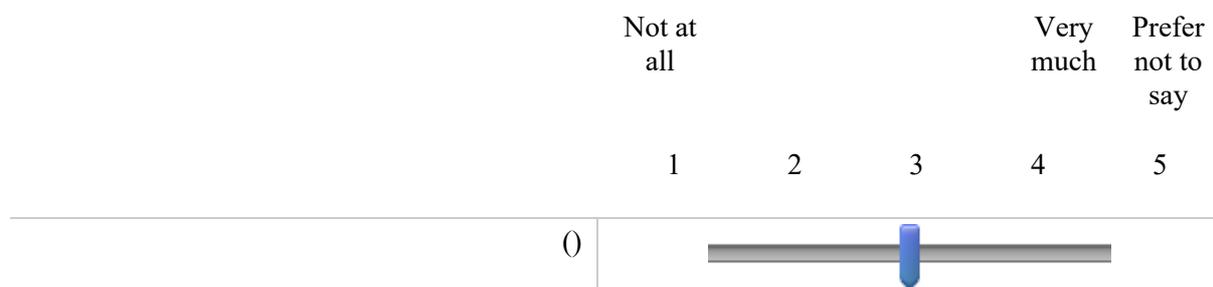
Please answer the following questions on a scale from 1 (not at all) to 5 (very much).

52 How favourable you were to have...

classmates who are vegan?



53 teachers who are vegan?



54 neighbours who are vegan?





55 house guests who are vegan?

	Not at all			Very much	Prefer not to say
	1	2	3	4	5



56 in-laws who are vegan?

	Not at all			Very much	Prefer not to say
	1	2	3	4	5



End of Block: Block 7

Start of Block: Block 8

57 How favourable would you feel towards vegan?

Please rate on a scale from 0 (extremely unfavourable) to 100 (extremely favourable), and 50 indicate neutral evaluation (neither positive nor negative)

	Extremely unfavourable			Extremely unfavourable	Prefer not to say						
	0	10	20	30	40	50	60	70	80	90	100



End of Block: Block 8

Start of Block: Block 9

Q70 Only for SurveyCircle users (www.surveycircle.com): The Survey Code is: HVS2-5NP2-N7KY-3BHD

Please skip it if you are not SurveyCircle users.

End of Block: Block 9
