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Does Suspicion of Motives Mediate the Relationship Between
Social Exclusion and Smile Discrimination?

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Science

In

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Abstract

Individuals who are socially excluded or suspicious of other's motives show increased sensitivity to social cues signalling positive affect. Facial expressions such as smiles are cues that signal affiliative intent. They may occur in the presence or absence of positive felt emotion, creating uncertainty for perceivers about affiliative motives underlying the expression. Excluded or suspicious individuals are better able to determine authenticity of such expressions and use the information to guide their social interactions with others. Despite shared theoretical frameworks, no research has examined a potential relationship between social exclusion and suspicion of motives themselves. Sample frames used have also lacked cultural diversity, inhibiting ability to generalise findings beyond Western European or American populations. The current study seeks to address both issues. This study predicted that feelings of social exclusion would make a person more suspicious of others' social motives and that changes in levels of suspicion would mediate the relationship between a person's feelings of exclusion and their ability to differentiate the social content of smiles. One hundred and eleven students of East and Southeast Asian origin, aged 18 to 50 years, were recruited to participate in the study from Massey University in Palmerston North, New Zealand. They completed an online survey where they were randomly assigned to one of two experimental social pain conditions (exclusion or inclusion). Cyberball was used to manipulate feelings of social pain, before participants were administered the Suspicion of Motive Index, a smile discrimination task, and the Needs Threat Scale. Results indicated that Cyberball reliably elicited feelings of exclusion and inclusion but found no significant evidence to support the hypothesised relationships between social exclusion, suspicion of motive and smile discrimination. The findings indicate that

effects measured in previous research cannot be generalised to the present sample frame in the New Zealand context. The current study raises questions about the theoretical and methodological universality of the constructs and how they may be influenced by underlying cultural differences in intergroup relations, situational context, emotion expression, perception and recognition.

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CHAPTER 1

Introduction

Hard times arouse an instinctive desire for authenticity - Coco Chanel (date unknown).

Haute couture and social psychology make strange bedfellows, but both are evidently no strangers to recognising the social distress caused by misinterpretation of the motives underlying a fake smile. Social psychology literature suggests that social marginalisation may improve detection of authentic smiles. This chapter introduces constructs related to examining such notions, including smile discrimination, social exclusion, suspicion of motives, and uncertainty of motives underlying expressions of positive affect in social interactions. A review of the literature around the theoretical framework, conceptualisation and operationalisation of the constructs of interest is presented. The construct of suspicion of motives relates to ethnic minorities level of uncertainty about whether ethnic majorities interracial motives for nonprejudiced behaviour are externally motivated by a wish to appear unbiased or internally motivated by a genuine commitment to egalitarianism. Research findings suggest that social exclusion and suspicion of motives share common theoretical underpinnings and outcomes, yet there is no evidence in the literature of research examining a relationship between the two constructs, so this study will explore this further. Findings presented in the literature also lack generalisability to culturally diverse populations, so this study will seek to replicate findings with a new ethnic sample frame. A model of the relationships between constructs is developed (for analysis) throughout the chapter and an exploration of an appropriate sample frame presented at the end of the chapter. An overview of the literature, and a statement of the research aims and hypotheses, is presented in Chapter 2.

Overview of Theory Underpinning the Current Study

Social Connection and the Need to Belong.

Social connection is so important to the human species that individuals have socially evolved with an innate tendency to affiliate with others. Group membership affords individuals protection and reproductive opportunities through the ability to share resources and the provision of access to mate (Baumeister & Leary, 1995). Maslow (1970) placed the need to belong third in precedence of importance (behind safety needs and physiological needs), in his hierarchy of needs motivational theory (see Figure 1).

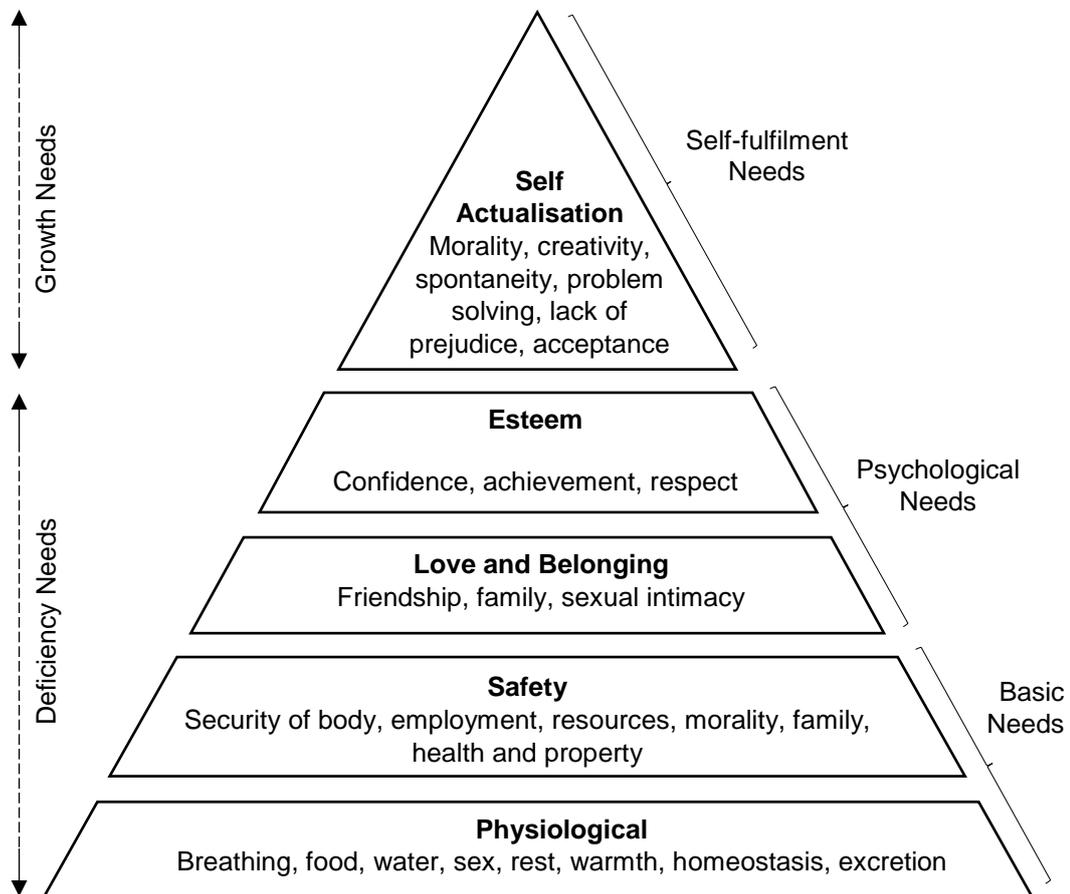


Figure 1. Schematic of Maslow's (1970) hierarchy of needs motivational theory.

The fundamental drive to form social attachments motivates instinctual cognitive, emotional and behavioural strategies which focus on establishing and maintaining

close social relationships with others of the species to prevent a deficiency of belongingness needs (Blackhart, Nelson, Knowles, & Baumeister, 2009). Successful navigation of social interactions involves selectively pursuing only those which are unlikely to be harmful or exploitative to an individual (Williams, 2007).

Detection of Social Cues to Guide Behaviour.

Sociometer theory (Leary, Haupt, Strausser, & Chokel, 1998), tying in with Maslow's hierarchy of needs, states that humans use their levels of self-esteem as a mechanism which provides them with feedback about their inclusionary status in social interactions with others (Leary, Tambor, Terdal, & Downs, 1995). They can detect they are low in belongingness reserves (after scanning the environment for information and cues about their current level of social acceptance) when they are alerted to potential sources of exclusion through experiences of negative affect, like social pain (Pickett, Gardner, & Knowles, 2004).

Social pain is as an immediate, negative and distressing emotional state which is elicited in response to the perception of actual or potential psychological distance from close others or a social group. It precipitates a psychological state resembling physical pain (Eisenberger & Lieberman, 2004; MacDonald & Leary, 2005). Feelings of social pain activate a self-protective vigilance mechanism which exerts influence by regulating and directing perceptual and attentional processes that enhance and improve accuracy in identifying socially threatening individuals (Becker et al., 2011; Young, Slepian, & Sacco, 2015). Evidence to support this notion has been found in neuroimaging studies which found that social pain activates the dorsal anterior cingulate cortex causing attention to be seized and directed toward the source of distress (Eisenberger, Lieberman, & Williams, 2003).

Individuals become sensitively attuned toward positive and negative social cues which provide information pertinent to the affiliative intent of others. In most everyday social interactions information cues pertaining to the affiliative intent of others are seldom displayed in an overt manner. They are instead subtly expressed through vocal intonation or fleeting facial displays (Gardner, Pickett, & Brewer, 2000; Pickett et al., 2004). For example, socially excluded individuals display better selective memory for socially relevant information compared to included individuals (Gardner et al., 2000). Individuals who are high in belongingness needs are also better able to identify both vocal tone and facial emotion expressions (Pickett et al., 2004).

The enhanced performance of socially excluded individuals is specifically related to social perceptual skills, rather than general cognitive skills, and clearly shows increased attention to social cues. Miles (2009) found clear differences in whether people were perceived as more or less approachable based on distinctions in the type of smile they expressed. Smiles are a signal that perceivers can use to identify the authenticity of the underlying emotional state of their social interaction partner, and to understand their communicative intent (Johnston, Miles, & Macrae, 2010; Miles, 2009). An individual who can perceive and decode such observable social cues should be better equipped to anticipate and avoid further social exclusion from others and be able to engage in behaviours which receive more inclusionary responses (Miles, 2009; Pickett et al., 2004).

Smiles as Signals of Affiliative Intent

Distinctions in Smiles.

Sensitivity to distinctions in facial expressions of different smile types provides a functional utility to social perceivers of emotion. Smiles allow perceivers

to discern information that can help them to accurately determine the contextual meaning of the that smile. That information can ensure that they do not misconstrue what a given social interaction may offer them (Miles & Johnston, 2007). Such discrimination is necessary because smiles may occur as an involuntary response to spontaneous and genuine experiences of positive emotion (Frank, Ekman, & Friesen, 2005; Gosselin, Perron, & Beaupré, 2010) or be posed and occur under voluntary control, in the absence of experiences of positive emotion (Ekman, 1993; Ekman, Friesen, & Ancoli, 1980).

Differentiating Smile Types

Facial Action Coding System (FACS). Early smile discrimination research used broad distinctions between smiles types, based on muscle contraction markers in facial expressions, to identify whether a smile occurred in the presence or absence of the experience of positive emotion (Ekman & Friesen, 1982; Miles & Johnston, 2007). This research found that smiles differ in form by activating specific facial muscles or groups of facial muscles that can act as markers signalling differences in the expressions. Posed smiles which occur in the absence of positive emotion, commonly called *non-Duchenne* smiles, involve contraction of the zygomatic major muscle only. Spontaneous smiles which occur in the presence of positive emotion, commonly called *Duchenne* smiles, involve contraction of both the zygomatic major and orbicularis oculi muscles (the *Duchenne marker*). The markers can be identified on the FACS which measures visible facial behaviour relevant to emotion (Ekman et al., 1980; Ekman & Friesen, 1978, 1982).¹

1. Refer to Appendix A to see a detailed description of the different facial movements characteristic of Duchenne and non-Duchenne smiles as set out by the FACS. FACS criteria are available on CD-ROM (Ekman, Friesen, & Hager, 2002).

There are many examples providing evidence for a relationship between the presence or absence of positive emotion, involuntary or voluntary activation of specific facial muscles and smile type. Duchenne smiles (with associated muscle contraction) co-occur with high levels of positive mood (Scherer & Ceschi, 2000), neural activity consistent with those displayed during positive emotional states (Fox & Davidson, 1988), and enjoyment (Ekman, Davidson, & Friesen, 1990). Non-Duchenne smiles (with associated muscle contraction) occur when indicating politeness or deceit (Keating & Heltman, 1994), concealing or masking negative emotions (Ekman, Friesen, & O'Sullivan, 1988) and attenuating spontaneous emotion (Ekman, 2005; Ekman & Friesen, 1982). These relationships demonstrate the value of social perceivers attending to information signalled by cues inherent in smile type (Johnston et al., 2010).

Problems with the FACS. The spontaneous nature of Duchenne smiles occurring in the presence of experiences of positive emotion has been challenged by the recent findings of a small number of studies. For example, Gosselin et al. (2010) demonstrated that many adults could voluntarily activate the facial action units required for Duchenne smiles. Other research found that a substantial minority of adults could produce deliberate smiles which activated both the zygomatic major and orbicularis oculi muscles (typical of spontaneous smiles) when completing deliberate imitation tasks (Gunnery, Hall, & Ruben, 2013). Recent smile discrimination research argues that consideration of the Duchenne marker alone, provides insufficient information for social perceivers to accurately determine the emotional state of others in social interactions. Evidence suggests that other factors – such as the presence of emotion or temporal properties of a smile – also need to be considered (Johnston et al., 2010; Krumhuber & Manstead, 2009).

Felt emotion in smiles. Miles and Johnston (2007) sought to generate a set of smile stimuli for use in smile discrimination research that extended beyond the focus of the Duchenne marker in facial expressions. When they developed their stimuli, they verified their set of smile types according to differences in FACS coding, but they also incorporated the presence of genuine underlying emotion in their stimuli. They sought to generate spontaneous genuine and posed deliberate smile stimuli from their encoders as responses in a natural situational context, rather than as posed by actors as other developers had done (Bernstein, Sacco, Brown, Young, & Claypool, 2010; Tottenham et al., 2009). They developed a method where naturally elicited stimuli were captured as encoders expressed spontaneous genuine smiles in response to a positive emotional experience. Posed deliberate stimuli were captured as targets expressed volitional smiles in response to an event unrelated to a positive emotional experience (Miles, 2005; Miles & Johnston, 2007). The researchers focused on generating a set of smile stimuli that were ecologically valid because they accounted for differences in smile types based on the encoders facial expression characteristics and their underlying emotional states (Johnston et al., 2010; Miles & Johnston, 2007).

Temporal properties of smiles. Krumhuber and Manstead (2009) found that the predictive value of the Duchenne marker, on its own, in smile discrimination research was limited. They suggested that also attending to temporal properties (e.g., onset, apex and offset duration) of smiling expressions enhances utility for perceivers to accurately identify distinctions in smile authenticity and contextual meaning. Research has shown that spontaneous genuine smiles have longer onset and offset durations than posed deliberate smiles (Hess & Kleck, 1990). Research also shows that participants who use temporal characteristics differentiating smile type when

making evaluations of smile authenticity (Hess & Kleck, 1994; Krumhuber & Kappas, 2005), spontaneously attend to smile type where issues of cooperation and trust are salient (Johnston et al., 2010; Krumhuber, Manstead, & Kappas, 2007). Individuals who display spontaneous genuine smiles which are presented in a dynamic format in research are perceived as more trustworthy, preferred as affiliative partners for trust-based activities, and evaluated as more positive and cooperative compared to those who display posed deliberate smiles (Johnston et al., 2010; Krumhuber et al., 2007).

Overall, evidence from literature summarised in this section provides strong support for activation of the zygomatic major and orbicularis oculi muscles as a marker which can be used as a general signal of a spontaneous genuine smile, suggestive of at least heuristic value for social perceivers to attend to it as a cue signalling positive affect (Johnston et al., 2010; Soussignan, 2002). Sensitivity to emotion cues inherent in each smile type can be used as reliable indicators to organise information about potential affiliative partners where issues of affiliative threat (such as social exclusion or trust) are relevant.

Impact of Culture on Ability to Detect Distinctions in Smiles

There is some debate in the literature as to whether a *cross-race effect* exists, whereby social perceivers have a tendency toward greater accuracy in recognising facial expressions and emotion cues of encoders within their own race rather than across different races (Young, Hugenberg, Bernstein, & Sacco, 2012). The depth of perceiver cognitive processing of facial expression cues regulated by the motivation to attend to such cues is shown to be robust across cultures (Bernstein, Young, & Hugenberg, 2007; Young et al., 2012). However, studies comparing emotion recognition within and across cultures found evidence for an ingroup advantage that

was moderated by intergroup exposure and power differences (Elfenbein & Ambady, 2002; Henley, 1977). Studies have also reported that signals of positive affect (such as the markers of spontaneous genuine smiles) are not cross-cultural, rather positivity cues can be learnt through familiarity and experience (Tanaka, Kiefer, & Bukach, 2004; Thibault, Levesque, Gosselin, & Hess, 2012). These findings make the cultural origin of the encoders for each smile set highly relevant to the researchers' choice of stimuli when considering their research sample. Stimuli generated in the same country as the research is located and sample selected from may help to minimise cross-race effect.

Smile Discrimination Conceptualisation and Operationalisation

Review of smile discrimination stimuli. Conceptualisation of smile discrimination in the laboratory has predominantly involved its measurement as a Dependent Variable (DV) of study participants' ability to accurately detect differences in the authenticity of spontaneous genuine smiles and posed deliberate smiles. Dependent variables have consisted of state ratings such as happiness and authenticity, or trait ratings such as trustworthiness and competence. State ratings produce higher effect sizes than trait ratings (Gunnery & Ruben, 2016). Smile stimuli consist of head-shot photos in which an encoder generally displays a neutral, spontaneous genuine or posed deliberate smiling expression. Researchers most commonly select smile stimuli from three sources, including: (a) the British Broadcasting Corporation (BBC) smiles (Bernstein et al., 2010; Young, 2016) downloadable from <http://www.bbc.co.uk/science/humanbody/mind/surveys/smiles>; (b) the NimStim smiles (Tottenham et al., 2009) downloadable from <http://www.macbrain.org/resources.htm>; and (c) the Miles and Johnston smiles (Miles & Johnston, 2007). Stimuli from these sources differ on several factors that

have the potential to moderate perceiver responses. These factors include verification against FACS criteria, posed versus natural encoding, static versus dynamic presentation, and nationality of the encoder (Gunnery & Ruben, 2016).

The use of smile stimuli, classified and verified for the presence or absence of the Duchenne marker using FACS criteria, has been validated in past research. Findings indicate that individuals who are both socially excluded or suspicious of others' motives are significantly more accurate in discerning differences between spontaneous genuine smiles and posed deliberate smiles (Bernstein, Young, Brown, Sacco, & Claypool, 2008; Kunstman, Tuscherer, Trawalter, & Lloyd, 2016). Of the smile stimuli sets mentioned, all except the NimStim smile set (Tottenham et al., 2009) are verified against FACS criteria. Caution should be exercised when comparing findings from research using the NimStim set against findings which have used FACS verified smiles sets. Stimuli from the BBC smile set (Bernstein et al., 2010; Young, 2016) are also able to be matched for perceived trustworthiness and positivity.

Research evidence shows that perceived differences between spontaneous genuine smiles and posed deliberate smiles are greater when the smile stimuli are elicited naturally from encoders, rather than from posing expressions (Gunnery & Ruben, 2016; Krumhuber & Manstead, 2009). The BBC and NimStim smile sets used actors to pose all smile type photos in their stimuli sets. Perceived differences are also greater when smile stimuli are presented as photographs in the dynamic form of video clips rather than images presented as static photographs. Each of the three smile sets mentioned in this subsection allows presentation of stimuli in either dynamic or static format, with dynamic presentation being the preferred choice in the literature.

Different judgements about the quality of smile type arise from the perception of temporal properties of the encoder and their facial expression (Gunnery & Ruben, 2016; Krumhuber & Kappas, 2005). Slow onset and offset smile durations have led to more positive evaluations of the encoder and their smiles (than faster durations),² so use of static stimuli should help negate the influence of such effects on smile detection. The duration of presentation of smile stimuli is important to ensure there is no bias toward detecting spontaneous genuine smiles or posed deliberate smiles. When static images are used, the facial expressions need to be captured at the apex of the smile displayed from the encoders who were photographed. The apex of smiles in stimuli displayed in research have typically been presented for times of between 1.00 to 2.56 s duration. On this basis, smile stimuli should be presented for an average duration of 2 s when using static images in smile discrimination research (Bernstein et al., 2008; Johnston et al., 2010; Kunstman et al., 2016; Young, 2016).

The Miles and Johnston smile stimuli set were developed in New Zealand (NZ), whilst the NimStim smile set (Tottenham et al., 2009) were generated from a multi-racial American group of encoders. The origins of the BBC smile set could not be confirmed (Bernstein et al., 2010). After reviewing the literature on smile discrimination stimuli, the following subsection provides the rationale for the stimuli selected for use in the current study.

Smile stimuli selected for the current study. The smile stimuli chosen for the present research were selected from sets of facial displays where differences in smile type had been verified against FACS criteria. The stimuli had also been created in accordance with methods for naturally eliciting smiles, which were

2. When dynamic stimuli are presented participants perceive smiles with a shorter apex duration as more genuine. The apex of naturally occurring spontaneous smiles last between 0.5 to 4.0 s and smiles of longer duration are perceived to be posed (Ekman & Friesen, 1982; Krumhuber & Kappas, 2005).

developed by Miles and Johnston (2007) in their research on sensitivity to expressions of happiness. Smile stimuli were presented as static images to avoid the recognition advantage inherent in the dynamic images presented as video clips used in previous research (Johnston et al., 2010; Krumhuber et al., 2007; Philipp, Bernstein, Storrs, Vanman, & Johnston, 2012). Accordingly, smaller effect sizes should be expected from the current study when using static images, compared to other research. Even though a meta-analysis found that mean weighted effect sizes for perceptual differences were greater for dynamic stimuli ($ES = .56$) compared to static stimuli ($ES = .24$), they noted that effect sizes for static stimuli were still significantly above zero (Gunnery & Ruben, 2016; Krumhuber & Kappas, 2005).

The current study was undertaken in NZ and the smile stimuli used in this study were based on the Miles and Johnston (2007) set, so the participant sample and smile stimuli selection match in terms of country of origin. The smile stimuli had been successfully used in previous smile discrimination research, including the effect of social exclusion on reciprocity of spontaneous genuine smiles (Philipp et al., 2012), the contextual meaningfulness of sensitivity to spontaneous genuine smiles (Miles & Johnston, 2007), and the social functions and consequences (e.g., trust) of sensitivity to spontaneous genuine smiles (Johnston et al., 2010). The following subsection summarises how smile discrimination tasks using the smile stimuli described (associated with social exclusion and suspicion of motives relationships), have been measured in the literature.

Measurement of smile discrimination tasks. Research examining suspicion of motive and social exclusion relationships with smile discrimination commonly use the signal detection measure d' to measure classification of smiles through quantifying participants ability to detect genuine smile stimuli. Appendix B

illustrates the signal-response matrix indicating typical decision criteria used by researchers with this measurement. Reliability of the effectiveness of d' as a detection measure for smile discrimination tasks is found in research that supports significant between-group differences in ability to recognise spontaneous genuine smiles (Bernstein et al., 2008; Kunstman et al., 2016; Philipp et al., 2012; Young, 2016). For a broader review of signal detection measures see Stanislaw and Todorov (1999).

Social Exclusion and Smile Discrimination

Social Exclusion Definition and Consequences

Social exclusion denotes all phenomena or situations where an individual or group are denied social contact or placed in a condition of being alone or isolated (Blackhart et al., 2009). The terms social exclusion, rejection and ostracism are poorly delineated in research and it is unclear whether these terms describe unique phenomena or essentially define a single construct. Thus, in the current study, the terms will be used interchangeably where relevant (Williams, 2007). Over the last two decades an extensive body of evidence has been developed which has contributed to understanding the highly aversive and distressing consequences of social exclusion (Williams, 1997, 2007; Williams & Nida, 2016). For example, people who are socially excluded, compared to included people, have been shown to be more likely to change their behaviour by complying with others' requests in order to be readmitted back into a group (Carter-Sowell, Chen, & Williams, 2008). Socially excluded people have also displayed a preference for forging social bonds and forming more positive impressions with new sources of potential affiliation, rather than seeking reconnection with the perpetrator of a social exclusion experience (Maner, DeWall, Baumeister, & Schaller, 2007).

Responses to the Threat of Social Exclusion

The experience of social exclusion thwarts individuals' fundamental affiliative tendencies that require frequent, positive and ongoing interpersonal connections with others and prosocial responses such as resistance to breaking of existing bonds (Baumeister & Leary, 1995; Blackhart et al., 2009). Lack of positive social relationships adversely impact individuals. For example, research has found evidence to suggest that people who had been excluded behaved aggressively toward the people who had socially excluded them through negative evaluation, but not to people who had praised them (Twenge, Baumeister, Tice, & Stucke, 2001). Other research shows that social exclusion causes antisocial responses such as decreases of self-regulation in people, including poor self-control and giving up sooner on tasks, compared to included people. These contradictory findings suggest that negative or antisocial responses to exclusion appear inconsistent with findings supporting positive or prosocial responses. Shilling and Brown (2016) propose, however, that the disparate outcomes can be explained by individuals allocating resources toward processes relevant to goals and away from competing goals that are not salient. This is supported by Williams (2009), who explains the inconsistencies through appraisals and attributions of the particular needs threatened by a specific occurrence of social exclusion.

Williams (2009) developed the temporal need-threat model to capture how individuals respond to episodes of ostracism. The model proposes that ostracism affects individuals in three stages. Regardless of situational specifics, an individuals' immediate response to ostracism in the reflexive stage is the experience social pain. Social pain causes individuals to experience deficiencies in four fundamental needs - belongingness, self-esteem, control and meaning existence - that are easily

detectable due to increased attention directed toward threat cues that can provide the individual with information about the affiliative intent of others (Hartgerink, Van Beest, Wicherts, & Williams, 2015; Williams, 2009).³ The temporal need-threat model of ostracism is shown in Figure 2.

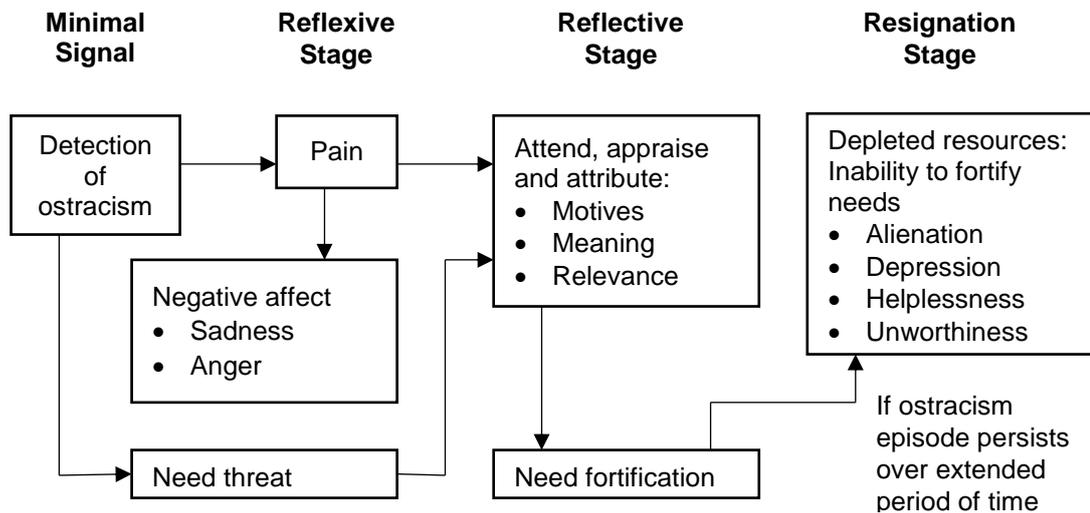


Figure 2. Schematic of William's (2009) temporal need-threat model of ostracism.

Threat of Social Exclusion and Detection of Smile Authenticity

Spontaneous smiles strongly communicate a genuine cue of positive affect and affiliative intent in social group interactions (Bernstein et al., 2010). Socially excluded individuals express a preference for working with individuals who display spontaneous genuine smiles and more such smiles are exhibited by individuals when they engage in pro-social behaviour (Bernstein et al., 2010; Mehu, Grammer, & Dunbar, 2007). Individuals who have been socially excluded show an enhanced ability to determine the authenticity of smiling expressions compared to socially included individuals (Young, 2016). These findings indicate that socially excluded

3. Reflective stage responses are subject to more rational thought and represent a greater ability to cope with threat using mechanisms reflecting behavioural, cognitive and emotional choices forming the basis of an individual's fortification of their threatened needs. Resignation occurs if an individual is not able to fortify their fundamental needs, meaning they then experience prolonged periods of social pain (Williams, 2009).

individuals exhibit an increased sensitivity toward cues signalling affiliative intent when compared to socially included individuals (Bernstein et al., 2008). Research on the effects of social exclusion has assumed that such sensitivity was a universal evolutionary response and so studies have traditionally focused on evidence from individualist cultures such as North American and Western European population samples (Gonsalkorale & Williams, 2007; MacDonald & Leary, 2005)

Impact of Cultural Differences on Responses to Social Exclusion

Recent research has started to dispute the notion of universality by suggesting that cultural background may moderate both the experience of, and response to, social exclusion (Uskul & Over, 2017). For example, a study comparing the impact of social exclusion on people from individualist cultures (emphasizing autonomy and personal goals) and collectivist cultures (emphasizing mutual obligation and collective goals) found that individuals from collectivist cultures perceived they were less negatively affected by the experience (Pfundmair et al., 2015). The strong bonds developed through social interdependence in collectivist cultures may lower individuals' stress responses which protect against the effects of social exclusion. Social exclusion which is targeted at the self of an individual belonging to a collectivist culture, and not their group, may not be threatening because it is not relevant (Uskul & Over, 2017). One explanation may be that people from collectivist cultures are more cautious in their responses to social exclusion from people outside their group, because they focus their trust narrowly and belong securely to the people within their social group (Fiske & Yamamoto, 2005).

Findings suggest that responses to social exclusion seem to differ between individualistic and collectivist cultures (Pfundmair et al., 2015). Evidence from a literature review by Uskul and Over (2017) also found that differences appear to

depend on the social exclusion methodology utilised. This means that, to date, the nature of the relationship between culture and social exclusion is complex and remains unclear. Culturally diverse research has not been a priority, so a next step for future research will be to attempt to clarify the relationship between culture and responses to social exclusion (Uskul & Over, 2017). An important limitation of social exclusion and smile discrimination research is lack of generalisability of findings. A key focus of this study will be to replicate the effect of social exclusion on the ability to determine smile authenticity with a culturally diverse sample within a NZ context.

A Model of Social Exclusion and Smile Discrimination

Overall, the findings from the literature reviewed in this section indicate that the aversive impact of social exclusion (or lack of positive social relationships) causes individuals to experience social pain and deficits of the four fundamental needs. Responses to this aversive experience result in attentional biases toward detecting potential affiliative threat from informational social cues such as smiles. Individuals can use the information they perceive from distinctions in smile types as an aid to identify others who have genuine affiliative intent. This allows them to distribute their maximum reaffiliation effort toward those displaying signals of authentic smiles, so they can present themselves with the best opportunity for social reconnection. The findings from the literature describing the relationship between social exclusion and smile discrimination can be represented by the model shown in Figure 3.



Figure 3. Proposed model of the causal effect of social exclusion on smile discrimination which is supported by evidence in the research literature.

This model provides a starting point for the development of a larger model to be tested in the present study. It will be added to later in this chapter. The following subsection describes how social exclusion has been manipulated in research in relation to this model.

Social Exclusion Conceptualisation and Operationalisation

Review of social exclusion manipulations. Conceptualisation of social exclusion in the laboratory has predominantly involved its manipulation as an Independent Variable (IV) in which study participants are either excluded or included in social interactions with others (Williams, 2007). Many social exclusion paradigms are available to researchers, with three most commonly being used. One of the three is the Getting Acquainted Workmate Feedback task. In this task participants are advised that they are included or excluded from a laboratory group based on either a random procedure or the preferences of other group members (Nezlek, Kowalski, Leary, Blevins, & Holgate, 1997). Reliving a Past Rejection Experience is a task where research participants write in detail about a previous socially painful event causing them to relive and re-experience the distressing memory (Chen, Williams, Fitness, & Newton, 2008). The third task is a game called Cyberball. Cyberball is a virtual game in which participants play passing a ball with two or more players (Williams, Yeager, Cheung, & Choi, 2012). The manipulation paradigms differ on three main factors, which have the potential to affect the ease of manipulation implementation and the effect size of findings. These factors include: (a) individual or group based tasks; (b) real group versus ostensible group exclusion; and (c) use in smile discrimination research (Blackhart et al., 2009).

Research has shown that social exclusion effect sizes are larger for manipulations which occur in group settings in a laboratory (e.g., Getting Acquainted

Workmate Feedback task), rather than individual settings. This is due to the presence of other people intensifying the emotional impact of being rejected (Blackhart et al., 2009). The Reliving a Past Rejection Experience task is a procedure implemented in an individual setting. It is also a writing task which may add additional stress to a manipulation for culturally diverse participants who are not proficient in the English language. Both the Getting Acquainted Workmate Feedback task and Cyberball involve interactions with others, and meta-analysis and review literature indicates the largest social exclusion effects sizes when using either of these two paradigms (Blackhart et al., 2009; Williams, 2007).

When research participants are excluded from real groups rather than being left out of an ostensible group they show larger levels of self-reported negative affect. Cyberball requires participants to engage with others via an internet connection, while the Getting Acquainted Workmate Feedback task requires small groups of participants to interact in a 'real' office setting before they are separated and asked to identify who they would most like to work with. Meta-analysis and review literature indicates that larger effect sizes were found with the latter paradigm. However, the Getting Acquainted Workmate Feedback task is cost-prohibitive with a limited research budget because it requires the employment of confederates to manipulate feelings of social exclusion through the provision of negative feedback to the rejected group of participants (Blackhart et al., 2009; Williams, 2007).

Only one of the three social exclusion paradigms mentioned above appears to have been used in smile discrimination research. The Reliving a Past Rejection Experience paradigm has been successfully used in several studies showing that social exclusion improves research participant accuracy in detection of spontaneous

genuine smiles (Bernstein et al., 2010; Bernstein et al., 2008; Philipp et al., 2012). Neither the Getting Acquainted Workmate Feedback task or Cyberball have been used specifically to examine the relationship between social exclusion and smile discrimination. However, Cyberball has been used in two studies that have examined the relationship between social exclusion and responses to smiles as social cues (Kawamoto, Nittono, & Ura, 2014; Xu et al., 2015). These studies provide evidence supporting the successful use of Cyberball as a manipulation which elicited greater participant activation of the zygomaticus major muscle in response to smiles (Kawamoto et al., 2014) and increased attention toward smiling faces after social exclusion (Xu et al., 2015). Participants for each of these studies were of East Asian origin, which is of interest to the present study as it seeks to utilise a culturally diverse participant sample - refer to the sample selection section at the end of this chapter for further details. After reviewing the literature on social exclusion manipulation paradigms, the following subsection provides the rationale for the manipulation paradigm selected for use in the current study.

Social exclusion manipulation selected for the current study. Cyberball was selected for use in the present study as it is the most widely used social exclusion manipulation in social psychology research. The game is the paradigm which best meets the necessary criteria for use in this study, being that it is group based, administered in a 'real' setting, and effective. While the game has not been utilised specifically in smile discrimination research before, it has been implemented in research on attention to facial cues signalling positive affect, which is in keeping with the present study. Cyberball has also been shown to be valid across international populations and to reliably elicits feelings of social pain across many constructs.

The paradigm shows large effects which generalise across the structural aspects (e.g., number of players, duration and number of throws), sampling aspects (e.g., gender, age, country) and types of dependent measures (e.g., interpersonal, intrapersonal and fundamental needs) used in study designs (Hartgerink et al., 2015; Rotge et al., 2015; Williams & Jarvis, 2006). Functional magnetic resonance imaging indicated activation of the anterior cingulate cortex, a correlate of social pain, in research participants excluded by the game (Eisenberger et al., 2003). Research also provides evidence supporting the temporal need-threat model of ostracism, where socially excluded participants who played against despised others (Gonsalkorale & Williams, 2007) and incurred costs (Van Beest & Williams, 2006) indicated lowered satisfaction levels for fundamental needs, irrespective of personality and distress mitigating factors (Williams, Cheung, & Choi, 2000; Williams & Nida, 2016).

Administration of Cyberball typically involves the use of deception and requires measurement of the DV (and levels of fundamental needs) immediately following manipulation of social exclusion. Traditionally researchers using Cyberball have made use of a cover story describing the involvement of other 'real' online players. The present study followed more recent protocols where participants were advised that they were playing against computer generated players as this removed the need for deception in the study (Canaipa, Treister, Lang, Moreira, & Caldas, 2016; Fung & Alden, 2017; Zadro, Williams, & Richardson, 2004). The aversive and distressing impact of social exclusion in the game is comparable in manipulations that utilise either real or simulated other players (Zadro et al., 2004).

A review by the Cyberball developer (Williams, 2007) found that the effects of social exclusion decrease on participants, from application of the first assessment measure to the last, suggesting that researchers should record responses immediately

after the social pain manipulation (Williams, 2007). However, meta-analysis findings indicate that such decreases are unlikely to adversely impact on results (Hartgerink et al., 2015). Socially excluded participants scored on average -0.73 standard deviation units lower than included participants, even well after the manipulation has occurred ($M_{\text{time}} = 4.85$ min), still indicating a medium to large effect. Average effect sizes were based on various dependent variables from the studies analysed in the meta-analysis, where measures were coded into three categories. Variables in the *interpersonal* category assessed the impact of social exclusion on other people (e.g., helping behaviours), while variable in the *intrapersonal* category measured how social exclusion impacted on the self (e.g., anger). Finally, variables in the *fundamental needs* category assessed need satisfaction levels (e.g., belongingness). On average, Hartgerink et al. (2015) notes that effect sizes for Cyberball have been large ($d > 1.40$). The following subsection summarises how researchers have measured the effectiveness of social exclusion manipulations using the Cyberball paradigm (associated with participants' perceived levels of fundamental needs) in the literature.

Measurement of the success of social exclusion manipulations. Research examining social exclusion commonly measures participants fundamental needs levels to assess the success of the manipulation (Blackhart et al., 2009; Williams, 2007). There are two assessment instruments available to measure fundamental needs, including the Need Threat Scale (NTS) and the Shelton Needs Scale. The Shelton Needs Scale is derived from self-determination theory and so is not theoretically relevant to the current study (Sheldon, Elliot, Kim, & Kasser, 2001). Cyberball has been successfully paired with administration of the NTS in many studies. Exclusion is measured by assessing the impact of the game on participants

perceptions of their needs levels, in keeping with the reflexive stage of the temporal need-threat model of ostracism (Van Beest & Williams, 2006; Williams, 2009; Zadro et al., 2004). The NTS subscales demonstrate acceptable internal consistency ($\alpha = .66$ to $.79$), however, items load heavily onto a single factor. A number of studies have indicated that composite NTS scores have high reliability ($\alpha = .81$ to $.93$), and when using such scores, the NTS is considered to have reasonable construct validity (Gerber, Chang, & Reimel, 2017; Oaten, Williams, Jones, & Zadro, 2008; Philipp et al., 2012; Zadro et al., 2004).

Suspicion of Motive and Smile Discrimination

Definition of Suspicion

Suspicion can be defined as an individuals' simultaneous state of cognitive activation, ambiguity and perceived malintent about underlying information concerning others' motives as they assess the potential for deceptive intent. It conveys an uncertainty about others' motives, a concern that those motives may involve intent to cause harm and increased cognitive activity to develop and process explanations for the behaviour observed on the part of the perceiver. Research on suspicion is sparse and generally focuses on state suspicion, such as issues that cause an individual to become suspicious in certain circumstances (Bobko, Barelka, Hirshfield, & Lyons, 2014; Sinaceur, 2010).

Social Norms Create Suspicion of Authenticity of Others' Motives

Social norms dissuade ethnic majorities from exhibiting expressions of prejudice toward ethnic minorities by exerting social pressure on individuals to conform to accepted group norms. Group norm theory suggests these prejudice-related social norms developed as part of a socialisation process whereby an individuals' ideologies and belief systems are based on the social norms of groups

with which they identify (Plant & Devine, 1998; Sherif & Sherif, 1953). Ethnic majorities may treat ethnic minorities favourably in interracial intergroup interactions for fear of the stigma of racism (Crandall, Eshleman, & O'Brien, 2002). This behaviour can create attributional ambiguity for ethnic minorities as they consider the motives underlying socially acceptable nonprejudiced responses by ethnic majorities in interracial interactions. Responses may be reflective of internalised motives indicating a genuine commitment to nonprejudicial egalitarian beliefs and standards. Responses may also be reflective of external motives indicating a socially desirable impression in front of others which reflects compliance with the nonprejudicial social norms (Major, Sawyer, & Kunstman, 2013; Plant & Devine, 1998). In accordance with social pressure, ethnic majority individuals have learnt to mask overt expressions of prejudice and negativity (Bergsieker, Leslie, Constantine, & Fiske, 2012; Crosby, Bromley, & Saxe, 1980), despite externally motivated individuals' predilection to privately be more prejudiced, biased and negative toward ethnic minority individuals (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Dovidio, Kawakami, & Gaertner, 2002).

Suspicion of Motives and Detection of Smile Authenticity

Uncertainty created by socially acceptable nonprejudiced behaviour by ethnic majorities leads suspicious ethnic majority individuals (compared to non-suspicious individuals) to place greater importance on motives in intergroup interactions. This has been shown to result in greater accuracy at detecting deception, relevant information, and social cues suggestive of others' underlying motives. Suspicion is usually aroused when individuals perceive information from others as missing, disparate or unexpected (Bobko, Barelka, & Hirshfield, 2014; Sinaceur, 2010). Pressure due to social norms provides ethnic majority individuals with strong

motivational reasons to express positive emotion (whether genuinely felt or not) through facial cues such as smiles. Ethnic minority individuals (compared to majority) who are suspicious of ethnic majority individuals motives are more accurate at detecting external motives for responding without prejudice (LaCosse et al., 2015), automatically orient to their smiles and perceive them to be threatening (Major et al., 2016), and are better at determining the meaning of spontaneous genuine smiles and posed deliberate smiles (Kunstman et al., 2016). When considering these findings, it is important to note that ethnic minorities' responses to ambiguity in interracial interactions may be moderated by situational and individual difference factors.

Effect of Culture on Suspicion of Motives and Attention to Smiles

There is a paucity of research considering the impact of suspicion of motives on attention to facial cues indicative of threat, so the impact of cultural differences on such relationships is poorly understood. A small amount of race-based prejudice research suggests that some variables (e.g., close intergroup contact or threat relevance) may moderate the amount of attention individuals allocate to ethnic outgroup faces. For example, a study by Dickter, Gagnon, Gyurovski, and Brewington (2015) found that regular and meaningful interethnic contact moderated early attention allocated toward ethnic outgroup faces versus ethnic ingroup faces, both for groups who were perceived as threatening and those who were not. Other studies found that threat from an ethnic outgroup member had to be salient (the individual posed a danger or appeared confrontational) for their face to capture and hold the attention of an ethnic ingroup member (Donders, Correll, & Wittenbrink, 2008; Trawalter, Todd, Baird, & Richeson, 2008). These race-based prejudice studies utilised African-American and Asian ethnic minority samples from the

United States, so it is unknown how these findings would generalise to more culturally diverse samples. Suspicion of motives research has also focused on ethnic minority group samples in an American context only. All studies highlighted the need for more culturally diverse research to improve understandings of how cultural differences may influence the effects found in research on suspicion of motives. The current study will address the lack of ability to generalise findings by attempting to replicate the results of the effect of suspicion of motives on smile discrimination with a culturally diverse sample.

A Model of Suspicion of Motives and Smile Discrimination

Overall, the findings from the literature reviewed in this section indicate that social norms make expression of prejudice unacceptable. The pressure to conform to such norms creates uncertainty for ethnic minorities in interracial interactions around the authenticity of positive affect expressed by ethnic majorities. When ethnic majority individuals exhibit social cues signalling positive affect, such as smiles, threat responses are activated within ethnic minority individuals resulting in attentional biases toward detecting the motives underlying such expressions. Suspicious individuals use the information they perceive from differences in smile cues as an aid to identify others who may have concealed prejudicial attitudes. This allows them to avoid the potential harm from those that hold such socially excluding biases.

The findings from the literature describing the relationship between suspicion of motives and smile discrimination can be represented by a model which extends the testable model introduced and previously described in Figure 3. This model will be developed further in the sections of this chapter that follow. The following subsection describes how suspicion of motives has been measured in literature, in

relation to this model. The model developed in this section shows the causal effect of suspicion of motive on smile discrimination and is shown in Figure 4.

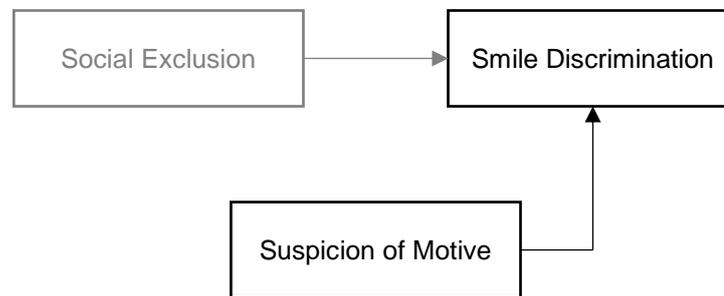


Figure 4. Proposed model of the causal effect of suspicion of motives on smile discrimination which is supported by evidence in the research literature.

Suspicion of Motive Conceptualisation and Operationalisation

Review of suspicion of motives measures. Conceptualisation of suspicion of motives in the laboratory involves its measurement as a DV assessing individual (trait) differences in ethnic minority participants' suspicion of ethnic majorities' underlying motives for behaving in nonprejudiced ways. Participant suspicion is based on perceived distinctions between internal and external motivation of others for responding with positive affect in intergroup interactions (Major et al., 2013; Plant & Devine, 1998). The motives underlying nonprejudiced behaviour in interracial interactions have mostly been examined from the perspective of ethnic majorities to date (Kunstman, Plant, Zielaskowski, & LaCosse, 2013; Plant, Devine, & Peruche, 2010). The conceptualisation of suspicion of motives as a DV allows research to be undertaken from the perspective of ethnic minorities (Kunstman et al., 2013; Plant et al., 2010).

One instrument, the Suspicion of Motives Index (SOMI), is available to measure the DV. It has been used in three studies to date. Only one of these studies, by Kunstman et al. (2016), examined the relationship between suspicion of motives and participants ability to discriminate between smile types in interracial interactions.

The other two studies considered the relationship of the DV with participants ability to detect motives for positive behaviour (LaCosse et al., 2015) and responses to positive feedback (Major et al., 2016). After reviewing the limited amount of literature on measurement of suspicion of motives, the following subsection provides the rationale for the instrument selected for use in the current study.

Suspicion of motive measure selected for the current study. While the SOMI is the only measure available, it's effectiveness in assessing participants' levels of suspicion (about their perceptions of European Americans' motives for behaving in nonprejudiced ways) has been shown in research on Latino and African American samples (Kunstman et al., 2016; LaCosse et al., 2015; Major et al., 2016). The SOMI was used by researchers to examine how suspicious ethnic minorities habitually resolved the attributional ambiguity inherent in positive overtures from ethnic majority group individuals. Highly suspicious individuals responded to positivity with psychophysiological markers indicating the experience of social pain, reduced self-esteem fundamental need levels, and improved accuracy of authenticity detection of social cues (Major et al., 2016; Major et al., 2013). The Kunstman et al. (2016) research found that smiles exhibited by ethnic majorities served to function as cues of threat, rather than positivity or affiliation, for suspicious ethnic minorities. For example, significant effects were found for African Americans perception of White Americans smiles as threatening ($r_p = .28$), they automatically oriented to White Americans' smiles compared to within group smiles ($r = .31$), and they could accurately detect distinctions in White Americans spontaneous genuine smiles and posed deliberate smiles ($r_p = .29$).

The SOMI was used in the three studies described as a trait measure, however in the current research it was used as a state measure. Expectations regarding

prejudice can be measured both as chronic individual differences (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002) and situationally manipulated differences (Richeson & Shelton, 2007) with similar effect. It is an open question as to whether experimental conditions which are designed to influence individuals' beliefs about ethnic majority groups motivations (state) will produce similar findings to chronic or trait beliefs (Major et al., 2016). In their development of the SOMI, Major et al. (2013) proposed that ethnic minorities beliefs about ethnic majorities motives for nonprejudiced behaviour were based on their own perceptions of intergroup relations and personal experiences. Perceptions of personal experiences are subject to situational change, so it would logically follow that the SOMI would be amendable to state measurements of suspicion as well. Use of the SOMI as a state measure in the present research offers the opportunity to validate the measure on a culturally diverse sample frame in a NZ context. The following subsection summarises how the SOMI has been used to measure ethnic minorities' suspicion of ethnic majorities' motives (related to smile discrimination) in the literature.

Measurement of suspicion of motives. The SOMI assesses research participants overall levels of suspicion. Overall suspicion is calculated from two subscales including: (a) the Perceived External Motivation subscale (PEMS), which measures the extent to which the behaviour of ethnic majority individuals is perceived to be externally motivated in responding without prejudice toward ethnic minority individuals; and (b) the Perceived Internal Motivation subscale (PIMS), which measures the extent to which individuals are perceived to be internally motivated (Major et al., 2013). When used to measure the relationship between suspicion of motives and smile discrimination ($n = 108$), the SOMI subscales were inversely correlated, $r = -.30$, $p = .002$ (Kunstman et al., 2016). SOMI has

demonstrated acceptable internal consistency (PEMS $\alpha = .76$ to $.86$; PIMS $\alpha = .63$ to $.90$) and test-retest reliability (PEMS $r = .53$; PIMS $r = .86$) across all studies (Kunstman et al., 2016; LaCosse et al., 2015; Major et al., 2016). Strong evidence has also been produced of the convergent, divergent and predictive validity of the measure (Major et al., 2013).

Social Exclusion and Suspicion of Motives

Commonalities in the Literature

Literature summarised in earlier sections of this chapter clearly indicates that individuals who experience episodes of social exclusion or suspicion of others' motives monitor their social environment to detect potential sources of affiliative threat from others. They exhibit increased sensitivity to cues of positive affect and display greater accuracy in determining authenticity of smiles. These abilities provide the individuals with information about the social intent motives underlying expressions communicated by others. Findings from the literature have shown that there is a relationship between social exclusion and smile discrimination (see Figure 3) and between suspicion of motives and smile discrimination (see Figure 4). Given the commonalities indicated in the literature, there is an unanswered question as to whether a relationship between social exclusion and suspicion of motives exists. No research was found in the literature that examines this relationship. The following subsections present evidence from the literature which was used to inform, underpin, and develop the hypothesised relationship between social exclusion and suspicion of motive defined at the end of this section and tested in this study.

Prejudice as a Form of Social Exclusion

The negative impact of prejudice underpins suspicion of motives literature, but how might it relate to the social exclusion literature? Prejudice is defined as a

negative evaluation, attitude or association about an individual based on their membership to a social group (Crandall et al., 2002; Stephan, 1985). As such, it is a product of societal group positions, individual's understandings of those intergroup relations, and their own social groups' interests and characteristics (Reynolds & Klik, 2016; Sherif, 1948). Motivational perspectives on intergroup behaviour state that prejudiced and exclusionary perceptions and behaviour toward an outgroup are often guided by preferential treatment and feelings of warmth toward an ingroup (Brewer, 2001). Exclusion driven by prejudice is especially likely to occur when factors are present, such as an outgroup posing threats to the welfare of an ingroup (Stephan, Renfro, & Davis, 2008) or social norms have legitimised negative treatment of outgroups (Duckitt, 1992; Mummendey, Otten, Berger, & Kessler, 2000). Prejudice is maintained and exacerbated through a dominant group excluding a minority group and through minimal contact between ethnic majority and minority groups. Increasing contact between the groups enhances inclusionary behaviours and willingness to affiliate (Molina, Tropp, & Goode, 2016).

Effect of Prejudice on Fundamental Needs

The negative impact of social exclusion on perceived fundamental needs underpins social exclusion literature. Given the nature of prejudice as a form of social exclusion, does prejudice adversely affect individuals' fundamental needs levels? Ethnic minority individuals feel threatened by externally motivated antiprejudicial behaviour when displayed or expressed by ethnic majority individuals (Major et al., 2013; Plant & Devine, 1998). When ethnicity is known by ethnic majority individuals, minority individuals respond to acceptance and positive performance feedback with threat-type reactive responses of negativity and uncertainty (Major et al., 2016; Mendes, Major, McCoy, & Blascovich, 2008). They

also show reduced levels of self-esteem (Crocker, Voelkl, Testa, & Major, 1991; Hoyt, Aguilar, Kaiser, Blascovich, & Lee, 2007). Minority individuals who are suspicious of the motives underlying expressions of positive affect from majority individuals in evaluative situations will feel uncertain about their competency, which will threaten their self-esteem needs. They will also feel uncertain if they are accepted in social interactions, which will threaten their belongingness needs in accordance with the temporal need-threat model of ostracism (Major et al., 2016; Williams, 2009).

A Model of Social Exclusion and Suspicion of Motives

Taken together, the findings from the literature reviewed in this section indicate that prejudice toward ethnic minority groups arise from exclusionary beliefs and behaviours exhibited by ethnic majority groups. The perception of threat felt by ethnic minorities who experience prejudice affects fundamental needs by reducing feelings of self-esteem and belongingness. Research indicates that ethnic minority individuals become suspicious of the motives underlying expressions of positive affect exhibited by ethnic majority individuals due to the threat of prejudice.

Considering these findings, the present study suggests that ethnic minorities experiences of social exclusion which are attributed to the threat of prejudice will increase uncertainty about the authenticity of positive affect exhibited by ethnic majority individuals. Such uncertainty will arouse suspicion of the motives underlying such expressions for ethnic minority individuals. The relationship between social exclusion and suspicion of motives can be represented by a model that extends the testable model developed and previously described in Figures 3 and 4. This model will be finalised in the section of this chapter that follows. The model

developed in this section shows the predicted causal effect of social exclusion on suspicion of motives and is shown in Figure 5.

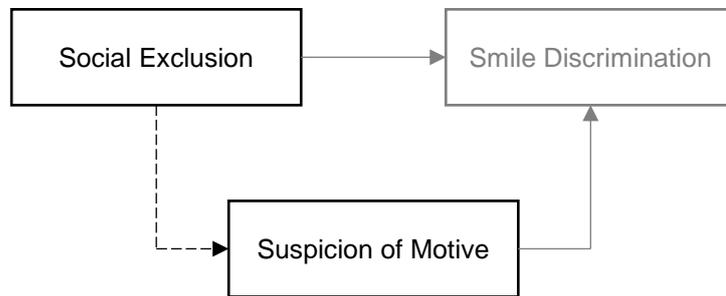


Figure 5. Proposed model of the causal effect of social exclusion on suspicion of motives which is hypothesised by the current research.

Despite the theoretical similarities between social exclusion and suspicion of motive noted in this section, research to date has not investigated such an association which indicates a gap in the literature, making the knowledge gained from examining this predicted relationship worthy of addressing in this study.

A Final Testable Model for the Current Study

Throughout this chapter a model has been developed from the review of the theoretical and empirical evidence presented in the literature on the constructs of social exclusion, suspicion of motives, and smile discrimination. The complete model is shown in Figure 6.

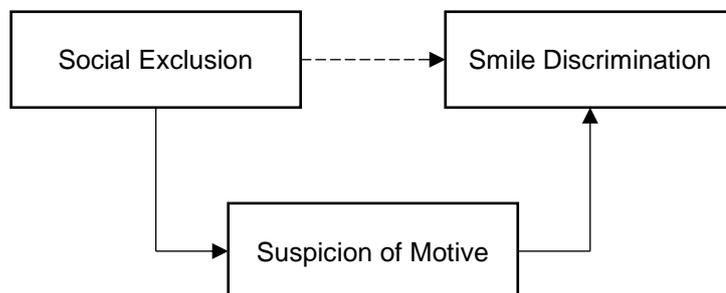


Figure 6. Proposed hypothetical model of the mediating effect of suspicion of motive on the relationship between social exclusion and smile discrimination.

Based on the evidence in the literature, the current study proposes that suspicion of motives mediates the relationship between social exclusion and smile discrimination, and this model depicts how each of the concepts summarised in the preceding sections relate to each other. Going forward into the next chapter, the model provides a foundation that informs the framing of the hypothesis to be tested in the current study. For this model to be tested on a culturally diverse population in a NZ context, consideration had to be given to selecting an appropriate sample frame, given the constructs to be examined. The process of selecting the sample frame for the current study is described in the following section, before the hypotheses are defined the following chapter.

Sample Selection

The review of the literature has shown that social exclusion and suspicion of motive research is limited in its ability to generalise and extend validity of findings to culturally diverse populations. Research has focused on Western European and American samples for social exclusion research and Latino and African American ethnic minority samples for suspicion of motive research. The present research occurred within a NZ context and so the following section of this chapter addressed the local social psychology literature to determine the most appropriate sample frame for the current study to replicate previous research findings. Criteria considered in the selection of the sample frame included; (a) recruitment availability (b) adequate conceptualisation; and (c) experiences of prejudice.

Recruitment Availability.

The sample frame had to be recruited as part of a convenience sample from Massey University in Palmerston North, NZ. In NZ, White New Zealanders (of Western European origin) form the majority ethnic group (77%), the indigenous

Māori population form the largest ethnic minority group (15%), and the Asian immigrant population form the second largest ethnic minority group at 10% of the population (Harris et al., 2012). The Asian population constitute the newest and fastest growing immigrant group in NZ (29%), with China the single largest source of international students to NZ at 28%, followed by India at 16% and South Korea at 5% (Ministry of Business Innovation and Employment, 2016; Ministry of Social Development, 2008).

At Massey University, individuals self-identifying as being of Asian ethnicity form the largest ethnic minority group at the campus and individuals self-identifying as being of European ethnicity form the largest ethnic majority group (Massey University, 2016). The statistics indicate that individuals of Asian ethnicity form the most prominent minority group in NZ, both in terms of immigration and university attendance, as illustrated in Table 1.

Table 1

Ethnicity of Massey University Students

Ethnicity	%
European (White New Zealander)	59
Asian	19
Māori	10
Pacific peoples	4
Middle Eastern/Latin American/African	3
Other	4
Unspecified	1

Note. Statistics are for the 2016 academic year which ran from 29 February 2016 to 18 February 2017. The statistics describe the ethnic makeup of students at all Massey University Campuses (Auckland, Palmerston North and Wellington) in New Zealand.

Evidence justified the choice of an Asian sample for the present research and validates the use of individuals of European ethnicity as the majority ethnic group referenced in the questionnaires and smile discrimination tasks in the study survey.

Conceptualisation.

Asian ethnicity categories are ambiguous and culturally diverse, so the sample frame had to be clearly defined for analysis in the current study. In NZ prejudicial understandings of Asian ethnic minority groups is based on information acquired through popular informal social discourse such as the media, family, peers and educational material. Such acquisition is representative of understandings of a social group category which has been labelled and evaluated rather than an understanding built from experience with individuals of the group (Stephan & Stephan, 1996). These understandings are not reflective of the official construction of the Asian ethnic group operationalised by the state and academic sector in NZ, as derived from national census categories and set out by Statistics NZ (McKinnon, 1996). The Asian ethnic category in national NZ census records constitutes East, South and Southeast Asian peoples, but not Middle Eastern or Central Asian peoples (Statistics New Zealand, 2013a, 2013b), a category membership that is not used in elsewhere in the world (Allan, 2001; Aspinall, 2003; Rasanathan, Craig, & Perkins, 2006).

New Zealand colloquial use of the term Asian is often more specific than the Statistics New Zealand definition, in that it excludes people with origins in the Indian subcontinent. The use of Asian to mean people of East or Southeast Asian origin is more resonant than the Statistics New Zealand definition in popular understandings of this ethnic minority group (McKinnon, 1996; Rasanathan et al., 2006). In NZ, prejudice is related to the socially constructed identity of the Asian ethnic minority group as represented in everyday social discourse, by the national news media, and in

NZ culture in general. For this reason, the present research will define the sample frame as those of East or Southeast Asian⁴ origin, as depicted in Figure 7.

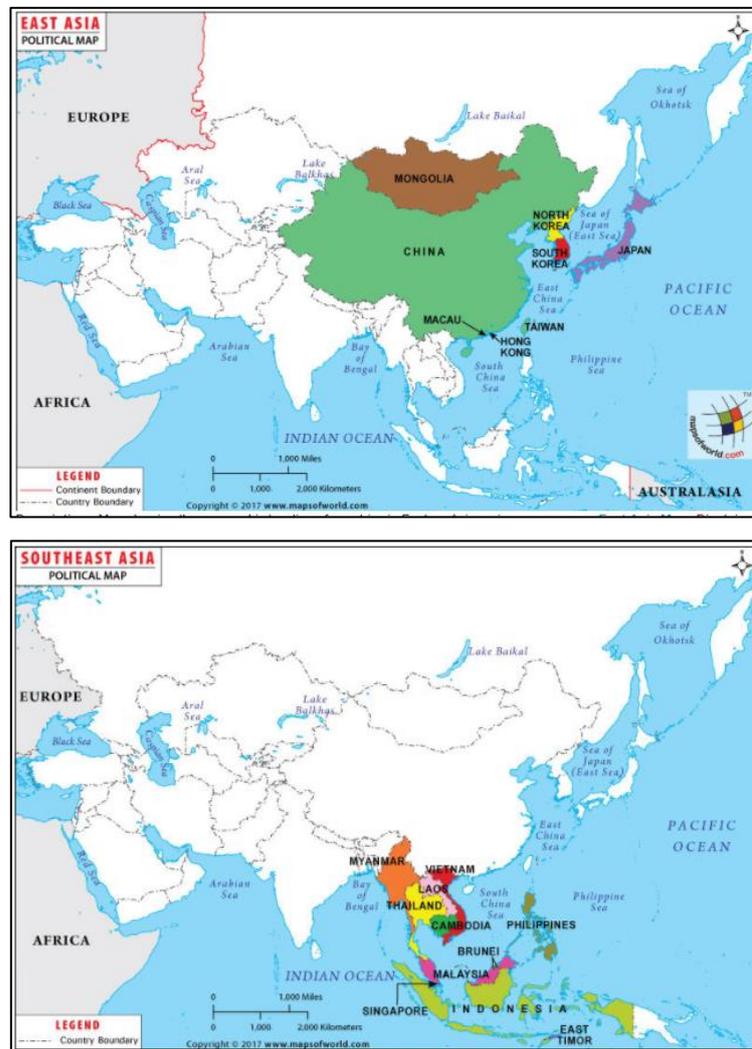


Figure 7. Part world map of countries which make up the East and South East Asia political regions (Maps of the World, 2017a, 2017b).

Experiences of Prejudice.

Prejudice toward Asian ethnic minority groups in NZ is well documented.

The level of warmth felt by other groups toward Asian New Zealanders was lower than that felt toward any other ethnic group and reported experiences of prejudice

4. East Asia is comprised of eight countries including: China, Hong Kong, Japan, Macau, Mongolia, North Korea, South Korea, and Taiwan. Southeast Asia is comprised of 11 countries including: Brunei, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

have increased in the last 20 years, but have remained unchanged for all other groups (Harris et al., 2012; Ministry of Health, 2008; Sibley & Ward, 2013). The prejudice experienced by Asian ethnic minority groups in NZ arises as a function of envisioned material threat which is exacerbated by popular media representations of increasing highly skilled and educated Asian immigrant numbers and associated envisions of economic competition for finite resources (Satherley & Sibley, 2016; Sherif, 2015; Sibley et al., 2011). White New Zealanders exert ingroup favouritism, in the form of expressions of affective prejudice, toward the Asian New Zealander outgroups. This is due to their motivation to protect ingroup norms, maintain their relative hierarchical status, power, and dominance, whilst managing the envisioned social threat to their economic wellbeing (Satherley & Sibley, 2016; Włodarczyk, Basabe, & Bobowik, 2014). Practical and theoretical evidence documenting Asian ethnic minority group experiences of prejudice in NZ further justifies the selection of this sample frame for the current research.

Taken together, the evidence provided in this section indicates a sample frame which is appropriate for examining the generalisability of existing research findings (on social exclusion and suspicion of motives relationships with smile discrimination) within more a culturally diverse context. Overall, the selections and decisions justified in this chapter will inform and underpin the development of hypotheses in Chapter 2, pilot testing and consultation in Chapter 3, and methodology in Chapter 4.

CHAPTER 2

Research Aims

Overview of the Literature

Social connection is so important to the human species that they have socially evolved a fundamental drive to form and maintain social attachments to others. The need to belong guides cognitive, emotional and behavioural strategies to monitor for threats to group membership and the direction of increased attention toward interpretation of the authenticity of motives underlying social cues signalling affiliative intent. Smiles are one such cue perceived to signal positive affect, affiliation and trust. They help facilitate the coordination of social interactions by provide a powerful social cue of an individuals' underlying emotional state. However, smiles may be expressed in the presence or absence of positive felt emotion making them an attributionally ambiguous signal of communicative intent. Sensitivity to distinctions in smile type enables perceivers the ability to determine their contextual meaning to understand others' intent in social interactions (e.g., detecting the authenticity of motives underlying expressions of social acceptance or affiliative intent). Smile type has been operationalised in the laboratory as differences between spontaneous genuine and posed deliberate smiles. Smile stimuli, based on Miles and Johnston (2007), will be used in the present research.

Aims of the Study

The current study aims to answer the question “does suspicion of motives mediate the relationship between social exclusion and smile discrimination?” This question will be answered by testing the model presented in Chapter 1. Specifically, the following relationships from that model will be examined, including; (a) the effect of social exclusion on smile discrimination; (b) the relationship between

suspicion of motive and smile discrimination; (c) the effect of social exclusion on suspicion of motive; and (d) the effect of suspicion of motive as a mediator of smile discrimination. The four hypotheses that were tested are stated and justified below.

Hypotheses Generated

Hypothesis 1. The current study seeks to investigate whether feelings of social exclusion improve individuals' ability to differentiate between the social content of others' smiles. Hypothesis 1 (H1) predicts that participants in the excluded condition of the social pain manipulation will show higher mean levels of ability to detect spontaneous genuine smiles than participants in the included condition. Social exclusion is aversive and causes individuals to experience feelings of social pain which lowers their levels of fundamental needs such as belongingness. Excluded individuals monitor their social environment, showing increased attention to social cues (smiles) signalling positive affect, to detect authenticity of others' social intent. Social exclusion improves individuals' accuracy in discriminating between smiles types. This ability provides them with information they can use to guide their affiliative behaviour in social interactions with others.

Cyberball, a well utilised and effective social exclusion paradigm, will be used in the current study to manipulate participant feelings of exclusion or inclusion. The success of the manipulation will be confirmed through administration of the Need Threat Scale. Participants' ability to detect spontaneous genuine smiles will be measured by the signal detection measure d' , a measure commonly used for this task in research examining the relationship between social exclusion and smile discrimination. If the current study replicates the effects of previous research findings, then individuals who are socially excluded will be more sensitive to facial

expression cues and show an increased ability to accurately discriminate authenticity of smiling emotional expressions.

Hypothesis 2. The present research aims to examine whether individuals who are more suspicious of others' social motives are better at differentiating the social content of others' smiles. Hypotheses 2 (H2) predicts that suspicion of motive scores will be positively correlated with spontaneous genuine smile detection scores (d'). Social norms deter ethnic majority groups from expressing prejudice toward ethnic minority groups, irrespective of their true views. Such norms create ambiguity around expressions of positive affect by majority individuals in intergroup situations, where minority individuals are uncertain about the underlying motives of such expressions. Suspicion of the motives underlying expressions of positive affect increases individuals' sensitivity to social cues signalling affiliative intent to determine their authenticity. Ethnic minorities who are more suspicious of the motives of ethnic majority individuals are better at detecting spontaneous genuine smiles compared to less suspicious ethnic minority individuals. This ability provides them with information which allows them to determine whether others are externally or internally motivated to behave in a nonprejudicial manner.

The Suspicion of Motive Index (SOMI), which is effective and the only suitable instrument available, will be administered in the present research to measure participant levels of suspicion of others' motives. If the present research has replicated the effects of previous research findings, then individuals who are more suspicious of others' motives will show increased attention to facial expression cues and display a greater ability to accurately differentiate the social content of smiles.

Hypothesis 3. The current study seeks to investigate whether feelings of social exclusion make an individual more suspicious of others' social motives.

Hypothesis 3 (H3) predicts that participants in the excluded condition of the social pain manipulation will show higher mean levels of suspicion of others' motives (SOMI) than participants in the included condition. When ethnic majority individuals exhibit prejudice, it creates exclusionary behaviour toward ethnic minority individuals in intergroup social interactions. Prejudiced behaviour lowers minority individuals' levels of fundamental needs such as self-esteem and belonging, whilst threat of prejudice increases their suspicion of majority individuals' motives for nonprejudiced behaviour. A relationship between social exclusion and suspicion of motive has not been investigated in the literature to date, but considering the research, the current study hypothesises that socially excluded ethnic minority individuals will be more attentive to the threat of prejudice which will cause them to be more suspicious of the motives underlying expressions of positive affect by ethnic majority individuals compared to included participants.

Hypothesis 4. The present research seeks to examine whether the changes in suspicion of motives mediate the relationship between individuals' feelings of social exclusion and their ability to differentiate the social content of smiles. Hypothesis 4 (H4) predicts that changes in SOMI scores will mediate participants' ability to detect spontaneous genuine smiles (d^f). Hypothesis 4 was derived from the relationships defined in Hypotheses 1 to 3.

Hypotheses for the present study were generated from a review of literature describing the conceptualisation and operationalisation of the research variables based around sociometer theory and the temporal need-threat model. These informed the development of the methodology for this research. The current study aimed to generalise social exclusion and suspicion of motive research findings to a culturally diverse sample frame, as described in Chapter 1. Consultation and pilot

testing processes were required to ensure that the methodology selected was appropriate to the participant sample. That process is described in the following chapter and was completed prior to finalising the methodology.

CHAPTER 3

Consultation and Pilot Testing

Key Considerations

To test the hypotheses stated in Chapter 2, several factors were identified during the planning process (whilst considering ethical implications for the current research) which required consultation and piloting to check the methodology before it was finalised for testing on research participants in Chapter 4. The researcher was unfamiliar with undertaking research on the sample frame to be recruited for the present study due to cultural differences between the two. The participant sample were of East and Southeast Asian ethnicity, the majority of whom were new immigrants to New Zealand (NZ). They originated from countries where English was, at best, spoken as a second language. Early in the planning stages the researcher identified that consultation would be required to ensure the utilisation of a sound methodology and respect for the culture of the participants was maintained. With respect to research methodology, it was important to ensure that the intent of the experiment was culturally sensitive and could be comprehended by participants. The following section describes the ethical, language proficiency, pilot testing and consultation processes that were undertaken with this research in the hope of providing a preliminary, but useful, 'road map' for other researchers at Massey University who may wish to follow this path.

Ethical Assessment.

An initial risk assessment was carried out in accordance with criteria set out in the Massey University Code of Ethical Conduct for Research, Teaching and Evaluation Involving Human Participants (Massey University, 2015), and was reviewed by the thesis supervisor. It was determined that participants in this study

would not be exposed to any risk beyond the risks of everyday living and that the experiment complied with the above-mentioned code of conduct. The project was evaluated by peer review and judged to be low risk, and so it was not reviewed by one of Massey University's Human Ethics Committees (Massey University Ethics Notification 4000017762).

English Language Proficiency

Comprehension of the English language was a key consideration for the current research sample frame. This was because the sample was recruited from a population who are not native English speakers. The researcher spoke to participants in English and the computer-based survey was administered in English. It was vital to ensure that the survey materials were written in a manner that could be understood by participants and that participants who were recruited were sufficiently proficient with the English language to understand both the researchers' verbal discourse and the written discourse of the survey. To this end, a consultation process was undertaken by the researcher to determine potential issues pertinent to the application of the experimental survey.

The first step of the consultation process involved the researcher investigating English language competency requirements for international students enrolling at Massey University. Comprehension was not anticipated to be problematic for the sample recruited as students who are enrolled at Massey University, and who are from a country where English is not the first language, must obtain minimum English language competency levels (Massey University, 2017). Confirmation was sought of each participants' English proficiency as part of the demographic questionnaire (refer to Appendix C). International students who are not proficient in English are

required to complete pre-enrolment courses at the University. The English proficiency standards are set out in Table 2.

Table 2

Undergraduate English Language Proficiency Enrolment Standards

Programme level	English language test			
	IELTS	TOEFL iBT	PTE Academic	CIE
Pre-Degree and Foundation Certificate in Academic English	5.0	61 overall	36 overall	155
Foundation Certificate in Advanced Academic English	5.5	70 overall	42 overall	165
Certificate in Foundation Studies	5.5	70 overall	42 overall	165
Certificate of University Preparation	6.0	80 overall	50 overall	170
Undergraduate level	6.0	80 overall	50 overall	170

Note. Massey University recognises both the IELTS and TOEFL English Language examinations. IELTS = International English Language Testing System; TOEFL = Test of English as a Foreign Language; PTE = Pearson Test of English. International Students who qualify for admission with National Certificate of Educational Achievement (NCEA) Level 3/Cambridge International Examination (CIE) from a NZ Secondary School do not need to present any additional English language evidence for general admission.

Survey Pilot Testing

The second part of the consultation process involved the researcher pilot testing the experimental survey. All experimental instructions, materials and measures for the current research were presented as a computer-based survey. The functionality of the survey was initially pilot tested by Massey University's Social Cognition Laboratory. After the initial problems were resolved, the survey was pilot tested with native Japanese and Mandarin speaking lecturers from Massey University. The lecturers were asked to complete the survey and advise the researcher of any potential language comprehension issues, culturally insensitive content, and functionality problems. Items and issues of concern were discussed with these lecturers and addressed by making changes to the survey as required. It was found that only minor changes were required, and in fact the survey instructions

and format were clear and easy to follow. A summary of issues identified during pilot testing that may have affected experimental outcomes is presented in Table 3.

Table 3

Summary of Issues Identified and Solutions Found During Pilot Testing of Survey

Issue identified	Identifier	Solution to issue
Cultural sensitivity of survey wording, questions and tasks.	Researcher	Consultation sought. No change required.
Participant comprehension of survey instructions and questions.	Researcher	Consultation sought. Changes as noted below.
Japan and China do not allow dual citizenship so need an ethnic group option allowing for NZ ^b born participants.	Japanese SE Lecturer	Include categories for 'Japanese New Zealander' and 'Chinese New Zealander'.
Japanese and Chinese are not familiar with the term 'ethnicity'.	Japanese SE Lecturer	Consider changing term to 'nationality' Decision undertaken described below.
Participants may not understand technical terms 'mental visualisation', 'emotion perception', or 'impression formation'.	Japanese SE Lecturer	Consider inclusion of Chinese or Japanese. Decision undertaken described below.
Participants from countries that fall under Chinese nationality, for example Taiwan, may not self-identify ethnically as Chinese.	Chinese ISS Officer	Maintain the use of the term 'ethnicity' to ensure participants from all countries can self-identify to their country of origin.
Difficulty understanding technical terms.	Chinese ISS Officer	Place meanings in brackets beside terms is the most practical. Too many countries included in population sample to allow sensible inclusion of translations.

Note. SE = Sport and exercise; ISS = International Student Support. It was noted that English competency may vary significantly amongst research participants, so it was decided to allow participants to utilise a dictionary on their phone if they chose to, to translate any words from the survey that they were unsure of. Consultees also identified an issue which may affect the success of recruitment of participants to the experiment. They pointed out that countries within the recruitment sample frame were, or had, experienced national conflict which may negatively impact on some recruiting methods so particular care needed to be taken to avoid this (e.g., avoiding placing Chinese, Japanese or Korean flags beside each other on posters).

Recruitment Process.

The third part of the consultation process involved awareness and development of efficient channels through which to recruit participants for the study. A key understanding gained through the pilot testing phase was that of the diverse nature of the cultural backgrounds of the sample frame. It was readily understood

that engagement of diverse communication channels was required for snowball recruitment of participants, as illustrated in Table 4.

Table 4

Communication Channels Utilised for Recruiting Participants in the Experiment Sample

Initial contact	Suggested contact	Channels	Notes
Research supervisor	Japanese SE Lecturer	Meeting	Pilot tested study Left flyers for students Emailed students' invitation to participate
	PACE	Meeting	Provide support for University staff only, not students. Left flyers for students
Japanese SE Lecturer	Dean of ELS at IPU	Email	Decided not to recruit from IPU as sufficiently large recruiting pool at Massey University. This is a change from the pre-registration document.
Dean of ELS at IPU	Head of IPU HEC	Email	External researchers require full ethical approval to recruit from IPU.
PACE	Chinese ISS Officer	Meeting	Pilot tested study Left flyers for students Distributed invitation to participate to student email lists
Chinese ISS Officer	Chinese SPO in School of Economics and Science	Meeting	Left flyers for students Emailed students' invitation to participate Suggested noticeboard locations for flyers at SSLB Building, Dining Hall, MUSA Lounge, The Centre (Chaplaincy, Waioira)
Research participants	Friends and classmates	Email	Passed on flyers to colleagues Suggested noticeboard locations for flyers at the library and the Psychology Building.
	DEEP courses	Email	Run by PACE.
	Rotary Hall of Residence	Meeting	Contact Accommodation Services in the Student Centre Building to have flyers placed on hall of residence noticeboards
	Chinese Student Association	Email	Translated and distributed invitation to participate to Chinese student email lists
Other	Japanese Theatre	n/a	Not contacted as no need to.
	Student radio station	n/a	Not contacted as no need to.

Note. PACE = Professional and Continuing Education team; ELS = English Language School; IPU = Institute of the Pacific United tertiary education institution, Palmerston North, New Zealand; HEC = Human Ethics Committee; SPO = Strategic Projects Officer; SSLB = Social Sciences Lecture Block; MUSA = Massey University Students Association; DEEP = Direct Entry English Pathway. Several communication channels described included electronic messaging, so to maintain the privacy of potential participants the contact people never provided the researcher with email addresses, but rather emailed an invitation to participate to the individuals on their email lists.

Due to the within-group diversity present in the sample frame, research findings may not be generalised to either specific ethnicities comprising the overall sample (e.g.,

Japanese or Chinese) or broader categorisations of Asian ethnicity (e.g. Indian Subcontinent or Middle Eastern countries).

Future Research Using This Sample Frame

Throughout the consultation and recruitment process it was evident that the population sample selected for the current study were extremely interested and eager to become involved in psychological research at Massey University. All the participants booked in for appointments completed the survey and 94% requested that the researcher provide them with the final results of the study. The lecturers consulted for advice were willing to help with recruitment and keen to develop and establish research links between the Asian ethnic teaching/student population and the Psychology Department at Massey University School of Humanities. The following chapter defines the methodology utilised in this study, which was informed by the processes undertaken and described in this chapter.

CHAPTER 4

Method

The final methodology to test the research hypotheses (defined in Chapter 2) for the current study was decided upon after the consultation and pilot testing process outlined in Chapter 3, but also informed by the theoretical model developed in Chapter 1 and the conceptualisation and operationalisation review undertaken in the same chapter. This chapter provides details of the pre-registration, experimental design and participants recruitment for the current research. The section on measures and materials describes application of the facial display stimuli and social exclusion manipulation, including their associated measures, as well as the Suspicion of Motives Index (SOMI) instrument. Procedural steps are clearly defined in the final section of this chapter. The flow diagram, depicted in Figure 8, describes the time course of the present study. Each of these steps will be described in greater detail in the method section that follows.

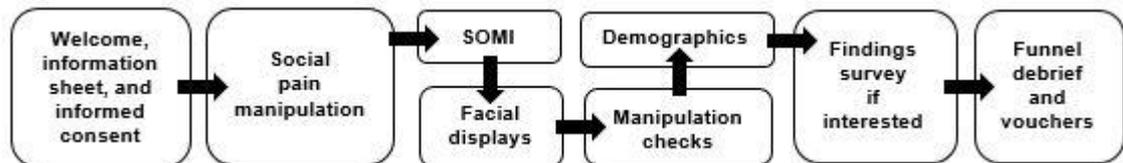


Figure 8. A schematic of the time course of the experiment.

Pre-registration.

The methodology for this experiment was pre-registered online (AsPredicted, 2017). A PDF of the pre-registration document (#4710) was made public after data collection was completed on 1 September 2107 and can be viewed online (<https://aspredicted.org/8av4b.pdf>). Pre-registration a priori power analysis for 100 participants ($\alpha = .05$; power level .80) using G*Power 3.1.9.2, determined a medium effect size ($d = 0.50$) for this study (Cohen, 1988), which is in keeping with other

studies on smile discrimination (using d'). A 54 participant SOMI study by Kunstman et al. (2016) had a medium effect size ($d = 0.60$), whilst a 48 participant social exclusion study by Philipp et al. (2012) also had a medium effect size ($d = 0.63$).

Design

Participants were randomly assigned to one of two Independent Variable (IV) social pain conditions (the inclusion group or the exclusion group) in a between-subjects, two-group, post-test only design. Allocation of participants to randomly assigned conditions was administered via computer script within the Qualtrics survey. Suspicion of others' motives (as measured by SOMI) and ability to detect spontaneous genuine smiles (as measured by d') served as the two dependent variables (DV).

Participants

Individuals were recruited for this experiment as part of a convenience sample drawn from Massey University in Palmerston North in New Zealand (NZ). All participants were aged 18 years or older, so they could independently provide informed consent. Overall, 111 self-identified East and Southeast Asian ethnic minority undergraduate and postgraduate students were recruited and administered the survey. Participants volunteered to take part in the study in return for a \$10.00 New World gift voucher as reimbursement for their time. Available funding for the present research allowed resources for a maximum of 110 participants which was more than the 100 participants stated in the pre-registration document. This was due to the supply of additional New World gift vouchers, allowing for the power of the study to be maintained following potential data exclusions. Places were offered in the experiment until 110 students agreed to participate or until 5:00 p.m. on

1 September 2017 (whichever came first). The use of a convenience sample means the current research findings may not be used to generalise to wider populations or to the broader category of “Asian” used in national census data by Statistics New Zealand (described earlier).

The snowballing method of recruitment was used via word of mouth, student email lists, paper posters on noticeboards and messages in ethnicity-specific online chat rooms (refer Table 4). Individuals who were interested in participating emailed the researcher via an email address (socialperceptionstudynz@gmail.com) which was specifically created for the purposes of this experiment. The creation of this email address allowed the researcher to efficiently administer correspondence pertaining to this study and helped maintain participant confidentiality by isolating experimental activities from other business of the researcher. All expressions of interest were replied to by emailing potential candidates with a request to book an appointment to meet the researcher. Non-replies to the researchers’ responding email were followed up seven days later with one reminder email asking if the individual was still interested in participating in the study.

All participants who booked an appointment with the researcher proceeded to participate in the study. Though they completed the survey, two participants were excluded from analysis due to familiarity with the social pain manipulation and smile discrimination stimuli (identified during the suspicion probe which is described in the procedure section), and a further two participants were excluded for ethnicity responses that were incompatible with the sample frame specified in the pre-registration document (identified from screening items in the demographic questionnaire, refer to Appendix C). The final experiment consisted of 107 participants (29 men, 78 women, $M_{\text{age}} = 25.95$ years, $SD_{\text{age}} = 6.24$, age range = 18.00

to 50.00). Participants had lived in NZ for a mean time of 2.70 years ($SD = 3.92$) and most self-identified their ethnicity as Chinese (67%), followed by Vietnamese (4%), Japanese and Chinese New Zealander (both 3%) respectively. Demographic characteristics of the experimental sample are summarised in Table D1 (Appendix D). Random allocation to social pain condition controlled for individual differences in age, gender, time lived in NZ, and ethnicity. Preliminary Mann-Whitney U tests and chi-square tests provided evidence to confirm that conditions did not differ by these variables, refer to Table D2 (Appendix D).

Measures and Materials

All stimuli and measures for the current research were presented in one online survey via computer to participants. These stimuli and measures are described below.

Facial display stimuli. The facial displays used in the present study comprised a total of 14 static photographs of faces exhibiting smiling expressions. The image stimuli included two different photographs (1 spontaneous genuine smile; 1 posed deliberate smile) from each of seven individuals (3 male; 4 female) of White New Zealander ethnic majority origin. Participants were advised that this task was concerned with emotion perception (i.e., the ability to identify emotion in others). They were instructed to view the photo presented in each trial, then decide about whether they felt the smile they saw was genuine. Each participant viewed all trials and there were no practice trials. Stimuli were presented individually, as colour images at 72 dots per inch (dpi) resolution and standardised for brightness, contrast and size (640 pixels high by 480 pixels wide). Each trial duration lasted 2 s before the computer automatically moved on to present the participant with the smile

classification question. Examples of each smile type can be seen in Figure 9 or refer to Appendix E for the full set of stimuli.



Figure 9. Examples of a spontaneous genuine smile (left) and a posed deliberate smile (right) used in the present research.

Smile classification. After each facial display stimuli trial participants indicated whether they believed the stimuli target displayed a spontaneous genuine smile by responding, on a bipolar scale of 1 (*yes*) to 2 (*no*), to the question, “Is this smile a genuine enjoyment smile?” The purpose of this question was to assess participants’ ability to detect spontaneous genuine smiles after completing the social pain manipulation. Hit rates, false alarm rates and d' scores were calculated in the Statistical Package for Social Science Statistics, with higher d' scores (present sample, $M_d = 0.92$, $SD = 0.74$) indicating greater accuracy in detecting spontaneous genuine smiles (Bernstein et al., 2008; Kunstman et al., 2016). All participants, except for four responses, had positive d' scores (range = -1.38 to 2.42) indicating that they were understanding and answering items correctly. Mean d' scores were within the range indicated in previous research (included condition $M_{\text{range}} = -0.04$ to 1.34; excluded condition $M_{\text{range}} = 0.38$ to 1.88) providing further evidence of the

reliability of the measure in this study (Bernstein et al., 2008; Philipp et al., 2012; Young, 2016).

Social pain manipulation stimuli. Cyberball was administered to participants to elicit feelings of either social exclusion or inclusion. Procedures for the present study replicate those set out by Zadro et al. (2004), whereby participants played the game with two other players, of whom they were aware were computer simulated. Cyberball was downloaded online (<https://cyberball.wikispaces.com/>) as was the user manual (Williams et al., 2012). A pre-set script manipulated the social pain experience by controlling the degree to which participants received the ball, with the ball toss order passed to each player randomised. The game concluded after 40 trials. Socially included participants were repeatedly tossed the ball, resulting in an equal number of passes compared to other players, at approximately one third of the total passes. Socially excluded participants received two tosses of the ball at the beginning of the game. After these initial passes they did not receive the ball again, as the computer simulated players only toss the ball to each other, resulting in fewer passes for the excluded participants than the other players (Zadro et al., 2004).

The standard Cyberball introduction screen was modified to suit the present experiment. Participants were advised that as we were testing the effects of practising mental visualisation (i.e., imagining or creating a picture in your mind) on impression formation and emotion perception, we needed them to practice their mental visualisation skills (Williams & Jarvis, 2006). They were told that we had found that the best way to do this was to have them play an online ball tossing game with computer-controlled players, which lasted for 3 minutes. Participants were told their ball tossing performance was not important, but it was important that they mentally visualised the entire experience. They were asked to imagine what the other players

looked like. What sort of people were they? Where were they playing? Was it warm and sunny or cold and rainy? They were instructed to create in their mind a complete mental picture of what might be going on if they were playing this game in real life.

Cyberball is animated and shows cartoon characters tossing a ball to other players. When participants received a ball pass, they are instructed to click with their computer mouse on one of the other two animated players to pass the ball to whichever one they had chosen, refer to Figure 10 which shows the Cyberball game screen layout (Williams et al., 2000; Zadro et al., 2004).

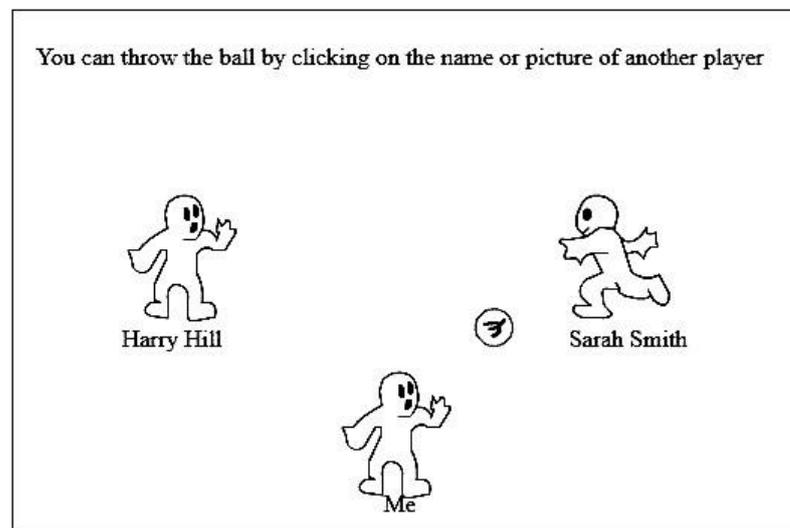


Figure 10. The Cyberball game screen where participants are represented by the player at the bottom of the screen with computer simulated players standing either side.

Many settings within the game can be adjusted to suit specific research requirements. The ball movement time between players in each trial was randomised, lasting between 0 to 4 s, to create a sense that each player was making a choice about throwing to another player. The names of the two computer simulated players were modified from the downloadable version of the game to reflect names of people of White New Zealander ethnic origins, to keep the context aligned with the following SOMI questionnaire. There was no “Spectate” option selected in the setting parameters for

this game, meaning that participants did not get to practice the game before playing. Neither the “Chatbox” (allows conversation between players) or the “Pictures” (image beside animated player characters) setting options were selected as these were not appropriate where no cover story was involved (Williams et al., 2012; Zadro et al., 2004).

Needs Threat Scale. The 12-item self-report questionnaire was administered following procedures set out by Zadro et al. (2004), in order to confirm the effectiveness of the social pain manipulation, by assessing the level that all participants felt that their four primary needs (belongingness, self-esteem, control and meaningful existence) were threatened during Cyberball. A minor wording change was made to the original Needs Threat Scale (NTS) questionnaire (Williams et al., 2000) in order to enhance the clarity of survey instructions, refer to the NTS footnotes in Appendix F.

Participants indicated the level of their perceived need for each item on 9-point Likert-type scales, labelled at each end only, from 1 (*not at all*) to 9 (*very much so*). Items were reverse scored where necessary. Scores on each item for each of the four subscales were summed and averaged to create a subscale score ranging from 1 to 9. Subscale scores were then averaged to create a composite NTS score ($\alpha = .89$; range = 1.00 to 9.00). Participants with higher composite NTS scores indicated a higher perception of currently possessing the four fundamental needs after playing Cyberball. Lower composite NTS scores (present sample, $M_{NTS} = 4.62$, $SD = 1.83$, range = 1.25 to 8.42) indicated that participants felt their psychological needs threatened to a greater degree, meaning they felt more socially distressed after the game (Philipp et al., 2012; Zadro et al., 2004).

Suspicion of Motives Index. The SOMI is a 10-item self-report questionnaire (Major et al., 2013). Participants were advised that it was concerned with impression formation (i.e., how one person perceives or understands another person) and that they would be asked about their beliefs about other people's behaviour. The SOMI (refer to Appendix G) was administered to determine the effect of the social pain condition on the dependent variable of the East and Southeast Asian participants' levels of suspicion of White New Zealanders' motives for nonprejudiced behaviour. It also sought to determine the relationship between changes in both participants' levels of suspicion and their ability to detect spontaneous genuine smiles. Some wording in the questionnaire, which was originally developed and administered on research sample frames based in the United States of America (Major et al., 2013; Plant & Devine, 1998), needed to be adjusted to suit the situational context of research occurring in NZ (refer Appendix G footnotes).

The SOMI response format allows participants to indicate agreement for Perceived External Motivation subscale (PEMS) and Perceived Internal Motivation subscale (PIMS) items on separate Likert-type scales, labelled at each end only, from 0 (*completely disagree*) to 6 (*completely agree*). No items were reverse scored. The score for each item is summed for each subscale and then averaged (possible subscale score range = 0.00 to 6.00). SOMI scores were calculated by subtracting the participants' scores on the PIMS ($\alpha = .70$) from their scores on the PEMS ($\alpha = .62$; possible score range from - 6.00 to + 6.00). The PEMS and the PIMS were not inversely correlated in this experiment, $\rho(105) = -.003, p > .05$. Minority ethnic group participants with positive SOMI scores were labelled "suspicious" (present sample, $M_{\text{SOMI}} = -0.66, SD = 1.44, \text{range} = -3.60 \text{ to } 4.00$), indicating that they believed that majority ethnic group individuals were motivated to behave in

nonprejudiced ways more due to external concerns such as wanting to appear to be nonprejudiced to others, rather than an internal personal commitment to egalitarianism (Kunstman et al., 2016; Major et al., 2016).

Procedure

Greeting and introduction. This experiment was conducted in sessions lasting 30 to 45 min, depending on the English language proficiency of the participant. Participants arrived at the computer lab and were greeted at the start of each session by the researcher, before being provided with an information sheet to read through. The researcher verbally advised participants that they could use a dictionary on their phones to look up words that they did not understand, both when reading the information sheet and while completing the study. The information sheet invited participants to take part in the study and outlined relevant experimental details including: the purpose of the research, participant eligibility criteria, task requirements, level of risk, confidentiality protection policies, participant rights (including voluntary participation and the right to withdraw at any time) and researcher contact details. Participants were advised that the purpose of the study was to investigate if impression formations underpin the relationship between mental visualisation and emotion perception. After reading the information sheet, participants were provided the opportunity to ask questions and clarify anything they were unsure of. Participants were asked if they wished to proceed with the study, and if so, they were asked to sign a paper informed consent form indicating they understood the information they were given, prior to commencing the study. Only the researcher had access to any identifiable information that participants provided. Identifiable data such as consent forms and email addresses were stored separately

from the data collected during the study. All personally identifiable data will be securely stored for a period of five years and then destroyed.

Experimental process. Sessions took place in a computer lab where participants sat in an isolated individual cubicle where they could not see or interact with the researcher. Each cubicle was equipped with a desktop computer and participants sat approximately 70 cm from a 55 cm (21.5 in), 16:9 aspect ratio, LED 1080p (full HD) 1920 x 1080 computer monitor. Prior to beginning the study, the researcher verbally advised the participant that all instructions were provided via the computer and that they were to make the researcher aware when they had finished. The researcher then left the participant by themselves to complete the experimental tasks. All experimental instructions, independent variable manipulations, and dependent variable stimuli and measures were presented on a web page, administered in the form of an online survey using Qualtrics survey software (Qualtrics, 2017), refer to Appendix H for the Qualtrics Survey Flow. The instructions for each task were provided on individual pages and questions for measures were presented one at a time. Participants could complete the survey at their own pace and clicked a “Next” button located at the bottom of each page to progress to the following page. If an item response was not checked Qualtrics presented a message to remind the participant to do so before moving on. This message also contained an option to move on without answering the question because answering each question was not compulsory. Only the demographic question requesting the participants age was compulsory as this was a mandatory condition of eligibility to participate in the study.

The first task that participants completed in the survey was the social pain manipulation. The Cyberball game was installed on a web host and ran as a website

accessed through the local computer when required by the Qualtrics survey.

Qualtrics automatically randomly assigned participants to either the inclusion or exclusion condition by accessing the respective version of Cyberball when they clicked the “Next” button at the bottom of the Cyberball instruction page. Qualtrics managed how long each participant spent on the game page by timing the presentation of the appearance of the “Next” button, thereby controlling when the participant could move onto the next task. This ensured that participants spent a minimum of 1 min 50 s playing the game (long enough to complete the game, on average). The standard Cyberball farewell message was modified to redirect players back into the main Qualtrics survey. After the social pain manipulation, all participants completed the SOMI measure followed by the smile discrimination task. Qualtrics managed how long a participant could spend on each facial display stimuli page by timing the presentation of each photo and automatically presenting a new page with the smile discrimination question after each trial.

Upon completion of the first three tasks in the survey, all participants were instructed to answer two brief sets of questions regarding their thoughts and feelings relating to their experience of the mental visualisation task (Cyberball), following procedures set out by Zadro et al. (2004) and Williams et al. (2012). These two sets of questions consisted of the NTS followed by manipulation check questions designed to assess the success of the quantity of exclusion felt by participants in each social pain condition (refer to Appendix F to view the social pain manipulation check). The social pain manipulation check consisted of 3 self-report items. On the first two items, participants indicated their agreement for each item on 9-point Likert-type scales, labelled at each end only, from 1 (*not at all*) to 9 (*very much so*). Items were reverse scored where necessary. On the third item, participants indicated

their response on a 10-point sliding scale, labelled from 0 to 100. If the social pain manipulation was successful, then quantities of social exclusion felt by participants in each condition should be significantly different. Qualtrics automatically randomised the order of presentation of items for both the SOMI and NTS measures, as well as the order of facial display stimuli trials, across participants to control for order effects. Finally, all participants responded to a series of demographic questions. The last four items on the demographic questionnaire assessed participants' English language proficiency (refer to Appendix D, Tables D3 and D4). Participants who did not meet Massey University language competency requirements were excluded from analysis.

Feedback to participants. At the end of the main Qualtrics survey participants were provided the opportunity to indicate whether they wished to be notified of the experiment results. If they responded that they would like to receive a summary of findings, then they were automatically redirected to a separate independent Qualtrics survey where they could enter their email address. This ensured that participants data remained anonymous because there was no physical link between their survey data and their identifiable email data because this information was kept separate. At the end of the survey procedure participants were instructed to notify the researcher that they had finished.

Suspicion probe and debrief. Upon survey completion, a funnel debrief was undertaken by the researcher in accordance with methods set out by Priest and Gass (2005). The researcher assumed participants had no prior knowledge of the study methodology and so conducted a verbal suspicion probe to assess whether the participant would divulge awareness about any aspect of the experimental design. Procedures for the suspicion probe were similar to those set out in experiments

assessing smile discrimination by Johnston et al. (2010) and Young (2016). If the participant indicated familiarity with the research purpose or procedures their data was discarded to maintain methodology soundness. As suggested by Blackhart, Brown, Clark, Pierce, and Shell (2012), participants were requested to refrain from talking to students who may take part in the study in the future about details of the nature of the survey in order to avoid the effects of crosstalk on research results. The nature and order of the questions the researcher asked the participants are indicated in the funnel debrief schematic presented in Figure 11.

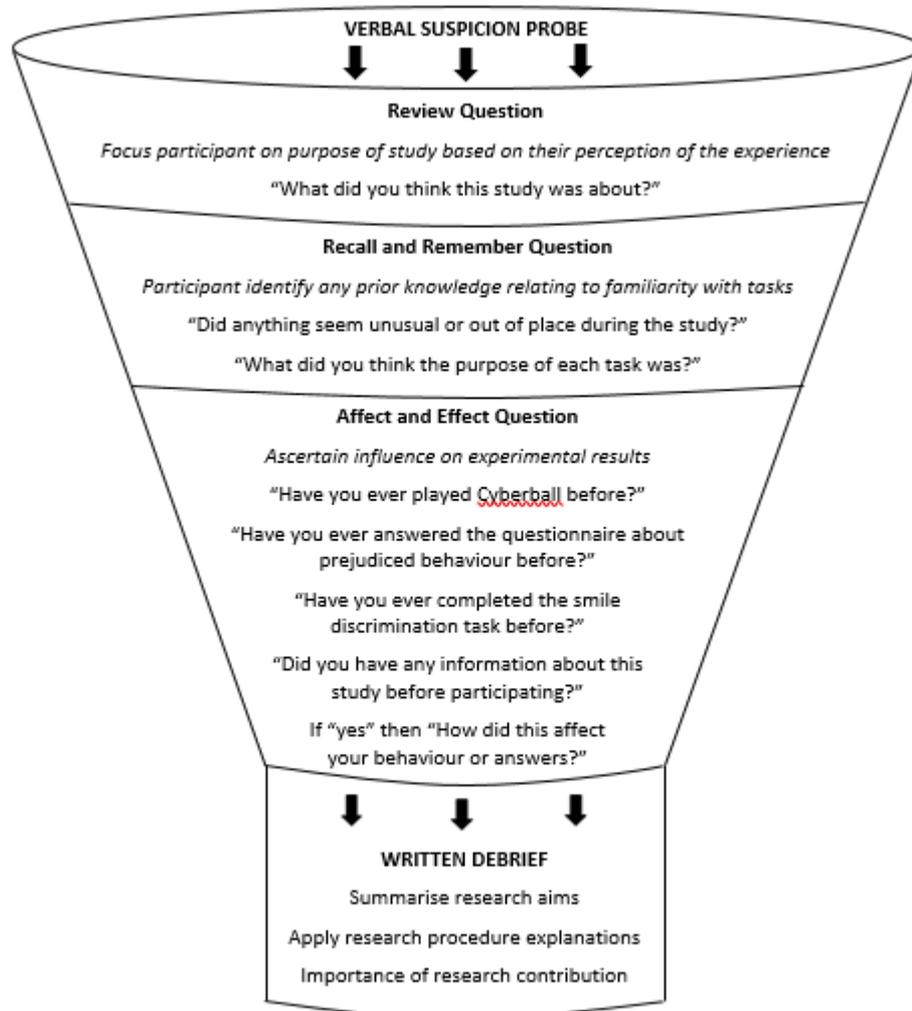


Figure 11. A schematic of the funnel debrief the researcher used with participants after completion of the main Qualtrics survey.

Following the suspicion probe participants were extensively debriefed in writing. The debrief sheet provided participants with a detailed explanation of the research aims, procedures, and importance. During debriefing the true nature of the study was divulged to participants and they were again provided with the opportunity to withdraw, though none did. The risk of harm to participants was minimal but contact details of Massey University support services were listed at the end of the debrief sheet should participants require to use them after completion of the study. Participants were provided with the opportunity to discuss any concerns or ask any questions they had with the researcher and they were reminded that there as a link to the researchers' email address on the information sheet if they needed to contact the researcher after the completion of the study. Finally, all participants were thanked and offered a \$10.00 New World gift voucher as reimbursement for their time. One participant did not wish to accept the voucher, so it was offered to another participant recruited to take part in the study.

CHAPTER 5

Results

The results chapter is divided into seven sections, the first five of which are analyses set out in the pre-registration document. The first five sections include statistical software and data reduction, hypothesis testing, assumption checks, manipulation checks, and Confirmatory Data Analysis (CDA). The last two sections are Exploratory Data Analysis (EDA) which were performed because CDA results indicated that phenomena, other than those predicted, were occurring with the sample.

Statistical Software and Data Reduction

After participants had completed the experimental survey described in Chapter 4, all raw data was downloaded from the main Qualtrics survey, cleaned and reduced prior to performing statistical analysis. The software package used to analyse all data was International Business Machines Statistical Package for Social Science Statistics v25 for Windows (International Business Machines Support, 2017). Descriptive statistics have been described previously in Chapter 4 and the associated summary tables can be seen in Appendix D. No data were missing for the manipulation check or CDA items. Some demographic items contained missing responses which did not affect quality of analytical outcomes, so these participants' data were not excluded from analysis. Where relevant, missing data is noted in descriptive statistic tables in the appendices.

Hypothesis Testing

Data analyses were completed using null hypothesis testing to compare relationships between two Independent Variable (IV; socially excluded and included groups of participants) conditions. Null hypotheses (H_0) proposed no statistical

relationship between the two conditions, compared against alternative hypotheses (H_1) for a relationship between the two conditions. Comparisons were statistically significant below the threshold of alpha .05 (i.e., if $p < .05$ evidence was sufficient to reject H_0). If $p > .05$ then H_0 could not be rejected because the evidence was insufficient to support any conclusion. Effect sizes (r , V and ρ) above .50 were considered practically significant. Prior to testing hypotheses, it was necessary to check statistical assumptions and the effectiveness of the social exclusion manipulation.

Assumption Checks

Assumption checks were completed before undertaking manipulation checks or CDA, to ensure that the statistical methods stated in the pre-registration document were appropriate to test the data for each hypothesis. The parametric tests to be used included: (a) independent samples t -tests for manipulation checks; (b) independent samples t -tests for Hypothesis 1 and 3; (c) Pearson's product-moment correlation for Hypothesis 2; and (d) mediation analysis for Hypothesis 4. Several assumptions were met for each test including independence of observations, an IV with two categorical groups, and a Dependent Variable (DV) measured at a continuous level.

The researcher completed a visual inspection of boxplots of each DV for both the manipulation check and confirmatory analysis data (Appendix I, Figures I1 and I2 respectively). These indicated that the assumption of normality required for parametric tests was violated in each case (confirmed by both large skewness coefficient and significant Shapiro-Wilk statistics). The assumption of minimal outliers required for Pearson correlations was also violated, as indicated by their presence in the boxplots displayed in Figure I2. The violation of the parametric test

normality assumption meant the researcher performed non-parametric testing of each hypothesis.

The non-parametric tests used included: (a) Mann-Whitney U tests for manipulation checks; (b) Mann-Whitney U tests for Hypothesis 1 and 3; and (c) Spearman's rank-order correlation for Hypothesis 2. The researcher completed a visual inspection of DV histograms, comparing distributions by IV condition, for both the manipulation check and confirmatory analysis data. These showed a violation of the assumption that DV scores for each IV group have approximately the same shape distribution, meaning that mean ranks rather than medians, were compared in Mann-Whitney U tests for manipulation checks and CDA. The researcher proceeded with manipulation checks after assumption checks were completed and determined to be acceptable.

Manipulation Checks

The exclusionary status of participants was assessed by manipulation check questions which confirmed the success of the social pain manipulation.

Mann-Whitney U tests for all questions found evidence showing there were statistically significant differences in DV scores between the two IV conditions when comparing the mean ranks of each distribution of scores. Excluded participants perceived themselves to possess lower levels of the four fundamental needs compared to included participants, after playing Cyberball ($U = 419.00$, $z = -6.31$, $p < .001$, $r = .61$). They also reported that they received fewer passes than included participants during the game ($U = 212.50$, $z = -7.61$, $p < .001$, $r = .74$). Two-tail p values were reported for these two Mann-Whitney U test (fundamental needs and the passes received) as results did not go in the expected direction (not a one-tail p value as per the pre-registration document). Participants in the exclusion condition felt

more ignored and excluded during the game ($U = 427.50$, $z = -6.32$, $p < .001$, $r = .61$), while participants in the inclusion condition felt more noticed and included during the game ($U = 518.00$, $z = -5.74$, $p < .001$, $r = .56$). Median and mean rank scores are summarised in Appendix I, Table II. The researcher proceeded with non-parametric CDA after manipulation checks provided evidence to conclude a successful social pain manipulation.

Confirmatory Data Analysis (CDA)

Bivariate analysis of each hypotheses was performed, accounting for non-parametric testing methods.

Hypothesis 1. The current study predicted that after the social pain manipulation excluded participants would report higher levels of ability to accurately detect spontaneous genuine smiles, as measured by d' scores, compared to included participants (H_1 : the distributions of both populations are unequal). Table 5 shows the median and mean rank scores for the Mann-Whitney U test, which found no statistically significant effect of between-group difference in mean rank d' scores to support the prediction ($U = 1337.00$, $z = -0.59$, $p = .557$, $r = .06$).

Table 5

Median, Mean Rank, Minimum and Maximum Values for the Smile Classification d' Variable as a Function of Social Pain Condition.

Variable (DV)	Social Pain Condition (IV)							
	Exclusion ($n = 54$)				Inclusion ($n = 53$)			
	<i>Mdn</i>	<i>MRank</i>	Min	Max	<i>Mdn</i>	<i>MRank</i>	Min	Max
d'	0.98	52.26	-1.38	2.42	0.98	55.77	-0.65	2.42
Hit rate	0.69	53.83	0.19	0.94	0.69	54.17	0.44	0.94
False Alarm rate	0.44	57.46	0.06	0.94	0.44	50.47	0.06	0.81

Notes. Hit and false alarm rates are subscales for d' scores and are included for future reference in this chapter.

A two-tail p value was reported for this Mann-Whitney U test as results did not go in the expected direction (not a one-tail p value as per the pre-registration document). Findings indicated that feelings of social exclusion did not affect participants ability to detect spontaneous genuine smiles, with similar distribution of d' scores by condition, so H_0 (the distributions of both populations are equal) was not rejected due to insufficient evidence to support any conclusion.

Hypothesis 2. The present research predicted that after the social pain manipulation there would be a positive monotonic relationship between participants' levels of suspicion of others' motives, as measured by SOMI, and their d' scores⁵ ($H_1 : \rho \neq 0$). The Spearman rank-order correlation found no statistically significant effect of a monotonic relationship between DV scores ($\rho(105) = -.09, p = .175$), further supported by evidence shown in Figure 12.

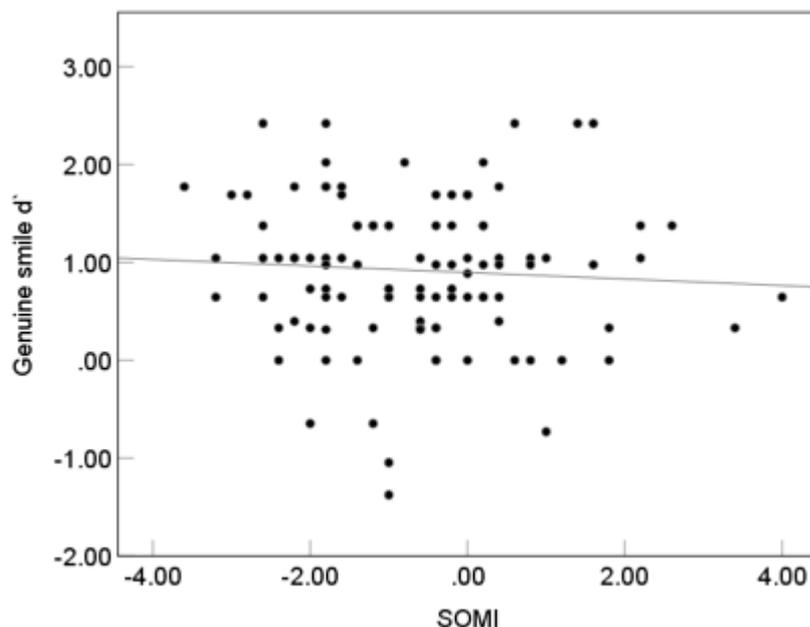


Figure 12. Socially excluded or included participants spontaneous genuine smile d' scores as a function of their Suspicion of Motives Index (SOMI) scores.

5. Hit rates of 1.0 or false alarm rates of 0 contain corresponding z scores which are infinite so all (for consistency) hit and false alarm rates were computed using the Snodgrass and Corwin (1988) correction procedure.

Findings indicated that there was no monotonic correlation between participants' SOMI and d' scores in the population, so H_0 ($\rho = 0$) was not rejected due to insufficient evidence to support any conclusion.

Hypothesis 3. The current research predicted that after the social pain manipulation excluded participants would report higher levels of suspicion of other's motives compared to included participants (H_1 : the distributions of both populations are unequal). Contrary to prediction, the Mann-Whitney U test found no statistically significant effect of between-group difference in mean rank SOMI scores ($U = 1365.00$, $z = -0.41$, $p = .680$, $r = .04$). A two-tail p value was reported for this Mann-Whitney U test as results did not go in the expected direction (not a one-tail p value as per the pre-registration document). Feelings of social exclusion did not affect participants suspicion levels, with similar distribution of SOMI scores by condition, so H_0 (the distributions of both populations are equal) was not rejected due to insufficient evidence to support any conclusion. Median and mean rank scores for the two IV conditions are shown in Table 6.

Table 6

Median, Mean Rank, Minimum and Maximum Values for the Suspicion of Motives Index (SOMI) Variable as a Function of Social Pain Condition.

Variable (DV)	Social Pain Condition (IV)							
	Exclusion ($n = 54$)				Inclusion ($n = 53$)			
	<i>Mdn</i>	<i>M Rank</i>	Min	Max	<i>Mdn</i>	<i>M Rank</i>	Min	Max
SOMI	-1.00	52.78	-3.60	4.00	-0.40	55.25	-3.20	3.40
PEMS	3.40	51.06	0.60	6.00	3.80	57.00	0.80	5.60
PIMS	4.20	52.36	0.40	6.00	4.40	55.67	1.60	5.80

Notes. Perceived External Motivation subscale (PEMS) and Perceived Internal Motivation subscale (PIMS) form the SOMI and are included for future reference in this chapter.

Hypothesis 4. The present study predicted that changes in participants' levels of suspicion of others' motives would mediate their ability to accurately detect

spontaneous genuine smiles. This mediation analysis was not performed as there was insufficient evidence supporting the predictions made in previous hypotheses, and hence inadequate evidence to support the current hypothesised prediction of a mediating relationship. Overall, null hypothesis testing for confirmatory data analysis provided no statistically significant evidence to support any of the hypothesised relationships predicted.

Exploratory Data Analysis (EDA) With Refined Exclusion Criteria

The results of the CDA did not find evidence to support the hypotheses of the current study, indicating that a different set of phenomena had occurred within this sample. Considering these findings, the researcher reassessed the data set and identified several outliers and anomalies which may have adversely influenced CDA testing. These data had not been identified at the time of pre-registering the current study. The following three observations were made:

1. Manipulation checks confirmed statistically significant between-group differences in mean rank feelings of social exclusion after the social pain manipulation. Despite these findings, there were considerable upper and lower limit overlap of responses to manipulation check items between conditions, as shown in the boxplots in Figure I1, Appendix I (also see minimum and maximum response values in Table I1). This overlap suggests that some participants incorrectly attributed their feelings of exclusion or inclusion.
2. Signal detection scores should be greater than zero ($d' > 0$). Despite this, some participants responses scored negatively on the d' measure, as indicated by the lower limit and outliers shown in the boxplot in Figure I2, Appendix I (also see minimum response values in Table 5). These scores indicate noise suggestive of participants inability to distinguish between smile type signals

($d' = 0$) or their doing the opposite of what they were instructed ($d' < 0$).

3. The SOMI is used based on the assumption of an inverse correlation between the PEMS and PIMS subscales (see previous research described in Chapter 1). Despite this, the current study found no evidence of such a relationship, as shown in the scatterplot in Figure I3, Appendix I (also see the summary of correlational analysis of PEMS and PIMS subscales in Table J1, Appendix J). The lack of inverse correlation suggests a likely explanation for the response overlap between conditions indicated by the boxplot in Figure I2, Appendix I (also see minimum and maximum response values in Table 6).

Based on these observations, pre-registered data exclusion criteria were redefined.

Data indicating outlier responses or not fitting within limits expected for participants' allocated condition were removed, as summarised in Table 7.

Table 7

Data Exclusion Criteria for Participants Excluded From Exploratory Analysis

Variable (DV)	Participant score exclusion limits		Number excluded ($n = 44$)
	Exclusion Condition (IV)	Inclusion Condition (IV)	
NTS	> 5	< 5	25
Feeling of exclusion	< 5	> 5	6
Feeling of inclusion	< 5	> 5	6
Throws received	> 20	< 20	3
d'	< 0	< 0	4

Notes. Social pain manipulation check questions can be seen in Appendix F. No exclusion criteria were set for Perceived External Motives Subscale (PEMS) or Perceived Internal Motives Subscale (PIMS).

The refined data exclusion criteria were applied in EDA which re-examined the previously stated hypotheses. Rather than use the SOMI, the hypotheses were

retested using the PEMS and PIMS subscales⁶ individually. Hypotheses 2 and 3 were reframed to account for PEMS and PIMS subscales (two dependent variables instead of one). A smaller alpha of .025 was used with all EDA to reduce the Type 1 error associated with the higher risk of Type 2 error. The final sample consisted of 63 participants (excluded condition $n = 36$; included condition $n = 17$).

Assumption checks. A visual inspection of the boxplots depicted in Figure J1, Appendix J, showed PIMS DV responses were negatively skewed, violating the normality assumption for independent samples t -tests (confirmed by both large skewness coefficient and significant Shapiro-Wilk statistics). Considering these findings and given the potential for low sample numbers to influence normality, non-parametric tests were run for hypotheses analyses. Median, mean rank and test results are summarized in Appendix J, Tables J2 and J3, respectively.

Hypothesis 1. The CDA prediction remained unchanged and the EDA outcome did not differ. Upon application of the refined data exclusionary criteria, the Mann-Whitney U test found no evidence supporting a statistically significant between-group difference in mean rank d' scores. The distribution of both populations was approximately equal, indicating that after the social pain manipulation it was unlikely that excluded participants would report higher levels of ability to accurately detect spontaneous genuine smiles, compared to included participants.

Hypothesis 2. The CDA prediction was reframed so that: (a) participants' PEMS scores would be positively monotonically correlated their d' scores; and (b) participants' PIMS scores would be negatively monotonically correlated with their d'

6. The reliability and correlation coefficients for the PEMS and PIMS subscales are reported in Appendix J, Table J1 for each stage of the exploratory analysis. Of note is that overall the PEMS reliability improved whilst the PIMS reliability remained marginal. At no stage were the PEMS and PIMS correlated, inversely or otherwise.

scores. After application of the refined data exclusionary criteria, the Spearman's rank-order correlation found no evidence to support a statistically significant monotonic relationship between DV scores, further supported by evidence shown in Figure J2 (Appendix J). The EDA outcome remained unchanged from CDA, with findings indicating that after the social pain manipulation it was unlikely that there was any type of monotonic correlation between either PEMS or PIMS and d' scores.

Hypothesis 3. The CDA prediction was reframed so that excluded participants would report both: (a) higher PEMS scores; and (b) lower PIMS scores, compared to included participants. The Mann-Whitney U test, upon application of the refined data exclusionary criteria, found no evidence supporting a statistically significant between-group difference in either mean rank PEMS or PIMS scores. In keeping with CDA findings, each case the distribution of both populations was approximately equal for EDA. The findings indicate that after the social pain manipulation it was unlikely that excluded participants (compared to included) would report higher levels of the perception that others were externally motivated to respond without prejudice in inter-social interactions. It was also unlikely that they would report lower levels of the perception that others are motivated by internal egalitarian beliefs to respond without prejudice in the same interactions.

Hypothesis 4. The CDA prediction was reframed so that changes in participants' PEMS and PIMS scores would mediate their d' scores. As per CDA, mediation analysis in EDA was not performed as there was insufficient evidence supporting the predictions made in previous hypotheses, and hence inadequate evidence to support the current hypothesised prediction of a mediating relationship. Overall, null hypothesis testing for the EDA, with refined data exclusionary criteria, provided no statistically significant evidence to support any of the hypothesised

relationships predicted. The findings remain consistent with the CDA results where no statistically significant evidence was found to support Hypotheses 1 to 4.

Exploratory Data Analysis of Extraneous Variables

Examination of CDA descriptive and test data highlighted two extraneous variables that were worth investigating further in EDA, including: (a) participant English language proficiency; and (b) the length of time that participants have lived in NZ. The analysis of these variables is described in this section.

English language proficiency. The observed outliers and anomalies in the CDA data suggest that some participants may not have understood the intent of the experimental tasks or followed their instructions correctly. The English proficiency screening item that was embedded in the survey demographic questionnaire indicated that all participants were proficient with the English language. However, considering the CDA findings and refined data exclusionary criteria, the EDA hypotheses were retested whilst controlling for English language proficiency. This was achieved by excluding the data from participants who were non-native and non-fluent English speakers from analysis.

Controlling for non-native and non-fluent speakers, the sample size was reduced to 38 participants (excluded condition $n = 21$; included condition $n = 17$) for this EDA. The hypotheses were retested using non-parametric methods due to small sample sizes, despite normal distribution of DV responses (see boxplots depicted in Figure J3, Appendix J). Median, mean rank and test results are summarised in Appendix J, Tables J4 and J5 respectively. Scatterplots of d' scores by PEMS and PIMS scores are shown in Figure J4. Null hypothesis testing, controlling for the extraneous variable of English language proficiency, provided no statistically significant evidence to support any of the predicted EDA hypothesised relationships.

Time Lived in New Zealand. Descriptive statistics (Table D1, Appendix D) suggest that participants have lived in New Zealand (NZ) for an average of nearly three years ($M = 2.70$). Despite this, the frequency table (Table D5, Appendix D) indicates that nearly half (48%) of all participants in the sample have lived in NZ less than 12 months, suggesting that the mean time has been influenced by outliers. Considering these findings and the refined data exclusionary criteria the EDA hypotheses were retested whilst controlling for the length of time participants have lived in NZ. This was achieved by excluding the data of participants who had lived in NZ for less than twelve months from analysis.

Controlling for the length of time participants have lived in NZ, the sample size was reduced to 35 participants (excluded condition $n = 22$; included condition $n = 13$). The hypotheses were retested using non-parametric methods due to small sample sizes, despite normal distribution of DV responses (see boxplots depicted in Figure J5, Appendix J). Median, mean rank and test results are summarised in Appendix J, Tables J6 and J7 respectively. Scatterplots of d' scores by PEMS and PIMS scores are shown in Figure J6. Again, null hypothesis testing controlling for the extraneous variable of time lived in NZ, provided no statistically significant evidence to support any of the predicted EDA hypothesised relationships.

After EDA analysis found no statistically significant findings whilst controlling for extraneous variables, a final analysis was run testing each hypothesis with a data set including the refined exclusion criteria and controlled extraneous variables. All test results returned insignificant findings, as shown in Appendix J (Figures J7 and J8; Tables J8 and J9). Overall the current study results were consistent, with neither confirmatory or exploratory data analyses indicating any evidence to support Hypotheses 1 to 4.

CHAPTER 6

Discussion

This chapter begins with the presentation of the main findings of the current study in relation to the hypotheses that were generated in Chapter 2. Theoretical and practical implications of the findings are considered, in relation to the use of stimuli and measures, and cultural differences. Limitations of the study are then discussed and future directions for research suggested. Finally, the contributions of this study to the research literature are explained.

Summary of Important Findings

The aim of this study was to determine whether suspicion of motives mediated the relationship between social exclusion and smile discrimination. Previous research on these constructs was undertaken on Western European and American samples, with researchers calling for more culturally diverse studies to improve the generalisability of findings (LaCosse et al., 2015; Uskul & Over, 2017). In answer to their call, this study used a participant sample of East and Southeast Asian origin.

A considerable body of literature has shown that human beings have a fundamental drive to form social connections with others and that they monitor their social environment to detect threats to their need to belong (Baumeister & Leary, 1995; Maslow, 1970). Sociometer theory posits that low levels of self-esteem can warn individuals of exclusionary threats, causing them to focus their attention on social cues that can help them determine about others affiliative intent (Leary et al., 1995; Young et al., 2015). Smiles have been studied as one such social cue which individuals can use as a source of information in their interactions with others. Research has shown that feelings of social exclusion reduce individuals' perceived

levels of belongingness and help them to be better at differentiating between the authenticity of smile types (Bernstein et al., 2010; Young, 2016). Literature also shows that increases in suspicion of others' motives threatens an individuals' self-esteem and creates a corresponding increase in their ability to accurately discriminate between smile types (Kunstman et al., 2016; Major et al., 2016).

In this study, manipulation checks supported the success of the social pain manipulation, but Confirmatory Data Analysis (CDA) did not replicate overseas findings for the first two hypotheses. Results showed that participants in the exclusion condition were more socially distressed after the game, where they reported feeling their psychological needs threatened to a greater degree (as measured by the Need Threat Scale scores), receiving fewer ball passes and feeling more excluded (compared to participants in the social inclusion condition). However, despite the success of the manipulation, no evidence was found to support the first hypothesis that socially excluded participants would be better at detecting spontaneous genuine smiles (as measured by d' scores), compared to socially included participants. Descriptive data showed similar median and upper limit d' scores for both conditions, and a Mann-Whitney U test confirmed a non-significant between-group difference. Findings also did not support the second prediction that increases in participants' levels of suspicion of others' motives (as measured by SOMI scores) would be positively correlated to increases in their ability to detect spontaneous genuine smiles. A scatterplot of d' and SOMI scores showed no association between the two constructs and a Spearman rank-order correlation confirmed that there was no significant relationship.

In addition to trying to replicate existing research findings, the present study investigated two new hypothesised relationships which were based on theoretical

commonalities and links between the constructs reviewed in the literature. This literature showed that prejudice arises from exclusionary behaviour, and it lowers fundamental need levels and induces feelings of threat which increase suspicion of others' motives (Major et al., 2016; Molina et al., 2016). Informed by this literature, the current study predicted that feelings of social exclusion would cause participants to become more suspicious of others' motives, and that changes in suspicion of motives would mediate the relationship between participants feelings of social exclusion and their ability to detect spontaneous genuine smiles. Descriptive data showed a small difference in median d' scores between conditions, where included participants were more suspicious of others' motives (compared to excluded participants). However, both the upper and lower range of included participants scores were contained within the upper and lower limits of excluded participants scores and a Mann-Whitney U test confirmed a non-significant difference between groups. These results were not unexpected, given that the SOMI subscales were not inversely correlated (as they ought to have been) and given the mediocre reliability of the SOMI scale. The mediating relationship was not investigated as it relied on evidence being found to support the first three hypotheses.

Taken together, these findings show that Cyberball can elicit feelings of social exclusion in the present sample, but that evidence from previous research (based on Western European and North American samples) which supports relationships, between both social exclusion and suspicion of motives with smile discrimination, could not be generalised to this sample. The divergence of this studies' findings from the literature raises interesting questions that challenge the appropriateness and universality of the smile stimuli and SOMI measure that were

used. The findings also highlight the influence of cultural differences in emotion recognition, experiences of social exclusion and prejudice.

Implications of the Stimuli and Measures Used

The lack of evidence supporting any of the current studies' predictions raised questions about the appropriateness and universality of the experimental stimuli and measures that were used.

Cyberball stimuli. Participants' first task in the Qualtrics survey was to play a game of Cyberball. The success of this manipulation supports previous research citing the cross-cultural validity of this game (Hartgerink et al., 2015; Williams, 2007). Results using Cyberball with the East and Southeast Asian participants in the current study also replicated that of two other studies which successfully used the game to manipulate feelings of social exclusion with Asian samples. The current research combined with these two studies, one with Japanese participants (Kawamoto et al., 2014) and one with Chinese participants (Xu et al., 2015), provide support for the validity of Cyberball with research utilising participants of Asian ethnicity.

It is important to note that despite the significance of the manipulation check results for this study, descriptive statistics show upper and lower limit overlap of responses to manipulation check questions between conditions. These may have impacted the significance of findings by reducing effect size. Effect sizes from the Need Threat Scale (NTS) manipulation check were lower for this study (though still large; $ES = 1.54$) than those in the Cyberball studies with Chinese ($ES = 2.27$) and Japanese ($ES = 2.44$) participants (Kawamoto et al., 2014; Xu et al., 2015). The upper and lower limit overlap shows that some participants in this study incorrectly attributed their feelings of inclusion or exclusion and suggests that they may have

misunderstood the questions that they were being asked. Despite the requirements for English language proficiency set by Massey University for student enrolment, the researcher allowed participants to use a dictionary to look up terms when they were unsure of the meaning. If participants had lost motivation or become fatigued when using a dictionary, they may have paid less attention to the tasks they were required to complete.

Exploratory Data Analysis (EDA) was undertaken in the current study, where each hypothesis was retested whilst controlling for English language proficiency, to determine if this extraneous variable did affect results. As per CDA, no evidence was found to support any of the predictions, however, test p -values were smaller and effect sizes were larger. The EDA findings indicate that English proficiency may not have affected the results of the study, though the findings should be treated with caution due to small sample size. Also, anecdotally during the debrief, some participants noted that they had trouble understanding the meaning of some words, such as the term *prejudice* (from SOMI items) in particular.

Suspicion of Motive Index. During the Qualtrics survey for the current study, several participants signalled to the researcher and requested clarification of the difference between the terms *prejudiced* and *nonprejudiced* (from SOMI items). The context of these terms caused confusion for some non-fluent English speakers, with *prejudiced* indicating negative intent and *nonprejudiced* signalling positive intent (because the *non* part of the latter compound word would typically evoke negative connotations when translated in English). The confusion for some participants around terms involving prejudice may mean that these terms did not translate literally through differences in language. Clarification of meanings for these terms within the Qualtrics survey would be useful in future research to make

clear the intent of SOMI questions and would also reduce the need for participant interaction with the researcher during the experiment.

Expecting that terms relating to prejudice could be translated and universally understood may have meant that the intent of SOMI items were misinterpreted by some participants in this study. This may be one reason why the SOMI subscales (Perceived External Motivation Subscale or PEMS; Perceived Internal Motivation Subscale or PIMS) did not act in the way the researcher expected. Literature indicated the subscales had high reliability (Major et al., 2013) with an inverse correlation (Kunstman et al., 2016). They were used in the present research based on this assumption. Subsequent analysis during this study showed that these assumptions were not met as reliability was merely adequate and there was no correlation between subscales. It is likely that misinterpretation of SOMI items by some participants lowered the reliability of the subscales. A reduction in reliability (despite internal consistency still being adequate) and lack of correlation may have been why the SOMI did not work when testing the second and third hypotheses. Exploratory analysis retesting the second and third hypotheses with the PEMS and PIMS subscales separately (in lieu of the SOMI) found no significant evidence to support the predictions of this study.

It is also possible that a lack of participant attention or engagement (especially with the added difficulty of language translation) with the current study meant that the above assumptions for use of the SOMI were not met. Inattentive participant responses on self-report scales in experimental and correlational studies have been shown to introduce error, through poor quality data, which significantly lowers scale reliability compared to attentive participants data. The addition of one directed manipulation check question, such as “I read instructions carefully. To

show that you are reading these instructions, please leave this question blank”, has been shown to effectively screen for participant inattention and improve the statistical power of an experiment by two to three percentage points (Maniaci & Rogge, 2014). The addition of at least one manipulation check item to the Qualtrics survey for participant inattention would be beneficial in future research.

Smile classification. For the third task of this study, smile classification scores (d') below zero suggest that participants were either doing the opposite of what they were instructed or were unable to distinguish between the two types of smile stimuli. A lack of English language proficiency, inattention to stimuli and measures or difficulty with language translation, as discussed in the previous two sections of this chapter, may be one reason for participants incorrectly following instructions. Anecdotal accounts of difficulties with the smile stimuli (made by participants during the debrief) suggest that inability to distinguish between smile types may be due to the presentation of the stimuli themselves. A few participants said they noticed that two photographs were provided by the same person in the smile stimuli. These participants stated that they thought this was a mistake and provided the same answer for both photos presented. It may be useful for future research to present stimuli generated from each person only once in an experiment. Some participants also stated they could not tell the difference between any smiles. Though smaller effect sizes were expected using a static format for presentation of smile stimuli (due to a recognition advantage when using dynamic stimuli), participants' comments may indicate that static stimuli made smile discrimination too difficult and reduced the likelihood of finding any significant effect.

The present research made use of static stimuli to avoid potential bias toward detecting either smile type based on smile onset and offset durations. However, the

lack of ability to replicate findings from existing studies suggests that temporal aspects of smiles may be necessary to enable participants to determine differences in smile type. Research by Krumhuber and Manstead (2009) found that participants were unable to discriminate between spontaneous genuine and posed deliberate smiles in static mode, but were able to when presented with dynamic cues. Their findings provide evidence that dynamic stimuli convey the spontaneity and genuineness of expression necessary for emotion perception.

Temporal aspects of smiles, such as smile duration, provide participants with more information about the meaning of the smile making distinctions between types easier to perceive. Significant differences between smile types are more readily recognised when stimuli are generated from naturally elicited expressions and presented in a video format rather than as static photographs (Gunnery & Ruben, 2016). The hypotheses for the current study were retested during EDA where exclusion criteria were refined so that participants who had d' scores less than zero had their data removed, but no evidence was found to support predictions. The photographs presented to participants in the current study were naturally elicited, however the insignificant results and evidence from the literature suggest that presentation of dynamic smile stimuli in a video format would be more appropriate for future research.

Taken together, the findings show that the effects of Cyberball on the fundamental needs of the sample used in this study replicate those effects found in the literature, in line with Williams (2009) temporal need-threat model of ostracism. These findings also show that the SOMI did not work in the way expected (based on the literature). Several potential issues with stimuli and measures were identified and resolutions recommended. To control for some of the extraneous variables

mentioned in this section, EDA was performed by retesting each hypothesis. The results were like the confirmatory analysis, results where no evidence was found to support any prediction. The non-significant EDA results (controlling for data anomalies, outliers and extraneous variables) raise questions about whether factors, other than measures and stimuli, may be influencing the outcomes of the relationships tested for this study. Such factors are discussed in the following section.

Implications of Cultural Differences

The non-significant findings for each hypothesis (in both CDA and EDA) bring to the fore the influence of cultural differences on the effects of exclusionary or prejudiced experiences and emotion perception.

Social exclusion. Calls in the literature for further cross-cultural research on the effects of social exclusion are well founded according to the conflicting findings put forward by various studies. A meta-analysis of 120 Cyberball studies found that culture had no influence on average social exclusion effect sizes, though they noted that the low prevalence of Asian samples may have caused a lack of power (Hartgerink et al., 2015). However, a literature review by Uskul and Over (2017) found that cultural background moderated how different groups experienced social exclusion and how they behaved in the aftermath.

The review (Uskul & Over, 2017) found that collectivist cultural groups (e.g., China, India) were less negatively affected by social exclusion than independent cultural groups (e.g., Germany, United States). The strong social connections ingroup members develop through social interdependence in collectivist cultures may serve as a protective barrier against social exclusion by members of outgroups because ingroup members have high levels of access to social support (Eisenberger,

Taylor, Gable, Hilmert, & Lieberman, 2007). Individuals from collectivist cultures also may not perceive instances of social exclusion directed by outgroups toward themselves alone as particularly threatening to their fundamental needs because they belong securely with the members of their collectivist ingroup (Fiske & Yamamoto, 2005). There is a range of evidence to support these theories. For example, a study by Pfundmair et al. (2015) found that socially excluded German participants' heart rates increased as an immediate response, that is typical of stress or threat, whilst Chinese participants' heart rates did not change. They also found that Indian participants reported lower levels of threat activation after being socially excluded compared to American participants. Levels of threat activation mediated the effect of social exclusion compared to social inclusion.

The findings from the present study using East and Southeast Asian participants (from collectivist cultures) provide partial support for each conflicting perspective in the literature just described. Manipulation check results showing participants' levels of fundamental needs were lowered as an immediate response to the effects of being excluded when playing Cyberball provide evidence in line with the reflexive stage of Williams' (2009) temporal need threat model of ostracism. This suggests that the negative impact of social exclusion on individuals' belongingness needs may be generalised across cultural groups. The lack of support for the first hypothesis, predicting socially excluded participants' increased ability to detect spontaneous genuine smiles, means that participants did not display evidence of increased attention to smiles as threat cues as per the reflexive stage in Williams' model. This finding is more in keeping with the idea that interdependence may protect individuals who belong to collectivist cultural groups from the negative effects of social exclusion.

Prejudice. Conflicting findings about whether the exclusionary effects of prejudice increase or decrease the fundamental need of self-esteem are also present in the research literature (Goodwin, Williams, & Carter-Sowell, 2010). For example, some findings indicate that attributing the negative effects of exclusion to prejudice is harmful, because an individual's perception of their own worth is dependent on the social evaluation of the group with which they identify (Branscombe, Schmitt, & Harvey, 1999). Other findings suggest that when participants are able to discount negative outcomes, by attributing their experiences to prejudice, they can shift explanations for the cause of exclusionary behaviour from internal to external reasons which protects their self-esteem (Crocker & Major, 1989).

The latter findings described above may help to explain the lack of support for the third hypothesis of this study, where the experience of social exclusion did not cause an increase in participant's suspicion of others' motives. Instead of exclusion associated with prejudice creating a deficiency in fundamental needs (such as self-esteem) and an increase in attention focused on threat cues, as an immediate response to ostracism in line with the temporal need threat model (Williams, 2009), the opposite may have happened. Improved levels of self-esteem may have buffered against any perception of social threat to the self. It is important to note that findings from the studies just mentioned are based on Latin and African American samples (Crocker et al., 1991; Hoyt et al., 2007), as are findings for all research examining participants' suspicion of others' motives (Kunstman et al., 2016; LaCosse et al., 2015; Major et al., 2016). This means that none of these findings can be generalised to East and Southeast Asian sample used in the current study.

It is possible that differences in majority group treatment of various minority groups may explain both the current studies lack of ability to replicate existing

findings, and the conflicts found in the literature discussed above. No research had examined the effects of suspicion of motive on East or Southeast Asian participants until the present study. In both New Zealand (NZ) and the United States (US) people of Asian ethnicity are stereotyped as a model minority group (Asbrock, Nieuwoudt, Duckitt, & Sibley, 2011). This means that they are treated by White ethnic majorities as an exceptional outgroup who are more competent than other minority groups, such as Māori or Pacific Islander groups in NZ (Asbrock et al., 2011) and Latin or African American groups in the US (Park, Martinez, Cobb, Park, & Wong, 2015). The type of prejudice experienced by Asian populations in both NZ and the US may not affect fundamental needs in the same way as other minority groups (Latino or African American). This would mean the motives underlying prejudice that are successfully measured by the SOMI on Latin and African American samples also may not be generalisable to Asian minority samples.

The positioning of Asian ethnicities as an exemplary minority outgroup, conceptually different to other ethnic minority outgroups, contrasts with considerable anti-Asian sentiment and intergroup distancing. This is reflected in prejudice based uniquely on economic concerns such as anti-immigration sentiment and competition for employment (Choi, Israel, & Maeda, 2017; Park et al., 2015). It is possible that the sample used in the current study, being mostly new immigrants who have lived in NZ for less than 12 months, have not been living in the country long enough to have experienced any instances of prejudice or be aware of (and understand) underlying sentiments felt or expressed by White New Zealanders. Anecdotally, participants advised the researcher during the debrief that they found all New Zealanders to be very friendly. These sentiments contrast considerably with NZ generated research which found that a quarter of Asian participants sampled reported experiencing

prejudice in the last 12 months. A quarter of New Zealanders surveyed also reported Asian groups as those they perceived to be most prejudiced against (Satherley & Sibley, 2016). Significant within-group variation in individual levels of suspicion of others' motives was also noted by Major et al. (2013) in their work with Latino American ethnic minorities. They found that levels of suspicion of other's motives were positively correlated with levels of expectation of being socially excluded or stereotyped based on ethnicity. For individuals new to NZ, exclusion or prejudice based on their ethnicity may not yet be salient. Immigrant ethnic minority individuals' beliefs are formed from their perceptions of intergroup relations and from their personal experiences. Those who believe intergroup relations are positive or cooperative may believe ethnic majorities are motivated to respond without prejudice in intergroup social interactions (Major et al., 2013).

Given that rapidly detecting and responding to social cues which signal social threat will only occur in situations where a threat is made salient (Donders et al., 2008), it may be that some participants in this study perceived no threat from White New Zealanders. Individual differences among participants may have meant that some were not suspicious of others motives or primed to focus their attention on social cues which provide threat relevant information. Evidence providing support for this notion is available in research that shows African American outgroups have no advantage in distinguishing between smile types when they are not suspicious of ingroups' motives. Research also indicates that the non-diagnostic nature of the SOMI for White Americans is due to their positioning as an ethnic majority ingroup, meaning threat is not salient to them (Kunstman et al., 2016).

Emotion expression. The current study required participants, of East and Southeast Asian ethnicity, to make judgements about smile stimuli encoded by

individuals of Western European ethnicity. Past research has established the importance and universality of emotional expressions. However, recent findings show that identification accuracy of emotional facial expressions is greatest when they are expressed and recognised by individuals who come from the same culture. For example, American research participants score higher than Asian participants in experiments using American encoders (Elfenbein & Ambady, 2002; Young et al., 2012). This suggests that, irrespective of condition, the participants in the current study may have had difficulty with a task that required discriminating between distinctions of smile type from stimuli encoded by a different cultural group. Such difficulties would have affected the first and second hypotheses which focused on the smile discrimination task. Difficulties with ability to detect differences in smiles may explain why findings for this study could not show increased attention to social cues indicative of threat for socially excluded participants, even with lower levels of fundamental needs compared to included participants.

The only study found in the literature examining the relationship between social exclusion (manipulated by Cyberball) and attention to smiles as social acceptance cues, among an Asian population, did not consider differences in smile types (Xu et al., 2015). This meant that this study could not contribute toward understanding Asian participants ability to perceive differences in smiles exhibited by people from other cultures. The study did find that Asian participants showed an attentional bias toward smiling faces after social exclusion, rather than neutral or angry faces. An immediate response of orientation toward cues signalling positive affect after social exclusion suggests that participants were primarily motivated by a desire for social reconnection, rather than detection of cues that signal threat and help individuals avoid further exclusion. The study did not consider smiles as a source of

both social acceptance and threat, only as a source of acceptance, which may be indicative of cultural differences in contextual meanings of smiles. Smile stimuli presented to participants were of mixed ethnicity and findings were unable to show if participants exhibited different attentional biases to smiles expressed by people of different cultures (Xu et al., 2015).

Most research on perceptions of differences between smile types is limited to Western European or North American samples. However, one study found that Chinese participants (living in Canada) did not differentiate between spontaneous genuine and posed deliberate smiles when judging Chinese faces, because they used smile intensity as a marker of authenticity instead. But they did rate spontaneous genuine smiles displayed by French-Canadian individuals more positively compared to posed deliberate smiles (Thibault et al., 2012). These findings provide evidence that whilst the spontaneous genuine smile may not be a cross-cultural sign of positive affect, it can be recognised as a signal of positivity in certain cultures. Chinese immigrants used the Duchenne marker (contraction of both the zygomatic major and orbicularis oculi muscles) to assess the smiles of their host culture. There was a significant positive correlation between the time Chinese participants had lived in Canada and their levels of perceived authenticity of spontaneous genuine smiles exhibited by French-Canadians. This finding suggests that increased exposure to a host culture improves emotion recognition learning. Elements of emotional expression that are specific to cultures can be learned by either growing up in the culture or by later exposure to that culture (Elfenbein & Ambady, 2002).

Given that approximately three quarters of the participants in the current study had lived in NZ for only a short time, and that some participants told the researcher that they thought all the smiles were genuine, it was possible that they had not had a

chance to learn the subtleties of smiling expressions displayed by White New Zealanders. The hypotheses were retested in exploratory analysis, controlling for the time lived in NZ, but findings were non-significant. These results should also be treated with caution due to their small sample size. Low sample sizes lower the statistical power of studies by decreasing the likelihood of a researcher detecting true effects and by reducing the chance that statistically significant results will reflect true effects (Major et al., 2016). Findings indicating a lack of ability to detect differences in smile type using a sample of East and Southeast Asian participants (most of whom are unfamiliar with White New Zealander faces), lend support to the notion of cultural differences in emotion recognition and intergroup learning of authenticity of positivity cues (Gunnery & Ruben, 2016).

Taken together, the findings described above highlight conflicts in the research literature over the influence of culture and the impact of cultural differences on emotion recognition, experiences of social exclusion and prejudice. Culture has a major effect on all variables in the current study, in many ways influencing the perception of threat and moderating personal outcomes and situational contexts for research participants. The findings call into question the cross-cultural validity of the temporal need threat model which underlies both this study and many others in the research literature. Except for Cyberball, the generalisability of the SOMI and the smile stimuli used in the present study can also be questioned. The ability to question these facets can teach researchers a lot about the cultural group used for the sample in this study and how they may differ from the typical Western European and North American samples generally used in the research literature.

Limitations and Future Directions

There is a paucity of social exclusion, suspicion of motive and smile discrimination research in the literature addressing the lack of cultural diversity in findings based on Western European and North American samples. This study answers calls in the literature for future research to address this issue by utilising a sample of East and Southeast Asian participants in an NZ based context. It is the first study to address the effects of suspicion of motives with this participant group. The importance of this study is highlighted because findings differ from previous research indicating that a different set of phenomena are happening for this sample. The current study provides a starting point for further research on the key constructs with the sample frame selected. This study also provides a foundation and framework for similar research with other culturally diverse groups within the NZ context.

A limitation of this study is its exclusive focus on an Asian ethnic minority group. This limitation is also a benefit, given the dearth of research on this group. Findings from the current study compliment and extend existing research by revealing meaningful differences in experiences of prejudice for cultural minority groups (i.e., between East and Southeast Asian groups in NZ and Latino and African American groups in the US). Given that these findings did not replicate previous findings in the literature, results for the present research suggest that definitions of prejudice may vary between minority cultural groups meaning SOMI items did not capture the construct they were supposed to. Results also suggest that not all prejudice experiences are the same between different minority cultural groups. As described earlier in this section, Western European ethnic majority groups understandings and treatment of Asian minority groups are similar in both NZ and

the US (Asbrock et al., 2011; Park et al., 2015). There is scant research on Asian American racial identity issues from the US (Choi et al., 2017). It would be interesting for future research to repeat the present study on an East and Southeast Asian sample in the US to see if the findings from this study were replicated or whether they matched findings based on Latino and African American samples.

Māori and Pacific Islanders, as the two largest ethnic minority populations in NZ are negatively stereotyped in similar ways as Latino and African American groups by the White ethnic majority groups in NZ and the US (Asbrock et al., 2011). Both Māori and Pacific Island groups have well documented experiences of prejudice in NZ, so it would be interesting to examine whether the findings of the relationship between suspicion of motive and smile discrimination based on US samples could be replicated with these groups. A future direction for research could be to replicate the current study with Māori or Pacific Island samples in the NZ context. Such research would answer current calls for more culturally diverse research on social exclusion, suspicion of motive and smile discrimination and extend understandings of how differences in culture may influence these constructs between groups in one country and between countries themselves.

Ingroup and outgroup categorisations are important for face recognition but new Asian immigrants to a NZ may not yet have made the psychological connection that they are perceived as a member of a social outgroup by the White New Zealander majority ethnic group (Reynolds & Klik, 2016). The fact these immigrants have not had time to define themselves as outgroup members indicates that the threat of experiencing prejudice may not be salient to them. Findings from the current research could be interpreted as the East and Southeast Asian participants being a less suspicious minority with relatively poor ability to ascertain the

authenticity of NZ European smiles due to their new immigrant status. This may have been a limitation of this study which prevented it from replicating previous findings based on more entrenched cultural minority groups in the US (Kunstman et al., 2016). If this is the case, then this study has important implications for individuals who are new to the country in terms of emotion recognition. It raises the notion that these cultural minority groups may misconstrue the contextual meanings provided in smile cues, placing them at risk of mistaking White New Zealanders' feigned positive affect as genuine social acceptance, and may make them susceptible to being deceived by dishonest individuals (Miles & Johnston, 2007).

Relying on a university student sample limits this study because these students represent a narrow proportion of the wider East and Southeast Asian population in NZ. The researcher cannot generalise findings to other populations, such as other minority ethnic groups or other NZ city locations. The category of *Asian* is a diverse group with numerous sources of population intersectionality and heterogeneity (Choi et al., 2017). Findings cannot be generalised beyond the broad East or Southeast Asian group to specific countries such as India or other Asian regions such as the Middle East. This category also ignores within group differences, and so generalisations cannot be made to individual countries that make up the East or Southeast Asian category, such as Japan or China. The study should be repeated with larger sample sizes on broader demographics, which will help to generalise findings to wider populations.

Participants were recruited via snowballing as part of a convenience sample for the current research. This method of recruitment was used as a cost-effective way to reach a specific population, that would otherwise be difficult to find and hard to access. Random allocation of participants to condition was undertaken to promote

the internal validity of findings. Convenience sampling limits the external validity of results, meaning that findings are not representative of populations beyond the sample frame tested (Sedgwick, 2013).

All measures used in the current study relied on self-report formats which need truthful responses from participants to allow the researcher to draw meaningful conclusions from results. Self-report questionnaires are susceptible to social desirability bias, whereby participants respond to items in a manner that presents themselves in a favourable light to the researcher. This type of responding can confound results by obscuring relationships between variables or creating artificial relationships. Both limit the validity of inferences that are made from the results (Van de Mortel, 2008). Offering anonymity to participants taking part in a study is one of the most commonly used strategies for reducing socially desirable responding. All participants in the current study were advised that their data were anonymous and that their responses could not personally be identified by the researcher. Anonymity should remove the need for participants to deliberately distort their responses to items because of the increased sense of privacy for completing the survey and also because of the removal of any possibility of identification (Dalal & Hakel, 2016).

It is possible that task differences with the current study may have led to results that differ from existing research. Several methodological limitations related to this have already been addressed earlier in this chapter. However, following subsequent discussion, a further item of interest arose. It became clear from the discussion that instances of threat must be made relevant to individuals if they are to increase their attendance to social cues indicative of threat. Manipulations must have clear functional implications if research participants are to give priority to cognitive processing of experimental stimuli (Trawalter et al., 2008). It is possible that

participants did not relate Cyberball to the threat of prejudice, so future research could consider providing a cover story for Cyberball to make the threat more salient for participants who are new immigrants to NZ.

The above findings, combined with the results from this study, suggest that East or Southeast Asian individuals who have lived in NZ for an extended period and become entrenched in the culture, should have learned distinctions in White New Zealander smiles through cultural exposure. Future research should repeat this study with the same sample, but with a culturally entrenched group. This will enable examination of the implications of social exclusion and suspicion of motive on smile discrimination with a group who should be aware of prejudice and nuances in ethnic majority individual's emotional expressions. Such research could contribute to understanding of within-group diversity of experience with intergroup social relations and cultural learning.

Concluding Remarks

The current study did not achieve its principal aim of replicating previous research findings that indicate people who were socially excluded, or suspicious of others' motive were better able to detect the authenticity of different types of smiles. The study was also unable to find evidence supporting a relationship between social exclusion and suspicion of motives. The contrast between the results of this study and previous findings are its most important aspect. Calls from literature for culturally diverse research were addressed in this study through use of an East and Southeast Asian sample in a NZ context and the findings contributed to research by highlighting the impact of cultural differences on the variables examined.

Literature considering the universality of theory and methodologies from research examining social exclusion, suspicion of motives and smile discrimination

appear conflicted regarding the influence of ethnicity. The divergence of current findings, from those based on Latino and African American samples, suggest that results derived from paradigms - such as the temporal need-threat model of ostracism and measures such as the SOMI - may not be generalisable across cultures. Evidence from the current study supports theoretical perspectives for cross-cultural differences in cognitive, emotional and behavioural responses to social threat, and the ability to identify sources of such threat. Differences in emotion expression and perception, intergroup relations, and situational context, influence the interpretation of cues which signal others' social intent. The present study shows that further research is required with Asian samples to improve understanding of the unique set of phenomena which they experience.

The current study is the first using an Asian sample to examine relationships between exclusion, suspicion and smile type, making it a building block for future research. The study was limited by its lack of recognition of diverse experiences of prejudice and by variations in intergroup social interactions. Both affect ethnic minority understandings of in-group out-group categorisations and recognition of nuances in emotional expression. The limitations highlight important new avenues for exploration. These include the impact that differences within the same ethnic group, differences between ethnic groups within the same country, and differences between the same ethnic group in different countries, have on the relationships examined. The study provides a preliminary framework that can be used by researchers who seek to replicate results or consider meaningful differences across cultures, based on findings from this study or previous research.

Undertaking the present research has provided insight into how different ethnic minority cultures may use information from social cues to guide their

interactions with ethnic majority cultures. Such insights have important implications because they highlight the potential for ethnic minorities to be exposed to risk if they are not attuned to possible sources of social threat from others. Those who lack exposure to ethnic majorities may be susceptible to harm if they misconstrue the contextual meaning, or authenticity of intent, signalled by social cues in intergroup interactions. This study may provide a starting point toward improving intergroup social relations and developing strategies to enhance cultural learning for vulnerable minorities.

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Appendices

Appendix A

Facial Action Coding System

The different facial movements characteristic of Duchenne and non-Duchenne smiles, as identified by the Facial Action Coding System (FACS) are set out in Table A1.

Table A1

Characteristics of Facial Movements Involved in Duchenne and non-Duchenne Smiles

Characteristics	Smile type	
	Duchenne smile	Non-Duchenne smile
Muscle used		
Zygomatic major	✓	✓
Orbicularis oculi, pars lateralis	✓	-
Orbicularis oculi, pars medialis	✓	-
FACS		
Action unit 12	✓	✓
Action unit 6	✓	-
Action Unit 7	✓	-
Appearance changes		
Lip corners pulled up toward cheek bones (12 ^a)	✓	✓
Raises the cheek; gathers skin inwards around the eye; bags skin below the eye; narrows eye aperture; produces crow's feet wrinkle (6)	✓	-
Tightens the upper and lower eye lids; raises the lower eye lid; wrinkles or bulges skin directly below lower eye lid (7)	✓	-

Note. Duchenne smiles are called "spontaneous genuine smiles" and non-Duchenne smiles are called "posed deliberate smiles" in the present research. FACS = Facial Action Coding System.

^aNumbers in parenthesis refer to the FACS action unit.

Appendix B

Signal-Response Matrix for Smile Classification Measurement

The matrix presented in Figure B1 indicates the typical decision criteria used in signal detection on smile discrimination tasks. Participants' d' scores are calculated by taking the difference between their z -transformed hit rate (i.e., proportion of spontaneous genuine smiles accurately identified as “genuine”) and z -transformed false alarm rate (i.e., proportion of posed deliberate smile inaccurately identified as “genuine”), reflecting their ability to detect spontaneous genuine smiles whilst correcting for any response bias.

		Signal (spontaneous genuine smile)	
		Present	Absent
Response (spontaneous genuine smile)	Present	<p>Hit Rate</p> <p>proportion of spontaneous genuine smiles accurately identified as <i>genuine</i></p>	<p>False Alarm Rate</p> <p>proportion of posed deliberate smiles inaccurately identified as <i>genuine</i></p>
	Absent	<p>Miss Rate</p> <p>proportion of spontaneous genuine smiles inaccurately identified as <i>posed</i></p>	<p>Correct Rejection Rate</p> <p>proportion of posed deliberate smiles accurately identified as <i>posed</i></p>

Figure B1. Signal-response matrix for computing hit and false alarm rates for the smile discrimination (d') task.

Appendix C

Demographic Questions

Following are a set of demographic questions. Please read each question carefully and type in your response or select the circle that best suits your answer.

1. What is your age in years?
2. What gender do you identify as?
 - Male
 - Female
 - Gender diverse (please specify)
3. Which ethnic group do you feel you identify with the most?
 - Chinese
 - Japanese
 - Chinese New Zealander
 - Japanese New Zealander
 - Other (please specify)
4. How long have you lived in New Zealand?
 - Years
 - Months
5. Are you a native English speaker?
 - Yes
 - No
6. How long have you spoken the English language for?
 - Number of years
7. Which of the following proof of English proficiency standards for study in New Zealand have you met? (please select one circle).⁸
 - International English Language Testing System (IELTS)
 - Test of English as a Foreign Language (TOEFL)
 - Pearson Test of English (PTE) Academic
 - National Certificate of Educational Achievement (NCEA) Level 3 or
 - Cambridge International Examination (CIE) from a New Zealand Secondary School
 - Other
8. What was your score in the English proficiency examination?

7. Questions 5 to 8 screen for participants English language proficiency. Participants are fluent in the English language if they have spoken and read fluently for 10 years or longer.

8. The response options offered for this item reflect enrolment eligibility criteria set out by Massey University and the requirements are summarised in Table 2.

Appendix D

Demographic Characteristics of the Experiment Sample

Table D1

Descriptive Statistics for Age, Gender, Ethnicity and Time Lived in New Zealand (NZ) Variables

Characteristics	Condition		Overall (N = 107)
	Social exclusion (n = 54)	Social inclusion (n = 53)	
Age (in years) M (SD)	25.61 (5.68)	26.30 (6.80)	25.95 (6.24)
Time lived in NZ (in years) M (SD)	2.53 (3.84)	2.88 (4.03)	2.70 (3.92)
Gender ^a			
Male	30% (16)	25% (13)	27% (29)
Female	70% (38)	75% (40)	73% (78)
Ethnicity			
Chinese	69% (37)	66% (35)	67% (72)
Vietnamese	4% (2)	4% (2)	4% (4)
Chinese New Zealander	2% (1)	4% (2)	3% (3)
Japanese	4% (2)	2% (1)	3% (3)
Chinese Singaporean	2% (1)	2% (1)	2% (2)
Hong Konger	0% (0)	4% (2)	2% (2)
Korean	2% (1)	2% (1)	2% (2)
Malay	4% (2)	0% (0)	2% (2)
Malaysian Chinese	2% (1)	2% (1)	2% (2)
Malaysian Indian	2% (1)	2% (1)	2% (2)
Taiwanese	0% (0)	4% (2)	2% (2)
Thai	2% (1)	2% (1)	2% (2)
Borneo New Zealander	2% (1)	0% (0)	1% (1)
Chinese Indonesian	2% (1)	0% (0)	1% (1)
Filipino	0% (0)	2% (1)	1% (1)
Indonesian	2% (1)	0% (0)	1% (1)
Korean New Zealander	0% (0)	2% (1)	1% (1)
Malaysian	2% (1)	0% (0)	1% (1)
Malaysian New Zealander	0% (0)	2% (1)	1% (1)
Singaporean	2% (1)	0% (0)	1% (1)
Uncategorised	0% (0)	2% (1)	1% (3)

Note. Participants were counted as "uncategorised" if they answered the ethnicity question with a response that could be classified as an ethnicity, but still met experiment sample frame eligibility criteria (i.e., South Asian).

^aSubsample *n* in parentheses.

Table D2

Between-group Comparison of Demographic Variable Scores by Independent Variable

Variable	Test result	Statistical Significance	Practical Significance
Age	$U = 1395.50, z = -0.22$	$p = .824^*$	$r = .02$
Time lived in NZ	$U = 1392.00, z = -0.24$	$p = .808^*$	$r = .02$
Gender	$\chi^2(1, N = 107) = .35$	$p = .553^*$	$V = .06$
Ethnicity ^a	-	-	-

Note. Independent variable groups include the exclusion and inclusion conditions. $N = 107$. A two-tail p value was reported for the Mann-Whitney U tests as results did not go in the expected direction (not a one-tail p value as per the pre-registration document). Mann-Whitney U tests were performed, in lieu of the independent samples t -tests stated on the pre-registration document, because boxplots (Appendix D, Figure D1) showed evidence that the normality assumption was violated (confirmed by both large skewness coefficient and significant Shapiro-Wilk statistics).

^aChi-square test not performed because only one cell (Chinese) contained more than five values, see ethnicity frequencies summarised in Table D1.

* $p > .05$.

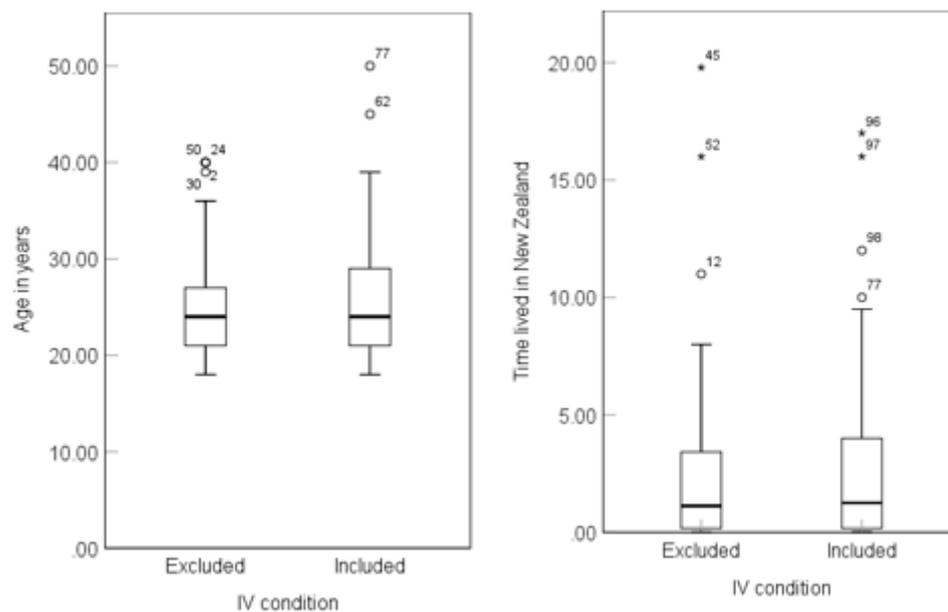


Figure D1. Boxplots of age in years (left) and time lived in New Zealand (right) for when participants were either socially excluded or included.

Table D3

Frequency Statistics for the Native English Speaker, Fluent English Speaker and English Proficiency Test Taken Variables

Characteristics	Condition					
	Exclusion (<i>n</i> = 54)		Inclusion (<i>n</i> = 53)		Overall (<i>N</i> = 107)	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Native English speaker	9	17	6	11	15	14
Fluent English speaker	15	28	26	49	41	38
Proficiency test taken ^a	30	56	23	43	51	48
IELTS	17	31	16	30	33	31
TOEFL	2	4	1	2	3	3
PTE	1	2	0	0	1	1
NCEA Level 3 or CIE	3	6	1	2	4	4
Other ^b	7	13	3	6	10	9

Note. Non-native speakers are fluent in the English language if they have spoken and read fluently for 10 years or longer. IELTS = International English Language Testing System. TOEFL = Test of English as a Foreign Language. PTE = Pearson Test of English. NCEA = National Certificate of Educational Achievement. CIE = Cambridge International Examination.

^aEnglish proficiency tests taken by non-native and non-fluent English speakers.

^bOther denotes those participants who have identified competency in English literacy standards criteria other than those listed (i.e., China College English Test - 6).

Table D4

Mean and Standard Deviation Statistics for the Number of Years Spoken English and English Proficiency Test Score Variables

Characteristics	Condition								
	Exclusion			Inclusion			Overall ^a		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Years spoken English									
Non-native but fluent ^a	15	15.93	3.59	26	16.23	5.87	41	16.12	5.11
Non-native and non-fluent ^b	30	4.10	2.26	21	3.24	2.15	51	3.75	2.31
Test score ^c									
IELTS	17	6.32	0.66	16	6.16	0.54	33	6.24	0.60

Note. The researcher completed a visual check of the raw data to confirm that all participants had sufficient English language proficiency to meet Massey University enrolment criteria. No participants required exclusion from the study. IELTS = International English Language Testing System.

^aParticipants who are non-native speakers, but fluent in speaking English.

^bParticipants who are non-native and non-fluent speakers of English.

^cA number of different tests were taken by non-native and non-fluent English speakers, but there were insufficient responses provided for Test of English as a Foreign Language (*n* = 3), Pearson Test of English (*n* = 1), National Certificate of Educational Achievement Level 3 and Cambridge International Examination (*n* = 4) scores to include in these tests in the table. Test scores in the "other" category (*n* = 10) of English literacy standard criteria were too diverse to include in the table.

Table D5

Frequency Table of the Time Lived in New Zealand by Participants in the Experiment Sample

Time lived in NZ (years)	<i>f</i>	%	Valid percent	Cumulative percent
0.00	1	1	1	1
0.02	1	1	1	4
0.03	1	1	1	5
0.04	1	1	1	6
0.08	17	16	16	21
0.13	1	1	1	22
0.17	5	5	5	27
0.21	1	1	1	28
0.42	2	2	2	30
0.50	9	8	8	38
0.58	5	5	5	43
0.83	1	1	1	44
0.92	2	2	2	46
1.00	2	2	2	48
1.08	1	1	1	49
1.17	3	3	3	51
1.25	2	2	2	53
1.33	1	1	1	54
1.42	2	2	2	56
1.50	4	4	4	60
1.67	4	4	4	64
1.75	1	1	1	64
2.08	2	2	2	66
2.17	1	1	1	67
2.50	1	1	1	68
2.58	1	1	1	69
2.83	1	1	1	70
3.00	1	1	1	71
3.08	1	1	1	72
3.17	1	1	1	73
3.33	1	1	1	74
3.42	1	1	1	75
4.00	2	2	2	77
4.50	2	2	2	79
4.67	1	1	1	79
4.83	1	1	1	80
5.00	3	3	3	83
5.08	1	1	1	84
5.25	1	1	1	85
5.42	1	1	1	86
5.50	2	2	2	88
5.83	1	1	1	89
7.58	1	1	1	90
7.67	1	1	1	91
8.00	1	1	1	92
9.00	1	1	1	93
9.50	1	1	1	93
10.00	1	1	1	94
11.00	1	1	1	95
12.00	1	1	1	96
16.00	2	2	2	98
17.00	1	1	1	99
19.79	1	1	1	100
Total	107	100	100	-

Note. Seventy percent of participants in the experiment sample have lived in NZ for less than three years and 50% less than one year.

Appendix E**Facial Display Stimuli**

Photograph A



Photograph B



Photograph C



Photograph D



Photograph E



Photograph F



Photograph G

Figure E1. Examples of the facial expression stimuli displaying “genuine” smiles.

Photograph H



Photograph I



Photograph J



Photograph K



Photograph L



Photograph M



Photograph N

Figure E2. Examples of the facial expression stimuli displaying “posed” smiles.

Appendix F

Social Pain Manipulation Check Questions

Need Threat Scale

Following are a list of statements relating to your experience with the mental visualisation task (on-line ball-tossing game). Please read each statement carefully and select the circle that best suits your answer.

1. I felt poorly accepted by the other players. (B) *⁹
Not at all | ●●●●●●●●●● | Very much so
2. I felt as though I had made a “connection” or bonded with one or more of the players during the online ball-tossing game.¹⁰ (B)
Not at all | ●●●●●●●●●● | Very much so
3. I felt like an outsider during the online ball-tossing game. (B) *
Not at all | ●●●●●●●●●● | Very much so
4. I felt that I was able to throw the ball as often as I wanted during the online ball-tossing game. (C¹¹)
Not at all | ●●●●●●●●●● | Very much so
5. I felt somewhat frustrated during the online ball-tossing game. (C) *
Not at all | ●●●●●●●●●● | Very much so
6. I felt in control during the online ball-tossing game. (C)
Not at all | ●●●●●●●●●● | Very much so
7. During the online ball-tossing game, I felt good about myself. (SE)
Not at all | ●●●●●●●●●● | Very much so
8. I felt that the other players failed to perceive me as a worthy and likeable person. (SE) *
Not at all | ●●●●●●●●●● | Very much so
9. I felt somewhat inadequate during the online ball-tossing game. (SE) *
Not at all | ●●●●●●●●●● | Very much so
10. I felt that my performance (e.g. catching the ball, deciding whom to throw the ball to) had some effect on the direction of the game. (ME)
Not at all | ●●●●●●●●●● | Very much so

9. An asterisk (*) at the end of a statement denotes an item that was reverse scored.

10. The wording from the original Need Threat Scale (NTS) measure was changed from “Cyberball game” to “online ball-tossing game” for this study to ensure participants understood the task these questions were related to, as this questionnaire was administered near the end of the Qualtrics survey.

11. Items are identified by the aspect of the variable that is targeted. There are four item types including: Belongingness (B), Control (C), Self-esteem (SE), Meaningful Existence (ME). Belongingness measures the extent to which individuals feel connected to other players during the game. Self-esteem measures the extent to which the game implicitly had an impact on individuals’ impression of themselves. Control measured the extent to which individuals perceived they had an influence over the other players during the game. Meaningful existence measured the extent to which individuals perceived their presence mattered in the context of the game.

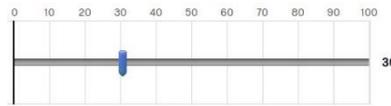
11. I felt non-existent during the online ball-tossing game. (ME) *
 Not at all | ●●●●●●●● | Very much so
12. I felt as though my existence was meaningless during the online ball-tossing game. (ME) *
 Not at all | ●●●●●●●● | Very much so

Other manipulation check questions

Following are a set of questions relating to your experience with the mental visualisation task. Please read each question carefully and either place the slider at the location that best suits your answer or select the circle that best suits your answer.

1. To what extent did you feel that you were being ignored or excluded by the other players during the on-line ball-tossing game?
 Not at all | ●●●●●●●● | Very much so
2. To what extent did you feel you were being noticed or included by the other players during the on-line ball-tossing game? *
 Not at all | ●●●●●●●● | Very much so
3. Think back to the on-line ball-tossing game. Assuming the ball should be thrown to each person equally (33% of throws to each for three players) what percentage of throws did you receive?

What percentage of throws did you receive?



Appendix G

Suspicion of Motives Index

Following are a list of statements which relate to your beliefs about other people's behaviour. Please read each statement carefully and think about when White New Zealand people¹² act in a nonprejudiced way towards people from your country.¹³ Please rate the extent to which you believe that White New Zealand people act in nonprejudiced ways for each of the following reasons and select the circle that best suits your answer.

1. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they want to avoid negative reactions from others. (PEMS)
Completely disagree | ●●●●●●●● | Completely agree
2. When White New Zealand people act in a nonprejudiced way toward people from my country it is because it is personally important to them not to be prejudiced. (PIMS)
Completely disagree | ●●●●●●●● | Completely agree
3. When White New Zealand people act in a nonprejudiced way toward people from my country it is because it is in accordance with their personal values to be unprejudiced. (PIMS)
Completely disagree | ●●●●●●●● | Completely agree
4. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they believe it is wrong to use stereotypes about people from my country. (PIMS)
Completely disagree | ●●●●●●●● | Completely agree
5. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they feel pressure from others to act nonprejudiced. (PEMS)
Completely disagree | ●●●●●●●● | Completely agree
6. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they think other people would be angry with them if they acted prejudiced. (PEMS)
Completely disagree | ●●●●●●●● | Completely agree
7. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they are personally motivated by their beliefs. (PIMS)
Completely disagree | ●●●●●●●● | Completely agree

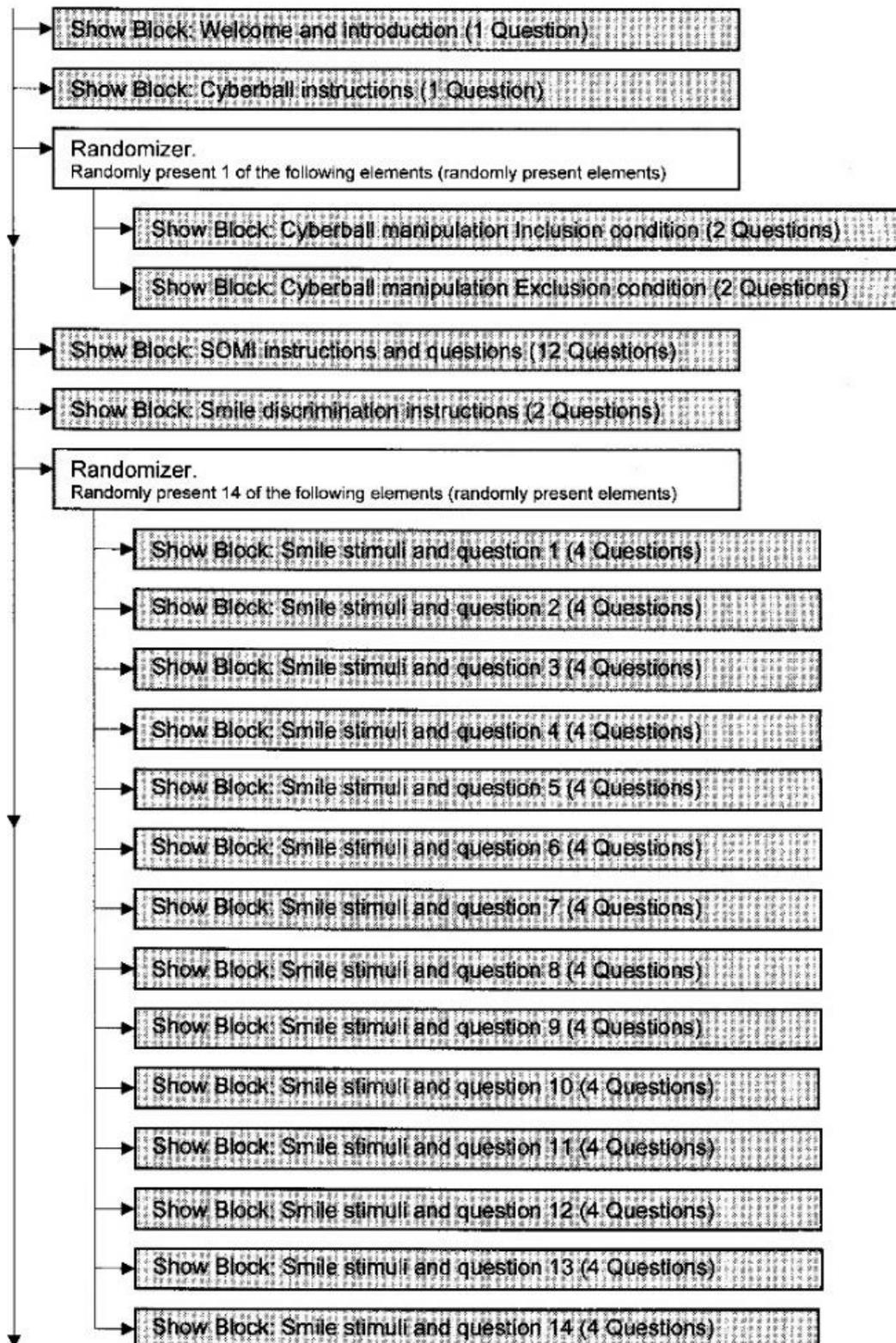
12. The wording from the original Suspicion of Motive Index (SOMI) measure was changed from "White people" to "White New Zealand people" for this study. The term "White people" is not used in NZ to refer to individuals of European origin. Such individuals are referred to in NZ census data as "New Zealand European" (Statistics New Zealand, 2013b). Following the consultation process, the researchers acknowledged that ethnic minority participants (many of whom were international students) may not be familiar with the term "New Zealand European", so a compromise was reached where the more generic term "White New Zealanders" was used to refer to ethnic majority individuals of European origin.

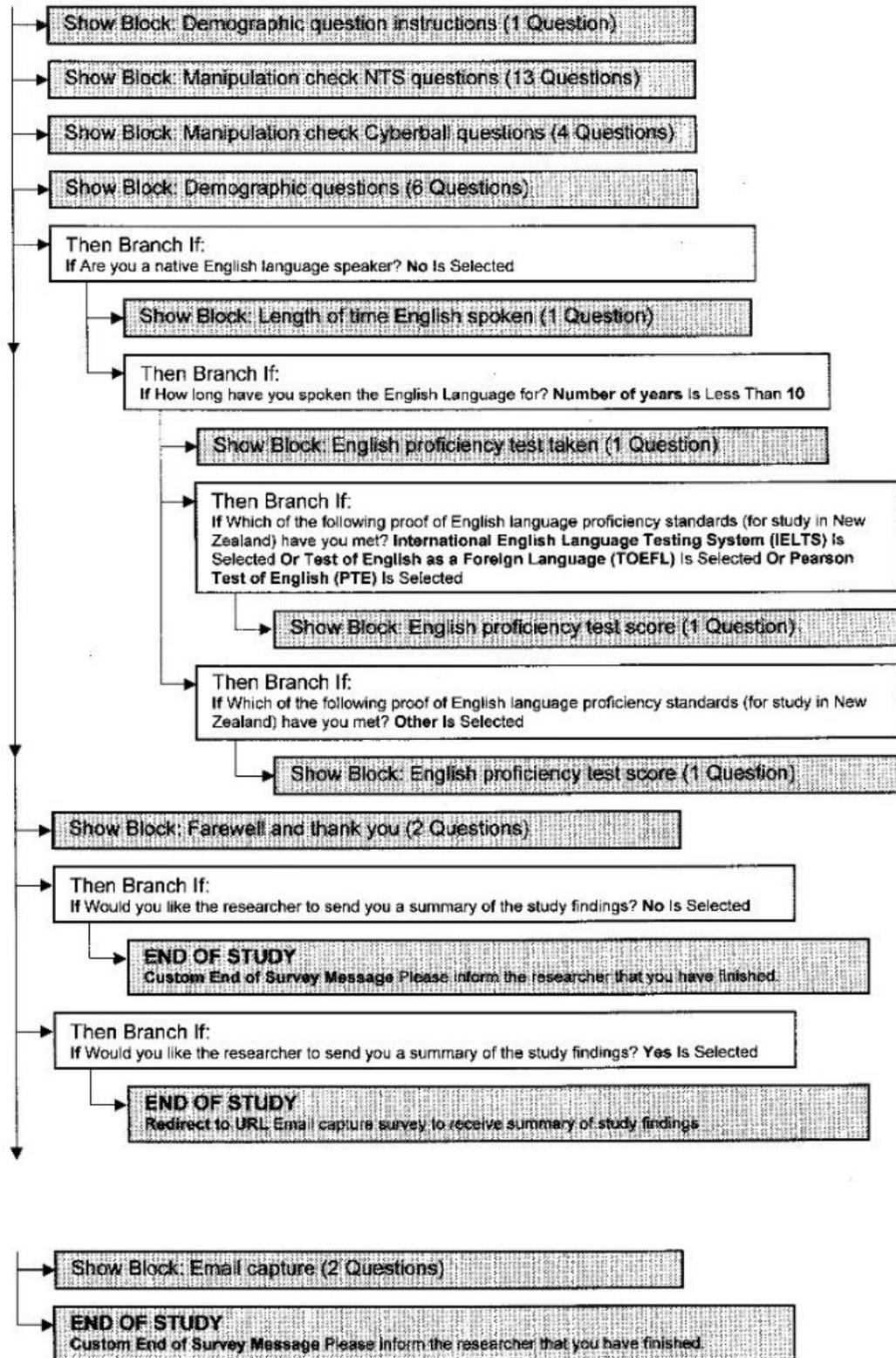
13. The wording from the original SOMI measure was changed, after consultation, from "members of racial/ethnic minority groups" to "people from your country" for this study to reflect the potential cultural differences between individuals of East and Southeast Asian origin in the NZ situational context.

8. When White New Zealand people act in a nonprejudiced way people from my country it is because they want to avoid disapproval from others. (PEMS)
Completely disagree | ●●●●●●● | Completely agree
9. When White New Zealand people act in a nonprejudiced way toward people from my country it is because it is important to their self-concept to be unprejudiced. (PIMS)
Completely disagree | ●●●●●●● | Completely agree
10. When White New Zealand people act in a nonprejudiced way toward people from my country it is because they are trying to act politically correct. (PEMS)
Completely disagree | ●●●●●●● | Completely agree

Appendix H

Qualtrics Survey Flow





Appendix I

Confirmatory Analysis Data

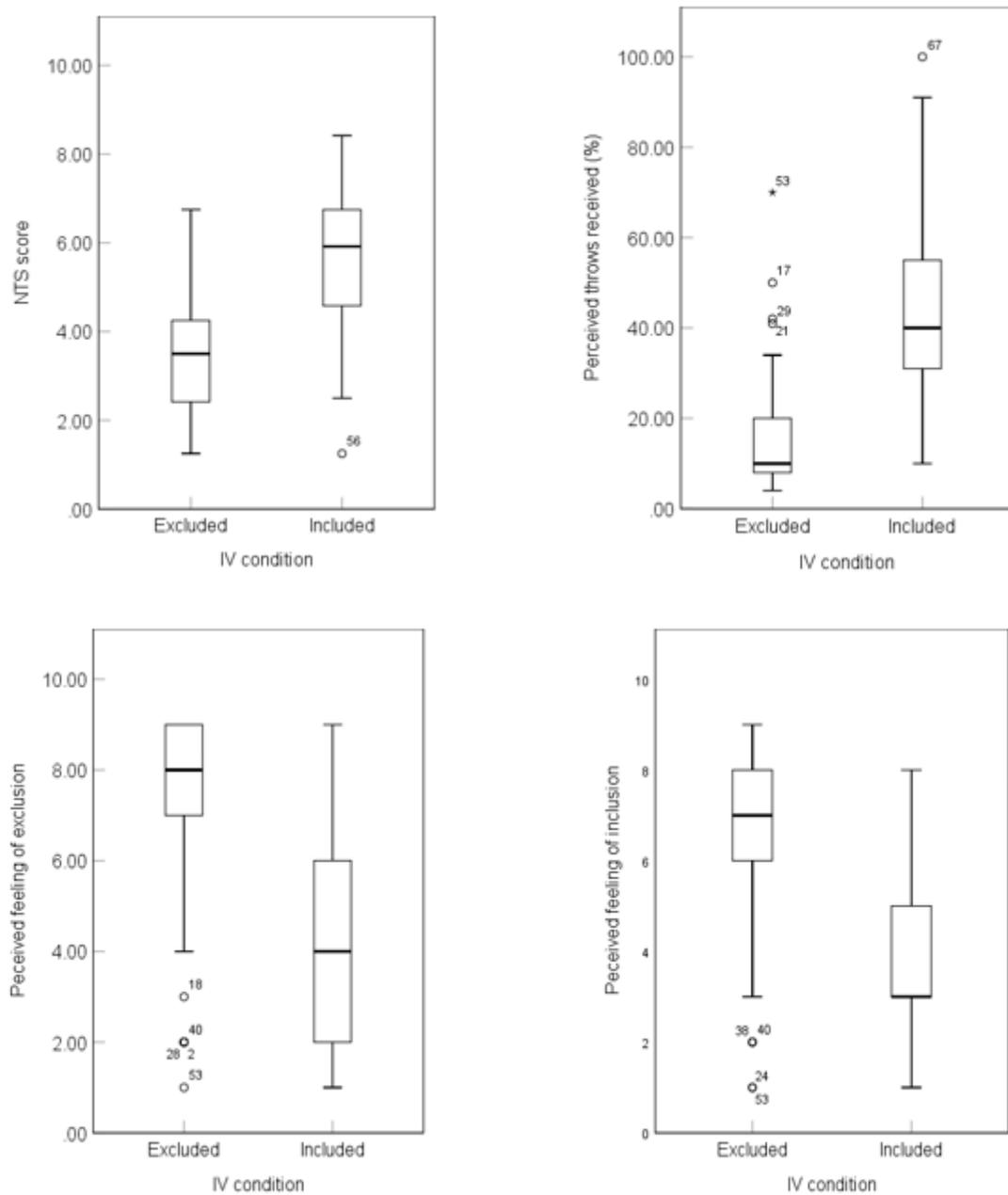


Figure 11. Boxplots of the four manipulation check questions for when participants were either socially excluded or included. NTS = Need Threat Scale.

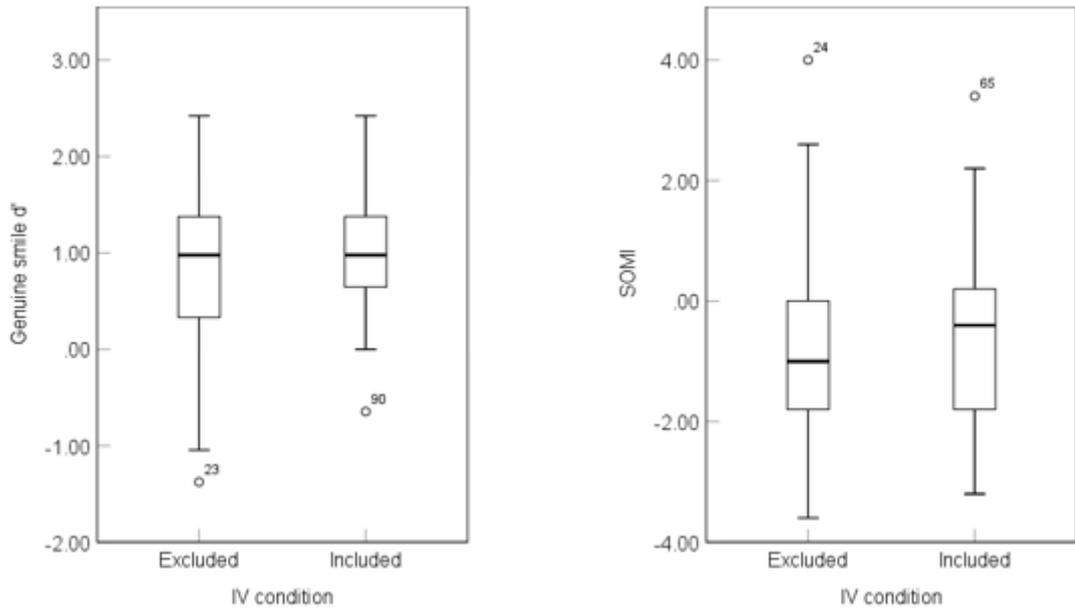


Figure 12. Boxplots of spontaneous genuine smile d' scores (left) and Suspicion of Motive Index (SOMI) scores (right) for when participants were either socially excluded or included.

Table 11

Median, Mean Rank, Minimum and Maximum Values for Each Manipulation Check Variable as a Function of Social Pain Condition.

Variable (DV)	Social Pain Condition (IV)							
	Exclusion (<i>n</i> = 54)				Inclusion (<i>n</i> = 53)			
	<i>Mdn</i>	<i>M Rank</i>	Min	Max	<i>Mdn</i>	<i>M Rank</i>	Min	Max
NTS ^a	3.50	35.26	1.25	6.75	5.92	73.09	1.25	8.42
Belongingness	2.67	36.20	1.00	8.67	6.00	72.13	1.33	9.00
Control	3.33	38.62	1.00	7.67	5.67	69.67	1.00	9.00
Self-Esteem	3.33	39.31	1.00	8.67	6.00	68.96	1.00	9.00
Meaningful Existence	3.67	38.26	1.00	8.67	6.33	70.04	1.00	8.67
Feeling of exclusion	8.00	72.58	1.00	9.00	4.00	35.07	1.00	9.00
Feeling of inclusion	7.00	70.91	9.00	1.00	3.00	36.77	9.00	2.00
Percent throws received (%)	10	31.44	4	70	40	76.99	10	100

Notes. Manipulation check questions are described in Appendix F. NTS = Need Threat Scale.

^a Belongingness, control, self-esteem and meaningful existence are NTS subscales and are included for reference in Chapter 5.

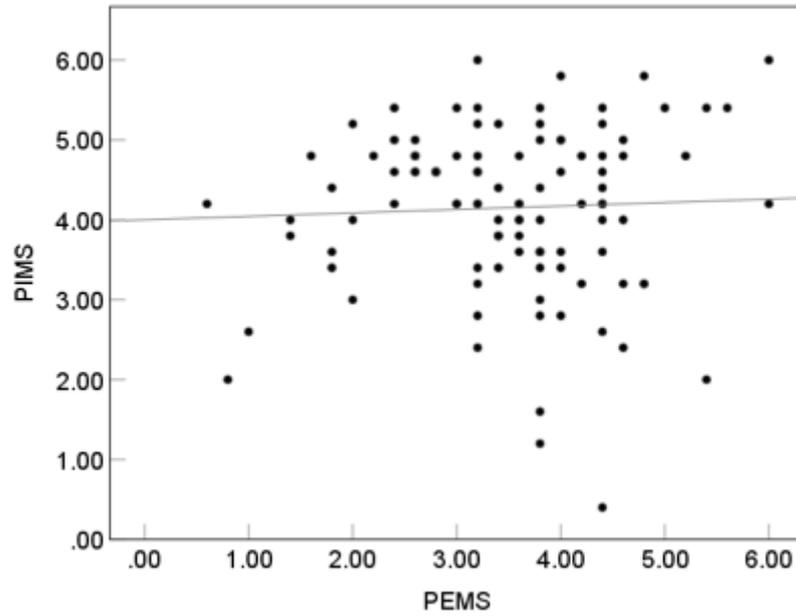


Figure 13. Socially excluded and included participants Perceived Internal Motivation Subscale (PIMS) scores as a function of their Perceived External Motivation Subscale (PEMS) scores.

Appendix J

Exploratory Analysis Data

Table J1

Summary of the Relationship of Suspicion of Motives Index (SOMI) Subscales at Each Stage in the Data Analysis

Time of Analysis	N	PEMS α	PIMS α	PEMS and PIMS ρ
Confirmatory analysis	107	.62	.70	< -.01, $p = .489^*$
Exploratory analysis				
Refined data exclusion criteria	63	.67	.62	.01, $p = .485^{**}$
Extraneous variables				
English language competency	38	.75	.66	-.02, $p = .450^{**}$
Time lived in New Zealand	35	.73	.59	-.04, $p = .412^{**}$
Final reduced data ^a	22	.78	.71	-.12, $p = .304^{**}$

Note. SOMI research on American sample frames show strong reliability and inverse correlation for the Perceived External Motivation Subscale (PEMS) and Perceived Internal Motivation Subscale (PIMS) subscales, which is not the case with the current sample. Spearman's rank-order correlations were performed, in lieu of the Pearson's product-moment correlations stated in the pre-registration document, because of small sample numbers and boxplots (Figures J1, J3, J5 and J7) showing evidence of outliers and violation of the normality assumption (confirmed by both large skewness coefficient and significant Shapiro-Wilk statistics).

^aDenotes exploratory analysis testing hypotheses after data exclusion criteria were refined (including removal of data from participants who were not native or fluent English speakers and who had lived in NZ less than one year).

* $p > .05$

** $p > .025$

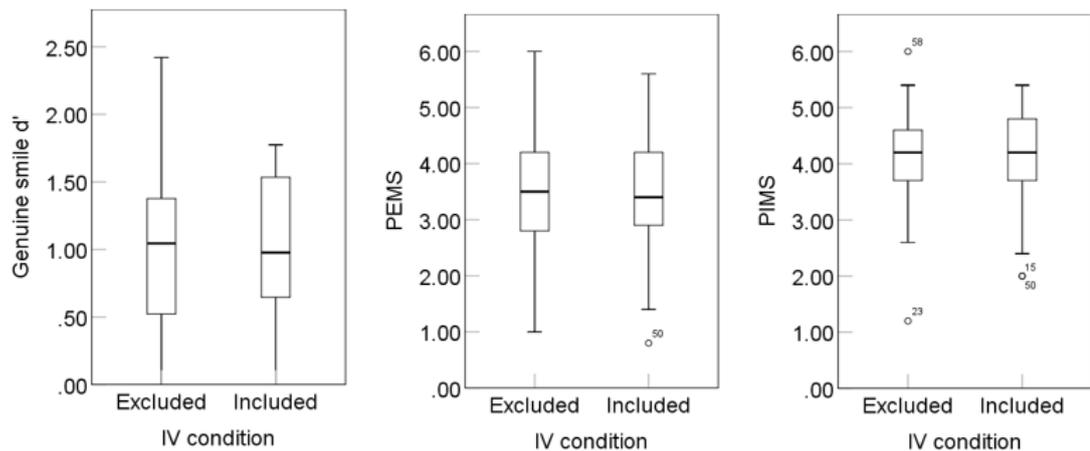


Figure J1. Boxplots of spontaneous genuine smile d' scores (left), Perceived External Motivation Subscale (PEMS) scores (centre) and Perceived Internal Motivation Subscale (PIMS) scores (right) by IV condition for exploratory analysis with refined exclusionary criteria.

Table J2

Median and Mean Rank Values for Dependent Variables as a Function of Social Pain Condition for Exploratory Analysis With Refined Exclusionary Criteria

Variable (DV)	Social Pain Condition (IV)			
	Exclusion (<i>n</i> = 36)		Inclusion (<i>n</i> = 27)	
	<i>Mdn</i>	<i>M Rank</i>	<i>Mdn</i>	<i>M Rank</i>
PEMS	3.50	32.42	3.40	31.44
PIMS	4.20	30.92	4.20	33.44
<i>d</i>	1.04	32.07	0.98	31.91

Note. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

Table J3

Test Results for Exploratory Analysis With Refined Exclusionary Criteria

Variable (DV)	Test result	Statistical Significance	Practical Significance
Hypothesis 1 <i>d</i>	$U = 483.50, z = -0.04$	$p = .486^*$	$r < .01$
Hypothesis 2 PEMS and <i>d</i>	$\rho (61) = -.11$	$p = .201^*$	-
PIMS and <i>d</i>	$\rho (61) = .03$	$p = .418^*$	-
Hypothesis 3 PEMS	$U = 471.00, z = -0.21$	$p = .417^*$	$r = .03$
PIMS ^a	$U = 447.00, z = -0.54$	$p = .586^*$	$r = .07$
Hypothesis 4 ^b	-	-	-

Note. Independent variable groups include the exclusion and inclusion conditions. *N* = 63. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

^aA two-tail *p* value was reported for this Mann-Whitney *U* test as results did not go in the expected direction (not a one-tail *p* value as per the pre-registration document).

^bMediational analysis for Hypothesis 4 not completed due to insignificant results for Hypotheses 1 to 3.

**p* > .025.

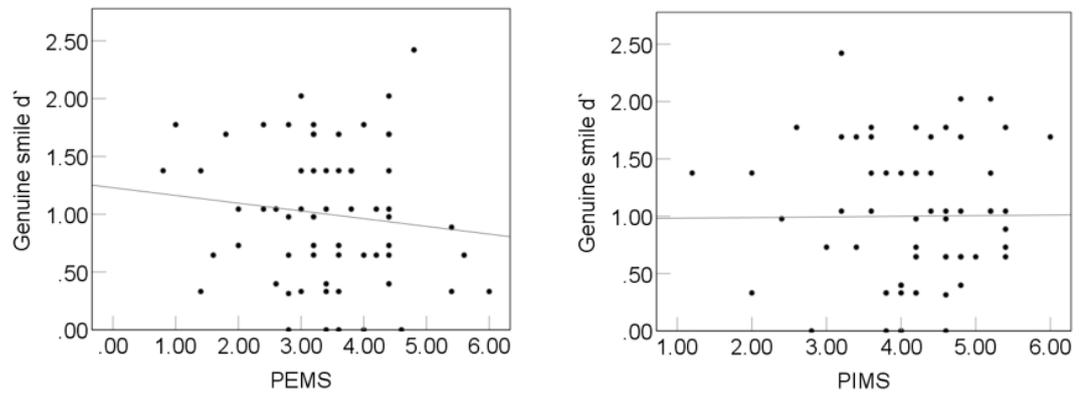


Figure J2. Socially excluded or included participants spontaneous genuine smile d' scores as a function of their Perceived External Motivation Subscale (PEMS) and Perceived Internal Motivation Subscale (PIMS) scores for Exploratory analysis with refined exclusionary criteria.

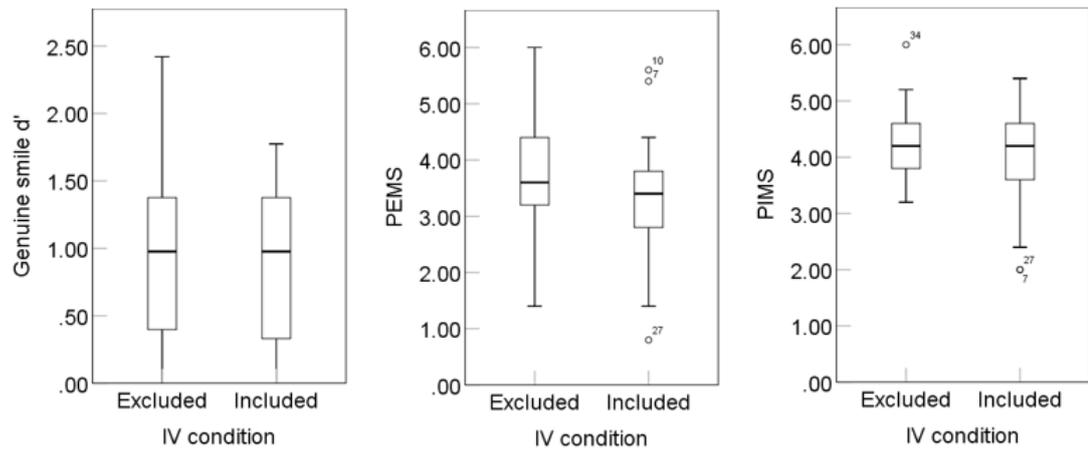


Figure J3. Boxplots of spontaneous genuine smile d' scores (left), Perceived External Motivation Subscale (PEMS) scores (centre) and Perceived Internal Motivation Subscale (PIMS) scores (right) by IV condition for exploratory analysis with English language competency.

Table J4

Median and Mean Rank Values for Dependent Variables as a Function of Social Pain Condition for Exploratory Analysis With English Language Competency

Variable (DV)	Social Pain Condition (IV)			
	Exclusion (<i>n</i> = 21)		Inclusion (<i>n</i> = 17)	
	<i>Mdn</i>	<i>M Rank</i>	<i>Mdn</i>	<i>M Rank</i>
PEMS	3.60	20.90	3.40	17.76
PIMS	4.20	20.17	4.20	18.68
<i>d</i>	0.98	20.40	0.98	18.38

Note. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

Table J5

Test Results for Exploratory Analysis With English Language Competency

Variable (DV)	Test result	Statistical Significance	Practical Significance
Hypothesis 1 <i>d</i>	$U = 159.50, z = -0.56$	$p = .288^*$	$r = .09$
Hypothesis 2 PEMS and <i>d</i>	$\rho (36) = -.03$	$p = .433^*$	-
PIMS and <i>d</i>	$\rho (36) = .08$	$p = .320^*$	-
Hypothesis 3 PEMS	$U = 149.00, z = -0.87$	$p = .193^*$	$r = .14$
PIMS	$U = 164.50, z = -0.41$	$p = .340^*$	$r = .07$
Hypothesis 4 ^a	-	-	-

Note. Independent variable groups include the exclusion and inclusion conditions. $N = 38$. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale. The data set used to examine this extraneous variable utilised the refined data exclusion criteria from Table 7.

^aMediation analysis for Hypothesis 4 not completed due to insignificant results for Hypotheses 1 to 3.

* $p > .025$.

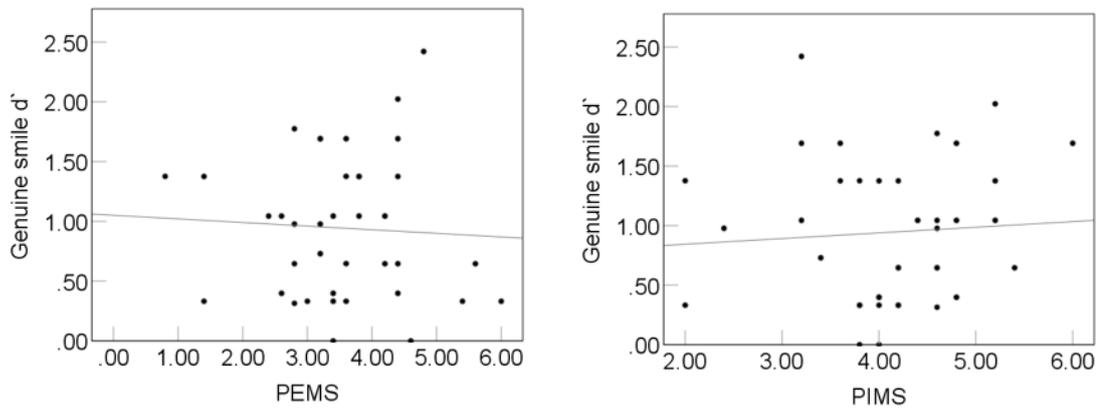


Figure J4. Socially excluded or included participants spontaneous genuine smile d' scores as a function of their Perceived External Motivation Subscale (PEMS) and Perceived Internal Motivation Subscale (PIMS) scores for exploratory analysis with English language competency.

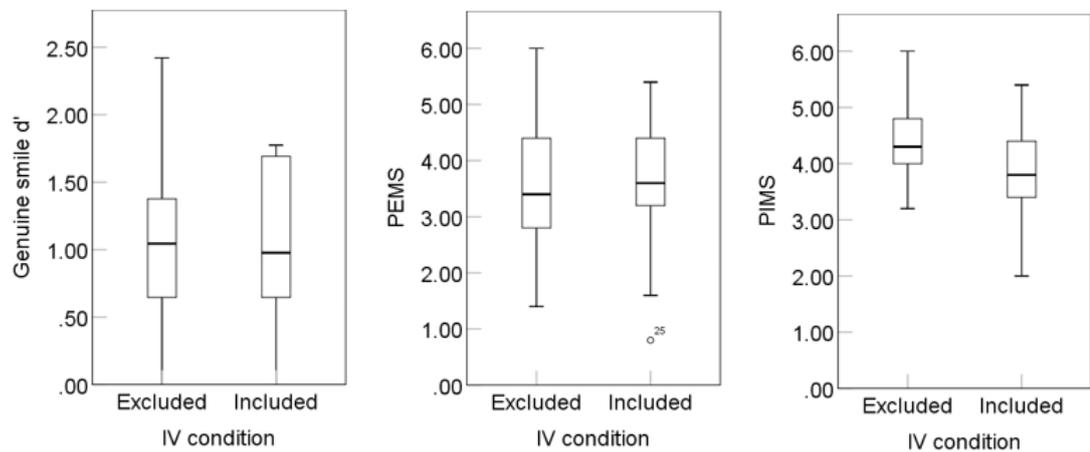


Figure J5. Boxplots of spontaneous genuine smile d' scores (left), Perceived External Motivation Subscale (PEMS) scores (centre) and Perceived Internal Motivation Subscale (PIMS) scores (right) by IV condition for exploratory analysis with time lived in New Zealand.

Table J6

Median and Mean Rank Values for Dependent Variables as a Function of Social Pain Condition for Exploratory Analysis With Time Lived in New Zealand

Variable (DV)	Social Pain Condition (IV)			
	Exclusion (<i>n</i> = 22)		Inclusion (<i>n</i> = 13)	
	<i>Mdn</i>	<i>M Rank</i>	<i>Mdn</i>	<i>M Rank</i>
PEMS	3.40	17.93	3.60	18.12
PIMS	4.30	20.32	3.80	14.08
<i>d</i>	1.04	18.09	0.98	17.85

Note. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

Table J7

Test Results for Exploratory Analysis With Time Lived in New Zealand

Variable (DV)	Test result	Statistical Significance	Practical Significance
Hypothesis 1 <i>d</i>	$U = 141.00, z = -0.07$	$p = .473^*$	$r = .01$
Hypothesis 2 PEMS and <i>d</i>	$\rho (33) = -.18$	$p = .149^*$	-
PIMS and <i>d</i>	$\rho (33) = -.11$	$p = .258^*$	-
Hypothesis 3 PEMS	$U = 141.50, z = -0.05$	$p = .480^*$	$r = .01$
PIMS	$U = 92.00, z = -1.75$	$p = .040^*$	$r = .30$
Hypothesis 4 ^a	-	-	-

Note. Independent variable groups include the exclusion and inclusion conditions. $N = 35$. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale. The data set used to examine this extraneous variable utilised the refined data exclusion criteria from Table 7.

^aMediational analysis for Hypothesis 4 not completed due to insignificant results for Hypotheses 1 to 3.

* $p > .025$.

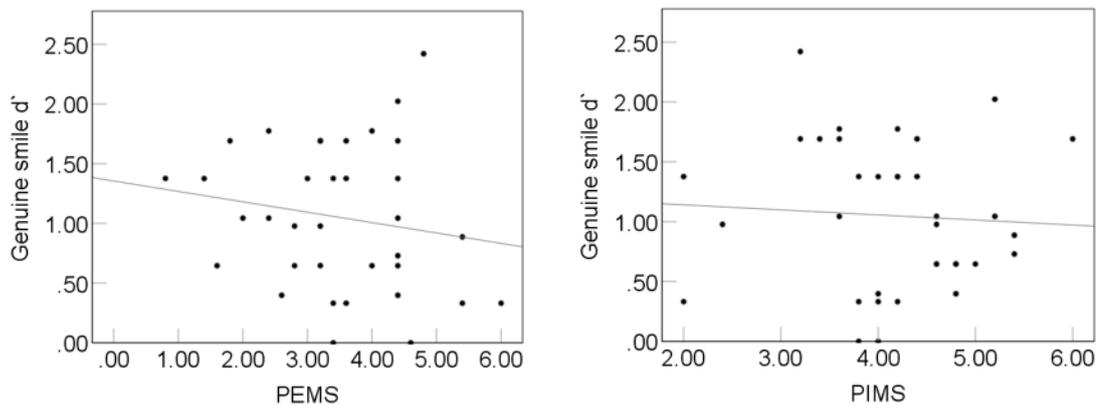


Figure J6. Socially excluded or included participants spontaneous genuine smile d' scores as a function of their Perceived External Motivation Subscale (PEMS) and Perceived Internal Motivation Subscale (PIMS) scores for Exploratory analysis with time lived in New Zealand.

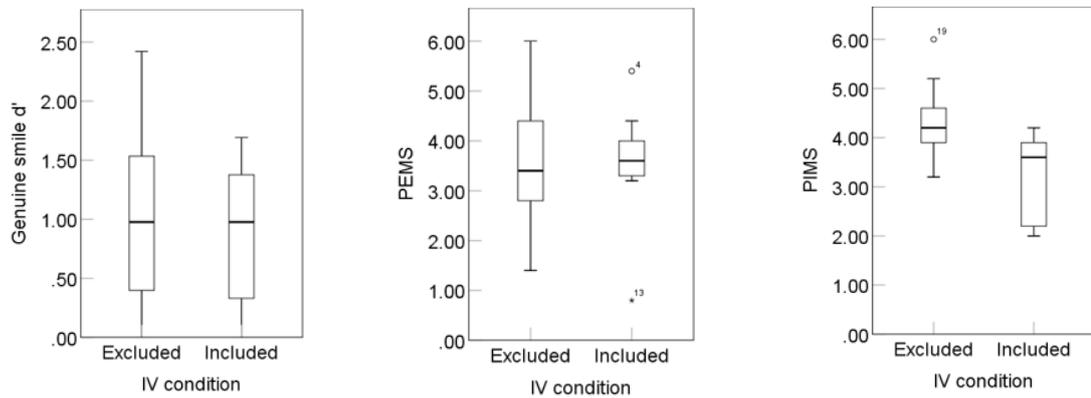


Figure J7. Boxplots of spontaneous genuine smile d' scores (left), Perceived External Motivation Subscale (PEMS) scores (centre) and Perceived Internal Motivation Subscale (PIMS) scores (right) by IV condition for exploratory analysis with refined exclusion criteria and extraneous variables controlled.

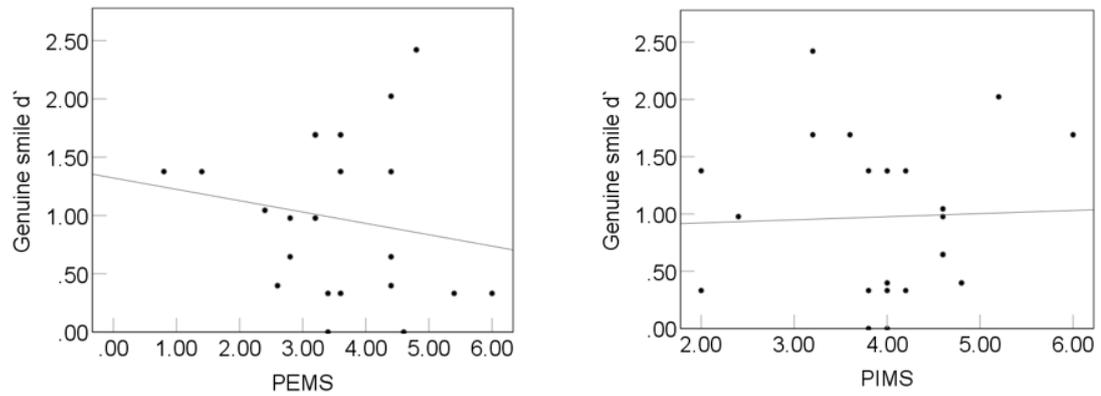


Figure J8. Socially excluded or included participants spontaneous genuine smile *d'* scores as a function of their Perceived External Motivation Subscale (PEMS) and Perceived Internal Motivation Subscale (PIMS) for exploratory analysis with refined exclusion criteria and extraneous variables controlled.

Table J8

Median and Mean Rank Values for Dependent Variables as a Function of Social Pain Condition for Exploratory Analysis With Refined Exclusion Criteria and Extraneous Variables Controlled

Variable (DV)	Social Pain Condition (IV)			
	Exclusion (<i>n</i> = 15)		Inclusion (<i>n</i> = 7)	
	<i>Mdn</i>	<i>M Rank</i>	<i>Mdn</i>	<i>M Rank</i>
PEMS	3.40	11.33	3.60	11.86
PIMS	4.20	13.80	3.60	6.57
<i>d'</i>	0.98	12.07	0.98	10.29

Note. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

Table J9

Test Results for Exploratory Analysis With Refined Exclusion Criteria and Extraneous Variables Controlled

Variable (DV)	Test result	Statistical Significance	Practical Significance
Hypothesis 1 <i>d</i>	$U = 44.00, z = -0.60$	$p = .274^*$	$r = .13$
Hypothesis 2			
PEMS and <i>d</i>	$\rho(20) = -.20$	$p = .190^*$	-
PIMS and <i>d</i>	$\rho(20) < .01$	$p = .494^*$	-
Hypothesis 3			
PEMS	$U = 50.00, z = -0.18$	$p = .430^*$	$r = .04$
PIMS	$U = 18.00, z = -2.45$	$p = .007$	$r = .52$
Hypothesis 4 ^a	-	-	-

Note. Independent variable groups include the exclusion and inclusion conditions. $N = 22$. PEMS = Perceived External Motivation Subscale. PIMS = Perceived Internal Motivation Subscale.

^aMediational analysis for Hypothesis 4 not completed due to insignificant results for Hypotheses 1 to 3.

* $p > .025$.