

**E-Contact in Online Poker: Examining the Role of Negative and Positive Intergroup
Contact and Economic Gains vs. Losses on Implicit and Explicit Outgroup Attitudes**

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Abstract

The internet has become indispensable to daily living; we spend roughly a third of our day online. A popular online activity is to play games such as online poker. In online poker, the only readily available information available about players is their nationality. This creates a prime environment to study intergroup contact. In the current research, Study 1 examined how experiencing negative, positive, or no intergroup contact at an online poker table affected explicit and implicit attitudes, emotions, secondary transfer effects (STE) of attitudes towards another outgroup, and underlying cognitive processes. Study 2 examined how negative contact, positive contact and economic gains and losses affected the same outcomes as in Study 1. Across two studies, 405 participants played a game of online poker where they experienced either positive or negative contact (or no messages at all) with a Brazilian outgroup member in the chat box. In Study 1, participants in the negative contact condition reported more negative explicit attitudes towards Brazilians compared to the positive and control conditions. However, for implicit attitudes, there was no difference between the experimental conditions, with these conditions displaying more implicit bias than the control condition. No STE were observed when Russians were the secondary outgroup. Similarly, in Study 2, participants who experienced negative intergroup contact displayed less favourable outgroup attitudes at an explicit level, but there was no difference between the negative and positive contact conditions on implicit bias. However, those that lost money, irrespective of valence of contact displayed greater implicit bias compared to the winning condition. Gains vs. losses did not affect explicit attitudes though. There were STE when Argentinians were the outgroup, with explicit attitude results mirroring that of the primary Brazilian outgroup. Emotions did not mediate the effect of contact on explicit and implicit attitudes in either study and finally, across both studies, contact valence or gains/losses did not seem to affect N400 activity as measured via electroencephalography (EEG). In conclusion, this research

demonstrates the potency of online contact that is casual, competitive, and negative, to heighten explicit prejudice, and the potential for economic gains and losses to affect implicit attitudes.

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Chapter 1: General Introduction

The internet has dramatically changed the way we live. Globally, on average, the human population spends 6 hours and 43 minutes online each day, with the top activities online being messenger apps, social media, entertainment, shopping, and gaming (Kemp, 2020). People spend significant amounts of time encountering others online, whether that be via news stories, videos, blogs/posts, games, etc., and with social media taking up a third of that time, it all adds up to people being exposed to a wide range of social information from all over the world. Thus, the internet has in a sense, made us global citizens. One of the most popular activities to do online is play games; 81% of the world's population aged between 16 to 64 play games online, with an approximate total global gaming community of 3.5 billion people (Kemp, 2020). The internet allows us to play games with strangers anywhere in the world, 24/7. One such popular online game is the multibillion-dollar industry of online poker (Gentile, 2019). Players from dozens of countries around the world play online poker, and can play for hours at a time, on a variety of online poker providers, for real or play money. The largest online poker provider, PokerStars, has reportedly over 100 million players registered to its site (PokerStars, 2016).

Online gaming, particularly that of online poker, is a ripe environment to study intergroup relations, due to the reach of people worldwide, and because in many games, the participants are essentially anonymous. In online poker, the only piece of information on players that is readily available is nationality, which is an integral piece of social identity with important implications for stereotyping, prejudice, and intergroup relations (Yogeeswaran & Dasgupta, 2014; Yogeeswaran & Verkuyten [in press]).

Online poker is also a valuable environment for intergroup research because it not only contains real life positive and negative interactions between players, but it is also inherently competitive. Specifically, players in online poker experience monetary gains and

losses allowing research to examine novel questions relating to the interactive effects of intergroup contact when people experience gains or losses relative to the outgroup.

The current research aims to investigate what happens when people have a pleasant or an unpleasant encounter with outgroup members whilst playing online poker. Do such encounters impact on our explicit prejudice and implicit prejudice toward other groups? Do such encounters affect how we feel about members of other unrelated groups not directly involved in the interaction? How are our emotions such as anger, anxiety, and happiness affected by such encounters? How do monetary losses and gains affect how we feel about outgroup members?

In order to set up the rationale for studying virtual contact/ E-contact in online poker, this dissertation (Chapter 1) will firstly give a general overview of intergroup relations, intergroup conflict, which concludes with one of the most effective ways to address intergroup conflict, and is the main theoretical background to this dissertation: intergroup contact. From here, the various forms of intergroup contact will be discussed in detail: direct positive contact, indirect contact (including online gaming and E-contact), and negative forms of intergroup contact. Next, the literature that forms the basis for the measures across both studies are presented. Finally, this chapter concludes with what the present research aims to contribute to the field of intergroup contact, and the goals and research questions that this dissertation aims to answer.

Chapter 2 focuses on the finer details of Study 1 and sets it up with a broad overview of Study 1, and presents hypotheses for this study. The rest of the chapter focuses on the study design, method (including potential moderating variables), results, and concludes with a discussion of the results.

Chapter 3 follows a similar plan: the literature sets up the addition of adding a variable to investigate losses vs. gains, and then briefly outlines the measures used, and improvements/ modifications from Study 1, with hypotheses presented. The rest of Chapter 3 is dedicated to method, design, results, and a discussion of the results.

The final chapter in this dissertation, Chapter 4, is the general discussion chapter. Here, I briefly summarise the design and findings from both Study 1 and 2. Then, I relate the findings back to the E-contact literature, negative intergroup contact literature, and the contact literature more broadly. I then provide a brief discussion on the divergence of implicit and explicit attitudes, which links into the subsequent section on economic losses and gains. Next, I discuss my results in relation to the secondary transfer effects literature, before moving onto limitations and future directions. The dissertation concludes with the broader implications of my research.

Intergroup relations: An overview

Intergroup relations is an area of study in psychology interested in how people feel, perceive, think, and act towards others from different group memberships or categories (Hogg, 2013). In order for this to happen, judgements are made about individuals to differentiate them as being from different groups, this is when intergroup processes occur (Messick & Mackie, 1989). Intergroup processes refer to the processing of individuals or groups of people based on their varying group memberships (Messick & Mackie, 1989), that is, processing *between groups*. We tend to evaluate members of our own group (ingroup) more favourably than members from groups we do not belong to (outgroups; Hewstone et al., 2002). This is referred to as intergroup bias, which can lead to prejudice, stereotyping, and discrimination (Hewstone et al., 2002). When hostile relations between the ingroup and outgroup arise, intergroup conflict can occur.

Intergroup conflict comprises of competition between groups for dominance over physical or symbolic resources, values, and power (Coser, 1967). When conflicts based primarily on social categories or group memberships occur *between* different groups, it is referred to as intergroup conflict (Tajfel & Turner, 1979). Conflicts between (and within) groups are common in the animal kingdom. For human animals, conflicts can arise in relation to different groups such as ethnicity, sport, gender, and religious groups, just to name a few.

Realistic group conflict theory (RGCT). Quite commonly, conflicts can arise due to competition for resources between groups. One of the first theories to emerge that attempted to explain intergroup conflict resulting from threat was realistic group conflict theory (RGCT; Riek et al., 2006; Sherif & Sherif, 1969). RGCT states that when two or more groups compete for limited resources, a potential zero-sum outcome results in conflict, negative attitudes, stereotypes, and discrimination toward the outgroup (Sherif & Sherif, 1969). Some examples of these resources are: wealth, employment, and security etc. In Sherif et al. (1961; 2010) famous experiment, children in a summer camp were divided into two distinct groups that competed against each other on a variety of activities. Hostilities between the groups grew as competition for zero-sum outcomes grew. Reductions in competitive tasks were not sufficient to alleviate conflict between these groups, the hostility was mitigated only via intergroup cooperation where both teams had to attain common goals.

Social identity theory (SIT). Whereas RGCT focuses on realistic threats, social identity theory (SIT) states that competition between groups can also arise in the process of attaining symbolic resources, such as having a positive group identity. Tajfel et al. (1971) demonstrated this phenomenon by randomly assigning participants to arbitrary groups based on their supposed performance on a trivial line estimate task. Even though these groups were not based on any meaningful category, participants still displayed ingroup favouritism by

allocating more resources to other members in their arbitrary ingroups, compared to outgroup members.

Tajfel and Turner (1979) explain this intergroup bias as participants trying to maintain a positive group identity. When Tajfel et al. (1971) made the two groups salient in the experiment, participants' social identity (vs. interpersonal identity) was activated. In order for participants to maintain a positive social identity, they were more motivated to display ingroup favouritism by allocating more resources to their (arbitrarily created) ingroup. Furthermore, researchers have found that when competition is made salient, outgroup biases become even more prevalent, demonstrating the additive effect of RGCT and SIT (Sidanius et al., 2007).

Integrated/ Intergroup threat theory (ITT). Building on RGCT and SIT, integrated threat theory (ITT) classified outgroup threats into four sources that make the outgroup seem threatening and accordingly heighten prejudice: realistic threat, symbolic threat, intergroup anxiety (emotion), and negative stereotypes (beliefs; Stephan & Stephan, 2000). ITT considers RGCT and SIT to be not necessarily mutually exclusive, but complement the other in the variance attributed to attitudes toward outgroup members (Riek et al., 2006).

Although often still used interchangeably, integrated threat theory has now evolved into *intergroup* threat theory, where only realistic and symbolic threats are considered threats (Stephan & Stephan, 2000; Stephan et al., 2009). The threats do not have to be real, they can also be perceived threats (Rios et al., 2018). Researchers now think that negative stereotypes are a cause of threat, such as thinking the outgroup is aggressive; and anxiety is now thought of as a subtype of threat (Rios et al., 2018; Stephan et al., 2009). Even though now not formally recognised as part of ITT, it is still important to consider intergroup anxiety, negative stereotypes and their relationships to prejudice.

In relation to intergroup anxiety, people may feel uncertain about how to act around outgroup members, which in turn increases feelings of anxiety, and makes the intergroup interaction seem more threatening (Stephan & Stephan, 1985). Previous research has found that intergroup anxiety acts as a mediator of outgroup attitudes (Pettigrew & Tropp, 2008). Plant and Devine (2003) discovered that hostility increased alongside intergroup anxiety, as did people trying to avoid the outgroup.

On the other hand, negative stereotypes affect how threatening the outgroup appear, by generating negative expectancies about how the outgroup behaves (Riek et al., 2006). If people have negative prior assumptions about the outgroup, then this in turn can affect how threatening the outgroup appears, influencing judgements and attitudes. Negative stereotypes also occur alongside negative emotions (e.g. anger), leading to increased negative outgroup appraisals (Stephan & Stephan, 1996). There is also an additive factor when competing against an outgroup for realistic or symbolic resources. In these competitive situations, intergroup anxiety and negative stereotypes increase, as does intergroup threat, heightening prejudice further (Stephan & Stephan, 2000).

The above research has demonstrated that prejudice and conflict can arise from real or perceived realistic and symbolic threats from outgroup members. Further, group membership does not even have to be meaningful, even arbitrary groups are sufficient to elicit realistic and symbolic threats. Anxiety resulting from uncertainty about how to act around the outgroup, can make intergroup encounters seem more threatening, which can heighten prejudice. The outgroup can also seem more threatening by prior negative stereotypes, which too, can lead to more negative views of the outgroup.

Although an increased sense of threat and anxiety resulting from competition or potential intergroup encounters can exacerbate prejudice, negative stereotypes, and

discrimination, intergroup relations can be improved. This can be achieved by reducing intergroup threat and anxiety (Stephan & Stephan, 2000), increasing empathy for outgroups (Dovidio et al., 2011; Pettigrew & Tropp, 2008; Swart et al., 2011), and to a lesser extent increasing knowledge about the outgroup (Dovidio et al., 2011; Pettigrew & Tropp, 2008). Having contact with outgroup members in a positive manner is one way to achieve this and has been demonstrated to be a robust means of reducing outgroup biases (Al Ramiah & Hewstone, 2013; Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2008). This notion is addressed by intergroup contact theory, which is the foundational theoretical basis for this dissertation.

Intergroup contact theory

During the middle of the 20th century, personality psychologist Gordon Allport proposed his pivotal intergroup contact theory. Allport postulated that (under certain conditions) having positive contact with an outgroup member can lead to less prejudice towards that outgroup (Allport, 1954). These conditions are: mostly equal status among the groups, the groups working toward a subordinate goal, cooperation between the groups, and the contact has institutional support (e.g. from authorities). Further research has added that these conditions are ideal but not necessary for intergroup contact to be effective at reducing prejudice (Pettigrew & Tropp, 2006). Since Allport's seminal work, numerous studies have demonstrated that having direct contact with outgroup members, such as having an outgroup friend, reduces levels of intergroup prejudice (Al Ramiah & Hewstone, 2013; Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2008).

Direct intergroup contact

Direct intergroup contact is where someone has face-to-face contact with an outgroup member. Meta-analyses on direct, face-to-face intergroup contact has demonstrated that having positive contact with outgroup members results in more positive attitudes towards that

outgroup (e.g. Pettigrew & Tropp, 2006; 2008). In their meta-analysis, Pettigrew and Tropp (2006) examined data from 515 studies and found that positive direct intergroup contact can significantly reduce prejudice ($r = -0.22$). Moreover, Pettigrew and Tropp (2006) compared effect sizes for positive contact effects between different situations and found no differences, indicating that contact effects generalize to different situations. A meta-analysis by Lemmer and Wagner (2015) also concluded that direct contact interventions in regards to ethnic prejudice are effective in real life settings (outside of laboratories) and that positive generalizations are sustained after the initial intervention. What are the mechanisms for how intergroup contact works then?

Mechanisms for how and why direct intergroup contact reduces bias. Research implicates both cognitive and affective routes in reducing bias. From a cognitive perspective, having more knowledge about an outgroup has been shown to have a small effect at reducing bias (Pettigrew & Tropp, 2008). Increased knowledge can help the ingroup understand the outgroup more e.g. their historical background (Tausch & Hewstone, 2010), and can prescribe ways in which one can successfully have contact with others and reduce avoidance (Stephan & Stephan, 1985). However, outgroup knowledge is only weakly associated with reduced bias (e.g. Dovidio et al., 2011; Pettigrew & Tropp, 2008).

Another cognitive factor that can help reduce bias is socially categorizing outgroup members differently. Pettigrew (1998) proposed that optimally, outgroup members should be decategorized, then their social identity should be salient (categorization), and finally they can be recategorized. To achieve this, in a contact situation outgroup members should be individualised (decategorization), that is, ingroup members should get to know them on a personal level (e.g. Brewer & Miller, 1984), and thus there would be more heterogeneous or less stereotypical perceptions about the outgroup (Turner et al., 2007). The issue with decategorization however, is that it might not generalise any positive contact effects over to

all members of the outgroup (Hewstone & Brown, 1986). Therefore, the next step is categorization, in which group memberships should be salient and the outgroup member should be a typical exemplar of the outgroup. This can then facilitate positive generalizations to the outgroup as a whole. Finally, recategorization can occur. This is when groups of “us” and “them” become “we”. In this sense, outgroup members are now included in an all-inclusive superordinate category (e.g. Gaertner & Dovidio, 2000).

Brown and Hewstone (2005) proposed the mutual differentiation model which argues that contact should be ‘intergroup’, that is, it is important for group memberships to be salient (contact partners should be aware of their respective memberships) for any positive effects to generalise to the wider group, and for the individuals to be representative of their groups. This has been supported by other studies that have consistently found salience to moderate the relationship between contact and various mediators and outcome measures (in addition to prejudice) such as outgroup trust, forgiveness, and perceived outgroup variability (Harwood et al., 2005).

Affective routes are also implicated in the beneficial effects of intergroup contact for reducing bias; these include reducing anxiety, perceived threat, and increasing empathy (Tausch & Hewstone, 2010). As previously mentioned in this chapter, anxiety can make one feel awkward around an outgroup member, and hence increase perceived threat (Stephan & Stephan, 1985), or avoid the outgroup altogether (Plant & Devine, 2003). In fact, intergroup anxiety is the strongest and most reliable mediator of intergroup contact and prejudice (Lolliot et al., 2015; Pettigrew & Tropp, 2008). Likewise, as mentioned previously, reducing perceived threat such as realistic and symbolic threats also mediate intergroup contact and attitudes (Stephan & Stephan, 2000). Additionally, Tausch et al. (2007) demonstrated that these threats mediated the relationship between contact and prejudice, only for those that strongly identified with their group. For those that did not identify as highly with their group,

anxiety about interacting with an outgroup member mediated the relationship between contact and prejudice, thus showing moderated mediation.

Lastly, increased empathy and perspective-taking for the outgroup is important for mediating or improving intergroup relations (Swart et al., 2010). Empathy, is the ability to ‘put oneself in another’s shoe’ by understanding another person’s feelings (Al Ramiah & Hewstone, 2013). Eliciting empathy also increases group salience, because during the empathising process, one has to understand another’s experience of being an outgroup member (Al Ramiah & Hewstone, 2013), thereby generalising positive feelings to the whole outgroup. Swart et al. (2011) demonstrated longitudinally, that affective empathy (and reduced anxiety) mediated the relationship between cross-group friendships and prejudice. In this sense, more knowledge of the outgroup and/or more empathy, generally coincides with getting to know outgroup members on a more personal level.

The aforementioned mechanisms are how intergroup contact, including direct contact can reduce prejudice, but intergroup contact is not necessarily just direct contact. In fact, most contact that we have today with others is mass-mediated (Mutz & Goldman, 2010), a form of indirect contact.

Indirect intergroup contact for reducing prejudice

Indirect contact is contact that is not face-to-face and includes several different approaches (discussed in more detail in the sections below) such as extended contact (knowledge of a friend being a friend of an outgroup member), imagined contact, vicarious contact (observing an ingroup member have contact with an outgroup member, or E-contact/virtual contact (intergroup contact over the internet). Although not originally comprehensively researched like direct contact—it has only really been studied since 1997

(starting with extended contact; Wright et al., 1997), recently more emphasis has been given to the value of indirect contact.

Indirect contact has some advantages over direct contact. For instance, groups that do not have as many opportunities to meet face-to-face, or it is difficult for them to meet due to a hostile history, and therefore are unwilling to meet directly, may find it easier to meet indirectly, especially as indirect contact does not elicit as much intergroup anxiety (Vezzali et al., 2014). Also with indirect contact, group membership is generally more salient, which is important for the effects of positive contact generalising to all members of an outgroup (Brown & Hewstone, 2005). Lastly, indirect contact is much more feasible to implement as it can include watching videos, interacting online, or even just thinking about an intergroup interaction. These factors highlight the practicality of indirect contact. In fact, rather than being limited to having contact with just those that you meet, indirect intergroup contact can reach even more ingroup members, as many more instances of the intergroup encounters are circulated or heard about (Dovidio et al., 2011).

In their meta-analysis, Lemmer and Wagner (2015) found that positive indirect contact is effective at reducing prejudice in real-world settings, and like direct contact, the efficacy of the interventions was maintained over time. Crucially, initial positive indirect contact encourages future direct contact with outgroup members (Wölfer et al., 2019). The proceeding sections briefly summarise the different forms of indirect contact. The section on E-contact contains more detail, as this was the focus of my dissertation.

Extended contact. Even just knowing that a fellow ingroup member has an outgroup friend can increase positive attitudes towards that outgroup. This effect was first demonstrated by Wright et al. (1997), whereby in two correlational and two experimental studies, knowledge that an ingroup member had close, positive, cross-group friendships led to

more positive outgroup attitudes. A recent meta-analysis has shown that extended contact has a small to medium effect on positive outgroup attitudes, and it does so independently of direct friendship. Interestingly, extended contact's effects were just as strong as direct friendship on intergroup attitudes (Zhou et al., 2019).

Imagined contact. Imagined contact is an easy and cost-effective way to introduce intergroup interactions, and as the name suggests, it entails participants imagining a positive interaction with an outgroup member (Crisp & Turner, 2009; 2012). Research in imagined contact has demonstrated that even just imagining having contact with an outgroup member can reduce prejudice (Miles & Crisp, 2014). A meta-analysis by Miles and Crisp (2014) found a small to medium effect of imagined contact on reducing bias, with imagined contact being more effective on behavioural outcomes compared to attitudinal measures.

Vicarious contact. Just observing an ingroup member engage in a positive interaction with outgroup members has been sufficient to reduce prejudicial attitudes (see Banas et al., 2020 for a meta-analysis). Vicarious contact models to the observer *how* intergroup contact can occur (Mazziotta et al., 2011). In Mazziotta et al. (2011), participants watched a video of either two fellow ingroup members (intragroup) or an ingroup and outgroup member (intergroup) interacting. Those that watched intergroup contact, had more positive attitudes toward the outgroup.

In previous research on vicarious contact in online poker, participants watched a New Zealand poker player (ingroup member) play against a Russian poker player (outgroup member), in an online poker game. The interactions between the players were either positive (e.g. "nice hand my friend"), negative ("U STUPID"), or there were no chat exchanges between the players. This served as the control condition. Relative to the control condition,

there was more prejudicial attitudes toward Russians in the negative condition, and less negative attitudes toward Russians in the positive condition (Andrews et al., 2018).

Parasocial contact is similar to vicarious contact, but instead uses a first person perspective, as opposed to operating through watching another ingroup member (Zhou et al., 2019). Personally watching or being exposed to a member of an outgroup, such as on television, can lead to more positive attitudes towards that group. Schiappa et al. (2005; 2006) demonstrated this where participants that watched more of a television show with homosexual characters in main roles displayed more favourable attitudes towards homosexuals in general.

In their meta-analysis, Banas et al. (2020) compared parasocial and vicarious intergroup contact and found that both were equally likely to affect prejudicial attitudes. For either vicarious or parasocial contact, there was also no difference in the length of time for the exposure to the outgroup and subsequent attitudes, but there were greater effect sizes for experimental versus survey methods.

Online gaming and E-contact/ virtual contact research. Intergroup contact over the internet is a very common form of contact seeing as the internet is so ubiquitous in our daily lives. This area of intergroup contact is less studied, but research on the potential for E-contact to reduce prejudice has been promising though. Due to the focus of this dissertation being E-contact, this section will be much more comprehensive than that given to other indirect contact methods mentioned previously. This section will firstly present an overview on online gaming in general and its effects on various measures including prejudice. Then, I will transition into a comprehensive review on E-contact; this is where text-based or video based interactions have occurred, and interacting between different groups is the main focus

of the respective study (for instance c.f. to online gaming where playing the game is the main focus for participants).

Online Gaming Research

Previous research has looked at how online gaming can affect prosocial behaviour (Greitemeyer & Mügge, 2014), attitudes and beliefs towards the poor (Roussos & Dovidio, 2016), aggression (Adachi & Willoughby, 2011; Anderson et al., 2010), racial stereotypes (Burgess et al., 2011), gender stereotypes (Brehm, 2013), risk taking (Fischer et al., 2009), and ideas on designing games that can reduce implicit bias (Flanagan & Kaufman, 2016).

Several studies have examined different contexts for playing online games, namely, playing competitively or cooperatively. Shooter games such as Call of Duty (COD) which can be played cooperatively (e.g. in teams of two or more), or competitively (single-player mode) have been utilised to investigate intergroup relations. In these games, players talking through headsets / microphones so their voices and accents can be heard, or in COD players can display their country's flag if they wish (Adachi, Hodson, & Hoffarth, 2015) can make nationality apparent. Indeed, research using these shooter game paradigms have found that playing an online shooter game cooperatively with an outgroup member led to less prejudice towards that outgroup as a whole, and this effect still held even if the video game was violent in content (Adachi et al., 2016; Adachi, Hodson, Willoughby, & Zanette, 2015). Other research found that, playing a video game in which the enemies were Arab terrorists, increased negative attitudes, stereotypes and affect towards Arabs, compared to playing a non-violent game, or violent game that was not related to terrorism. Even when the terrorists in the game were Russian, negative attitudes towards Arabs still emerged, likely because of the strong stereotypical association between Arabs as terrorists (Saleem & Anderson, 2013).

Stiff and Bowen (2016) had participants play against a computer opponent either cooperatively with an outgroup member, or alone. There were more positive outgroup attitudes when playing cooperatively with the outgroup member, compared to playing alone. A further study by Stiff and Kedra (2018) replicated these findings and found that these effects were mediated by reduced anxiety. In these studies, there was no interaction with the outgroup partner e.g. no text-based or audio dialogue. Participants were just aware that they were playing alongside, or against them. It seems in these studies, just the mere exposure effect of playing cooperatively with an outgroup member was sufficient to improve attitudes. This was true even if the outgroup had a history of rivalry, or if it were just a trivial outgroup.

E-contact or virtual contact

The term E-contact was coined by White and Abu-Rayya (2012) as “computer mediated contact involving an engagement of self in the intergroup relationship” (p.598). It is considered indirect contact because there is no in-person face-to-face contact, rather the contact is computer-mediated (White, Harvey et al., 2015). However, unlike other forms of indirect contact such as extended or vicarious contact, E-contact, can be considered more of a direct form of contact as interactions take place in real time, so that there is immediate engagement of the self (White, Harvey et al., 2015). Also, it is more analogous to direct contact in that the self is directly implicated in the contact, and there is less reliance on group norms which tend to be more influential in mediating other forms of indirect contact such as extended or vicarious contact (Dovidio et al., 2011). E-contact can be an online interaction that is either text-based, video-based, or both (Amichai-Hamburger & McKenna, 2006).

The issue with many past E-contact studies is that they are mostly descriptive, lack a control group (see White, Harvey et al., 2015), are correlational (Schwab et al., 2019), or quasi-experimental field studies (Walther et al., 2015), and have not measured changes in

intergroup evaluations (White et al., 2020). To address these issues, White and colleagues (2012) devised a more rigorous test of the contact hypothesis in an online intervention.

White and Abu-Rayya (2012), devised an E-contact intervention with majority Australian Christian students and minority Australian Muslim students. Their intervention met all of Allport's (1954) recommendations for optimal intergroup contact, namely: there were equal number of Christian and Muslim students in each internet group, the students had a common goal to work towards cooperatively (finding a solution to make Australia more environmentally sustainable), and support from the school authorities. Additionally, throughout the 8-week text-based intervention, the students' religious memberships were salient and there was ample time for cross-group friendships to form. The authors also examined outgroup measures at two-weeks and 6-months post intervention and found the intervention group had less bias toward their respective outgroup (either Muslims or Christians) at both follow up time points, compared to the control group which only interacted with religious ingroup members. A 12-month follow up on the students was conducted and confirmed that the reduction in intergroup bias was still maintained (White et al., 2014). This lends support to the potential for positive, supervised, structured intergroup interactions over the internet helping to foster better relations and understanding between groups.

Since White and Abu-Rayya's (2012) comprehensive longitudinal, experimental design of an E-contact intervention, other studies have successfully used similar experimental designs as well. Some of these studies have employed multiple sessions of interacting with an outgroup member (e.g. Abu-Rayya, 2017), whilst some participants only interacted in a one-off session with an outgroup member (e.g. Maunder et al., 2019; Schumann et al., 2017; White, Turner et al., 2019; White, Verrelli et al., 2019). The target outgroups have also varied, and promisingly, E-contact appears to be effective at reducing bias toward a multitude

of outgroups: ethnic minorities (Abu-Rayya, 2017); people with schizophrenia (Maunder et al., 2019); between Catholics and Protestants (White, Turner et al., 2019); and lesbian women (White, Verrelli et al., 2019).

This previous research is encouraging for E-contact being an ideal means to reduce bias towards a wide-range of outgroup members and it can be very cost-effective, easy to implement, and may not necessarily require multiple sessions. A lot of the aforementioned research have utilized a pre-programmed “outgroup member” and moderator (e.g. Maunder et al., 2019; White, Turner et al., 2019). Additionally, it can bridge the gap between indirect and direct contact by preparing individuals for face-to-face contact (White et al., 2020).

Recently, White et al. (2020) conducted a meta-analysis on text-based E-contact studies, including 12 studies that employed experimental designs, and had a control condition where there was no interaction with an outgroup member. Text-based E-contact had a significant large effect ($d = -0.74$) at reducing cognitive measures of prejudice, a medium effect ($d = -0.43$) on reducing affective prejudice, and a medium effect ($d = -0.38$) of behavioural measures of prejudice.

E-contact, just like other forms of indirect contact, may be less anxiety producing than face-to-face contact (Amichai-Hamburger & Furnham, 2007). Reduced anxiety is a hypothesised underlying mechanism in E-contact (Abu-Rayya, 2017; White & Abu-Rayya, 2012; White, Turner et al., 2019; White, Verrelli et al., 2019), and just like in direct contact, is likely the strongest mediator for electronic contact effects (White & Abu-Rayya, 2012; White et al., 2014). Wölfer et al. (2019) found that in relation to positive intergroup contact, interacting electronically can reduce intergroup anxiety and increase the chance of having future direct contact.

Compared to direct contact, text-based E-contact can provide users with more control over their responses, and how they present themselves online (Amichai-Hamburger & McKenna, 2006). This can lead to hyperpersonal communication, in which, users can present themselves and manage their impressions to be more favourable than might be achieved in face-to-face interactions (Walther, 1996). The (slightly) asynchronous nature of text-based contact allows users more time to edit and plan their responses, resulting in more desirable characteristics being expressed, and the receiver forming a more positive impression of the sender than in face-to-face communication.

Intergroup emotions may also mediate the relationship between contact and outgroup evaluations. For instance, in their study, White, Abu-Rayya, et al. (2015) demonstrated that in their online intervention with Christian and Muslim students, those in the experimental condition (intergroup condition), shared their emotions more by using more affect words and additionally they expressed more positive (e.g. love, nice), and fewer negative emotions (e.g. hurt, ugly) compared to the control (intragroup) condition. The experimental condition also used fewer anger and sadness related words (e.g. hate, kill, or crying, sad, respectively). Furthermore, negative emotions, anger, and sadness mediated the relationship between contact condition and reduction in bias. This suggests that the reduction in bias is operationalized through the use of less negative emotions. Maunder et al. (2019) found changes in anger and fear to mediate the relationship between E-contact and stereotypes about individuals with schizophrenia. In their study, reduced anger and fear reduced negative stereotypes and social distance towards people with schizophrenia.

Benefits of E-contact. There are many benefits for E-contact; for instance, individuals may be better prepared for future face-to-face contact, because E-contact requires personal engagement. Previous research has found contact involving personal engagement to have lasting effects post experiment (White & Abu-Rayya, 2012; White et al., 2014),

therefore E-contact offers the possibility for more enduring attitude change (White et al., 2014). There has been support for long-term success with White et al. (2014) finding that reduced bias lasted 12 months after E-contact interventions in schools.

Exchanges over the internet generally involve greater levels of self-disclosure and intimacy than face-to-face exchanges, and in contrast to face-to-face contact, users report more liking toward acquaintances in interactions (McKenna et al., 2002; Walther, 1996). Individuals maybe more comfortable disclosing more information about themselves because of the anonymity offered by the internet (Amichai-Hamburger & Furnham, 2007). For text-based interactions, anonymity is heightened as physical cues of appearance are removed, potentially facilitating more self-disclosure.

Text-based vs. video-based and face-to-face contact. Text based E-contact may be more effective at improving intergroup relations as it gives users anonymity, which as stated above, facilitates more self-disclosure. Previous research has found self-disclosure to be important for contact to reduce prejudice (Davies et al., 2011). Due to the lack of visual and verbal cues, text-based contact can also increase the salience of the outgroup (if there are provided cues such as a flag, or the group memberships are known), resulting in computer mediated contact (CMC) users relying on social categories rather than personal attributes to form impressions (Cao & Lin, 2017). This can then lead to attitudes generalising to the outgroup as a whole more readily (Amichai-Hamburger, 2012). Cao and Lin (2017) tested the effectiveness of text-based vs. video-based CMC between Mainland Chinese and Hong Kong participants. Their results revealed that while video-based CMC improved attitudes towards the specific outgroup partner, only text-based CMC improved attitudes towards the outgroup as a whole. It appears that individuating information obtained from video-based CMC, hindered the positive appraisals being afforded to the outgroup as a whole.

A similar study by Alvírez et al. (2015) found that when group membership was salient by displaying a flag of the respective ingroup and outgroup members there was less prejudice toward the outgroup than the personalized condition where a photo of the outgroup member was displayed. The outgroup member also displayed stereotype confirming or disconfirming behaviour. However, there was no difference in stereotype perceptions between the conditions, indicating that this kind of CMC is more likely to affect affective rather than cognitive perceptions.

In another study, Mustafa and Poh (2019) tested face-to-face and virtual CMC contact between Malaysian and Chinese students in a 2 (intercultural or intracultural) x 2 (face-to-face or CMC contact) design. Despite having four sessions over four weeks, only face-to-face intercultural contact was effective at reducing prejudice. In this study, the participants were simply discussing personal questions (self-disclosing), which is unlike Alvírez et al. (2015) or White et al. (2012) where participants were working toward a common goal. In addition, unlike Cao and Lin (2017), which consisted of a one-off encounter, attitudes were measured repeatedly over the four weeks. Also unlike Cao and Lin (2017), Mustafa and Poh (2019) did not use a confederate outgroup member, so there may have been less consistency, and perhaps less positivity resulting in null effects.

Interactions in previous E-contact/CMC such as White et al. (2012) and Cao and Lin (2017) were designed to be friendly, and thus attitudes towards the outgroup partners improved. However, interactions over the internet, or indeed interactions with outgroup members in a variety of situations, are not always friendly or positive. Unfortunately, in relation to media news stories, research has shown that most information about minorities such as immigrants, is negatively valenced, thus more negative vs. positive information about minorities is being presented in the news (Dragojevic et al., 2017; Visintin et al., 2017).

Negative intergroup contact

Whilst positive contact has been recognized as a robust method to reduce intergroup bias, contact is not always positive. Therefore, it is imperative to understand the effects of negative intergroup contact, in order to gauge a complete picture of positive-negative contact valence. This section presents previous research on negative intergroup contact, which compared to its positive contact counterpart, pales in volume. It then addresses the issue of positive-negative contact asymmetry, where negative contact has been proposed to affect attitudes detrimentally, to more of a degree than positive contact helps to improve attitudes (Barlow et al., 2012; Hayward et al., 2017).

Previous research examining negative intergroup contact has mainly utilized correlational designs, although recent research has begun using experimental designs (e.g. Andrews et al., 2018; Hayward et al., study 3, 2017; Joyce & Harwood, 2014; Paolini et al., 2010). Paolini et al. (2010), for example, examined positive and negative contact experimentally, although their dependent variable was group salience (not attitudes). In the first study, Anglo-Saxon Australians experienced either positive, negative, or neutral direct contact with an English-speaking Sri Lankan (outgroup member) confederate. The confederate displayed either positive, negative, or somewhere in between, non-verbal behaviour. Participants reported more references to the outgroup members ethnicity in the negative vs. positive or control conditions, indicating more ethnicity salience. Study 2 replicated this finding with intergenerational contact leading to more age salience when the contact was negative, and additionally, this valence-salience persisted over time, i.e. longitudinally (Paolini et al., 2010).

As mentioned previously in the chapter, membership salience is important for generalizing positive contact effects to the outgroup as a whole, but Paolini et al. (2010) highlight an important consideration: negative contact makes group memberships even more

salient than positive contact, and if this is the case, then the implications for negative contact leading to negative generalisations, and reducing the effects of positive contact could be problematic.

Positive-negative contact asymmetry. The notion of negative experiences weighing more heavily than positive experiences is not new. A review by Baumeister et al. (2001) concluded we generally consider that “bad is stronger than good” when it comes to negative experiences and information, and that these negative occurrences are more memorable and influential than positive occurrences. This notion was supported in relation to intergroup contact, when Barlow et al. (2012) demonstrated in two cross-sectional studies that negative contact was a stronger predictor of prejudicial attitudes than positive contact. Further research has also elucidated this pattern of negative contact being a stronger predictor of prejudice (Dhont & Van Hiel, 2009; Dhont et al., 2010; Graf et al., 2014; Hayward et al., 2017; Techakesari et al., 2015), whilst other research has found an opposite pattern of positive contact being a stronger predictor of prejudice (Fell, 2015). Some researchers have not seen a valence asymmetry at all (Aberson & Gaffney, 2009; Árnadóttir et al., 2018; Mazziotto et al., 2015; Stark et al., 2013; see Banas et al., 2020 for a meta-analysis that compares vicarious and parasocial positive and negative contact).

The dependent variables being measured may also affect the relationship between valence and prejudice strength. In Aberson (2015), both positive and negative contact predicted affective and cognitive measures of prejudice, however negative contact was more strongly related to cognitive dimensions of prejudice e.g. stereotyping, than positive contact (but see Paolini & McIntyre, 2019).

Recently, more complex relationships between valence and outgroup attitudes have emerged. Árnadóttir et al. (2018) discovered an interaction effect between positive and

negative contact for direct (but not extended) contact. Specifically, they found that prior high levels of positive contact, buffered against the effects of negative contact, but without these prior positive experiences, negative contact was associated with less favourable outgroup outcomes (outgroup orientation and trust). Interestingly, the authors also found a facilitation effect of previous negative contact; that is, having more prior instances of negative contact than having positive contact, led to more positive outgroup outcomes, following positive intergroup contact. This result may seem counterintuitive, however, prior negative contact may have enhanced or facilitated the effects of positive contact via a contrast or rebound effect.

It is apparent from the mixed findings of past research that there is no clear assertion of negative contact being more influential on outgroup evaluations. Paolini and McIntyre (2019) recently helped to clear up the discrepancy in findings by conducting a meta-analysis on 47 published and unpublished studies that have utilized experimental designs. This is important because correlational designs pose the problems of self-selection bias in people having contact with outgroups, and no control condition to assess causality.

Previous research had also tended to focus on stigmatized groups as the target outgroup in intergroup contact (Paolini & McIntyre, 2019). The authors' meta-analysis had a clear and unequivocal conclusion: Bad is indeed stronger than good in stigmatizing contexts, in other words, having negative contact with stigmatized outgroups e.g. race-based, homosexuals, disabled people etc. has more of an influence on evaluations than having positive contact with these groups does. However, Paolini and McIntyre (2019) also found that for positive, admired outgroups such as teachers, accountants, the elderly etc., having positive contact was more influential on evaluations than negative contact, or "good is stronger than bad" (p. 39).

Fortunately, there appears to be a reprieve in relation to negative contact having a stronger influence on prejudice, at least for stigmatized outgroups. Research has found that even though in a lot of cases negative contact is more potent, people have more instances of prior positive contact generally overall, and this can buffer against the effects of negative contact (Graf et al., 2014; Paolini et al. 2014).

However, there should be caution in regards to indirect contact routes such as the mass media. Pagotto and Voci (2013) found that negative TV news and newspaper portrayals were able to impact people's attitudes and emotions toward immigrants, and that positive portrayals of the outgroup in other forms of communication do not seem to counterbalance this negative influence (but see Graf, Linhartova et al., 2020, study 2, for an example of a positive news story reducing affective prejudice). This could be a problem for outgroups where direct positive contact is less likely to happen, e.g. in highly segregated areas, or for outgroups that have low representation in the population (i.e. a rare minority group). Recently, Fuochi, Voci, Veneziani et al. (2020) provided some evidence for this where negative news portrayals led to negative views of the outgroup, but previous direct positive contact with the outgroup weakened these effects.

Further, the level of intimacy with outgroup members may affect positive-negative asymmetry. Research by Fuochi, Voci, Boin et al. (2020) found negative contact was more powerful than positive contact at influencing evaluations, but only when the level of contact was superficial; positive contact on the other hand, was more influential when the level of contact was intimate. Graf, Paolini et al. (2020) also found those that had experienced negative contact in intimate relationships had more positive outgroup attitudes than those that have had negative casual contact, suggesting intimacy in intergroup contact has a protective factor on negative attitudes, even after negative contact. Amir (1969) has described intimate contact as being when personal information and experience are shared. Many mass-mediated,

or brief encounters over the internet, would be considered superficial contact. Relatedly, research comparing structured and unstructured interactions, found negative contact to be more influential in unstructured contact, but not structured contact (Bekhuis et al., 2013). My current research consists of an unstructured interaction (an online poker game).

E-Contact that is negative. There has been very little research conducted to date that looks at *negative* intergroup contact in E-contact settings. Lissitsa and Kushnirovich (2018) surveyed Israeli Jews about the quality and frequency with which they have contact with Israeli Palestinians online (e.g. Facebook, internet forums, and on messenger apps). They found evidence for negative outgroup attitudes when online contact was defined as being negative. In a subsequent study, the same authors surveyed Jewish students in Israel about their exposure to negative content about Arabs online. Subtle and blatant forms of prejudice were related to virtual contact, with greater virtual contact associated with less subtle prejudice, even if this content negatively portrayed Arabs (Lissitsa & Kushnirovich, 2019). However, these studies rely on survey data, and so there could be issues with participants accurately remembering the valence of past contact/encounters. Experimental manipulation of valence is needed in order to make causal inferences about the relationship between negative online contact and prejudice.

My current research aims to tie all of these pieces together by experimentally examining positive and negative E-contact. There is a definite lacking of experimental research in the areas of E-contact, and negative contact in general. This makes it difficult to make causality claims, but also experimental research might help to elucidate the mixed results in terms of the strength of negative contact affecting attitudes. There is also a lack of ecological validity in terms of contact settings. A lot of previous experimental research has relied on highly structured contact online (e.g. White et al., 2012), which is not how most online interactions occur. Others have got participants to artificially imagine scenarios

(Harwood et al., 2011), or watch videos without participants directly being involved themselves (e.g. Andrews et al., 2018). The present study aims to add an element of ecological validity to the contact situation. Even though it is an experiment, unbeknownst to participants, they will encounter an outgroup member in an online poker game, who will attempt to personally interact with them. This may give a more organic result of outgroup generalizations.

I aim to measure explicit attitudes, but also to examine measures that rarely have, or have not been, measured experimentally with negative and/ or E-contact. One such measure is implicit bias, which to my knowledge, has not been studied in relation to positive *and* negative E-contact.

Implicit bias

Alongside explicit measures of bias such as asking the participants to rate how they feel about outgroups on likert-type scales, my current research will also endeavour to measure implicit bias, using an implicit association test (IAT; Greenwald et al., 1998). Vezzali et al. (2014) state that intergroup contact research has relied heavily on self-reports, with only a few studies having looked at *indirect* contact and implicit attitudes. Therefore, the current study will in addition to self-report (explicit) measures, also utilise an IAT to measure implicit attitudes.

Implicit attitudes are distinct from deliberative explicit attitudes (Dasgupta, 2009; Rydell et al., 2006). Explicit attitudes are those that individuals are consciously aware of and can control (Dasgupta, 2009; Gawronski & Bodenhausen, 2006; Rydell et al., 2006), such as evaluations made by asking people how they feel about a group in a questionnaire. Implicit attitudes on the other hand, are automatic and unconscious, usually inferred by performance,

such as reaction speed on tasks like the IAT (Dasgupta, 2009; Gawronski & Bodenhausen, 2006).

Intergroup relations research has looked at implicit attitudes because they may capture how individuals actually feel about outgroups, due to it being difficult to produce socially desirable responses to automatic reactions, (unlike explicit attitudes which can be better controlled), and because individuals may not be able to access complete introspection into their own attitudes, which may be unconsciously influenced by their society/ culture at large (Banaji & Greenwald, 1994; Dasgupta, 2009). Sometimes stereotyping and prejudice can occur outside of our conscious awareness, even for those that endorse egalitarian views (Yogeeswaran et al., 2017), and individuals' biases may even be impacted by inaccessible past experiences (Yogeeswaran et al., 2017).

Implicit attitudes in intergroup contact. Although not as extensively studied in intergroup contact compared to explicit attitudes (Tausch & Hewstone, 2010), implicit attitudes have provided some interesting findings thus far. Tam et al. (2006) found that while more contact (*quantity*) with older people was associated with more favourable explicit attitudes, better *quality* contact with the elderly was associated with more favourable implicit attitudes towards the elderly. Turner et al. (2007), found a similar pattern of results where contact quantity, not quality was associated with White British students' more favourable implicit attitudes towards South Asians. In another study, Castelli et al. (2012) showed that positive or negative non-verbal behaviour in indirect contact situations can influence implicit attitudes. From these findings, it would be wise to measure implicit attitudes alongside explicit measures to give a more complete picture in relation to E-contact and negative contact, seeing as implicit measures have scarcely been measured in these domains.

Relatedly, I will measure participants' brain wave responses to congruent and incongruent IAT stimuli in my study, using an electroencephalography scan (EEG).

Electroencephalography (EEG)

The current research aims to measure stereotype accessibility experienced in IAT stimuli, via EEG, in an exploratory fashion. Specifically, event-related potentials (ERPs), focusing on the N400 ERP component will be examined. The N400 is a negative deflection in the ERP that occurs approximately 400 milliseconds after the onset of a meaningful event, such as semantic anomalies (Kutas & Federmeier, 2000). Overall, the N400 is sensitive to the immediate context of the stimulus, especially semantic relationships (Kutas & Federmeier, 2000). For instance, White et al. (2009) found a larger N400 amplitude to incongruent stereotype word pairs, e.g. Men: Nurturing, than to stereotypically congruent word pairs e.g. Women: Nurturing. Other researchers have also found incongruent stimuli to elicit larger N400 amplitudes compared to congruent stimuli (Wang et al., 2011; Wang et al., 2017).

Recently, the N400 has been posited to assess stereotype accessibility, in which certain groups should elicit larger N400 amplitudes, if they are paired with stimuli not typically associated with them in memory (Hehman et al., 2014). The aforementioned study above by White et al. (2009) is one example of where stereotype incongruent words elicited larger N400 amplitudes. In Hehman et al. (2014), face primes were used, and greater N400 activity was elicited in incongruent face prime to trait target trials (e.g. a Black face with the trait “educated”). Other research has linked ERPs to IAT stimuli and found larger N400 amplitudes for incongruent (vs. congruent) trials (Hilgard et al., 2015; Williams & Themanson, 2011).

Although other ERP components have been implicated in IAT effects (Hehman et al., 2014; Williams & Themanson, 2011), for IATs utilizing word stimuli (e.g. as opposed to face stimuli), the N400 is more relevant for investigating IAT effects. The N400 is hypothesised to capture stereotype accessibility (Hilgard et al., 2015; Williams & Themanson, 2011), which is why it is the main component of focus for the current research. In the current research, the

ERPs will be used to examine psychological processes involved in changes on implicit prejudice by looking at ERPs alongside the presentation of incongruent or congruent word stimuli. This is to see if N400 ERPs mediate the effects of intergroup contact and implicit bias.

A lot of previous research on ERPs during an IAT looked at congruent and incongruent trials (Hilgard et al., 2015; Williams & Themanon, 2011). Thus, for the current study, it would be fruitful to see whether intergroup contact can impact N400 amplitudes, as having negative contact might increase the strength of associations between the outgroup and negatively valenced words, whilst positive contact might strengthen the relationship between the outgroup and positively valenced words (e.g. meaning the negative contact condition should have a larger N400 amplitude for incongruent pairings due to prior associations being the opposite to stimulus pairings in the incongruent condition).

Previous research has not applied EEG to intergroup contact paradigms, thus my research, to my knowledge, will be the first to do so. Other work has found larger N400 deflections for incongruent (positive word) pairings and/or smaller N400 deflections for congruent (negative word) pairings after participants were shown a brief negative media portrayal (video) of the outgroup before the commencement of the experiment (Jin et al., 2017). This indicated that negative stereotypes were only elicited for those primed by the negative media portrayal. However, this design was not strictly intergroup contact. It was a priming experiment, and the exposure to the outgroup was vicarious or parasocial in nature. Further, in their study, the control condition did not get a video portrayal of anything (those participants went straight into the experiment; Jin et al., 2017). Therefore, it could be due to other factors, not necessarily the content of the prime itself, that the primed participants displayed more negative stereotypes.

My current research will add to this by experimentally manipulating intergroup contact, with positive, negative, and no contact conditions, and further, the contact will last for 10 minutes, and be more involving for the participants as they will actively engage in contact rather than be passive viewers.

Secondary Transfer Effects

Another ancillary goal of the current research is to examine whether attitudes towards a primary outgroup can carry over onto another secondary, unrelated outgroup. Hence, additionally, the current research tests for secondary transfer effects (STE). Secondary transfer effects represent situations where contact with a primary outgroup carries over to evaluations of a secondary outgroup. Specifically, evaluations from an outgroup in which one has had contact with, are then applied to another outgroup where no contact has occurred (Pettigrew, 2009). These STE effects have been found to occur with positive contact in cross-sectional studies (Tausch et al., 2010), experimentally (Harwood et al., 2011), and longitudinally (Pettigrew, 2009; Tausch et al., 2010, Study 4). The mechanism facilitating STE (and that is most widely supported in the literature) is an attitude generalization from an outgroup that one has had contact with, to an unrelated outgroup (Lolliot et al., 2013; Sparkman, 2020). This generalization of attitudes to a group that is not directly involved in contact has been demonstrated to not just be due to methodological confounds such as having prior direct contact with the secondary outgroup or socially desirable responding (Tausch et al., 2010). It is therefore fruitful to see whether participants in my study generalize their attitudes from Brazilians to another secondary outgroup (Russians), particularly because STE offers another piece in the puzzle of intergroup contact and its generalizability effects, and specifically because there is little previous research applying STE to negative contact (with some exceptions e.g. Harwood et al., 2011) and/or E-contact.

To my knowledge, only one other study has looked at secondary transfer effects in the area of online contact, however this study utilized a survey method, so was not experimental (Lissitsa & Kushnirovich, 2018). Specifically, Lissitsa and Kushnirovich (2018) surveyed Israeli Jews about having positive and negative encounters online with Israeli Palestinians. They additionally asked participants how they felt toward non-Israeli Palestinians (secondary outgroup). They found evidence of STE for positive contact, but not negative contact. My current research aims to fill this gap by being the first experimental study of STE in an E-contact design.

Further, only a handful of other studies have looked at the effects of *negative contact* and STE; e.g. Lissitsa and Kushnirovich (2018), as mentioned previously. Harwood et al. (2011) instructed participants to imagine either positive or negative contact with an illegal immigrant, and measured attitudes towards a variety of secondary outgroups. While there was evidence for STE with various outgroups when comparing positive contact to negative contact (the more similar the outgroups the stronger the effects), there was no difference in attitudes towards illegal immigrants between the control and either experimental condition. Furthermore, negative contact did not facilitate STE.

Other researchers have looked at STE from LGBT people (primary outgroup) to people with Asperger's Syndrome (secondary outgroup) in parasocial contact (Lissitsa & Kushnirovich, 2020). Brylka et al. (2016), surveyed minority groups (Russians and Estonians) in Finland in relation to how they felt about each other when probing for positive and negative contact. For both minority groups, there was an indirect effect where both positive and negative contact with the majority group (Finns), and the resulting attitudes, mediated the effect of attitudes towards the other minority group. In another study positive contact was associated with positive attitudes towards the majority and minority outgroups (via perceived gains), whilst negative contact was associated with negative attitudes towards

the majority outgroup (mediated by perceived threat), but no STE were observed (Mähönen & Jasinskaja-Lahti, 2016). My current research aims to address this gap by being the first work to experimentally examine both positive and negative contact in an E-contact setting. This should help to explain some of the previous mixed findings in both negative contact and/or E-contact, where correlational methods have primarily been used (with the exception of Harwood et al., 2011 experimentally testing STE in imagined contact).

Losses vs. gains (economic/ realistic threat)

In Study 2 (Chapter 3), I explore the impact of monetary losses and gains that take place in online poker. Specifically, a core aspect of online poker is intergroup competition, which occurs when playing against someone from another country (or watching someone from our own country play against another national; e.g. Andrews et al., 2018). There are several reasons why monetary gains and losses were examined in Study 2. Firstly, in real life poker, players can win or lose money, so preserving ecological validity will require that participants either win or lose money. Additionally, such an exploration allows for the exploration of nuanced questions regarding the effects of virtual intergroup contact. For example, such an approach will allow testing to see if winning money can buffer against the effects of negative contact, or if losing money following positive contact erases any benefits of positive contact whilst playing the game. Additionally, looking at winning and losing money fills a gap in the literature because it also mirrors what occurs in the real world, as positive/ negative contact does not happen in a vacuum. Virtual intergroup contact can take place in contexts where one is gaining or losing something of value to an outgroup making it important to examine the interactive effects of intergroup contact with monetary gains or losses on prejudice.

Previous research looking at intergroup competition specifically that of realistic group conflict theory (RGCT), has found that competition between two outgroups can produce

hostility especially if the gains in resources for one group results in loss for the other (Jackson, 1993; Sherif & Sherif, 1969). The result of this zero-sum outcome fosters stereotyping of the outgroup (Filindra & Pearson-Merkowitz, 2013) and is also interpreted as a threat which leads to prejudice towards that outgroup (Sidanius & Pratto, 1999). A meta-analysis supported the notion that contact partially accounts for reduction or increases in prejudice. Specifically, positive contact is associated with reduced feelings of threat, which in turn results in less prejudice, whereas negative contact is associated with increased feelings of threat and greater prejudice (Aberson, 2019).

This pattern of behaviour has been observed in White Americans, where greater perceived threat was linked to more negative attitudes toward Black Americans (Aberson & Gaffney, 2009). However, other research has found that ingroup members may not want negative outcomes for outgroup members, but rather, they want to maintain benefits for their own ingroup. For instance, in Lowery et al. (2006), support for affirmative action policies was related more to how the policies would affect the White ingroup, but not how they would affect the Black outgroup. Lowery et al. (2006) found that while Whites might want to protect their own ingroup interests, especially in policies implementing zero-sum outcomes (such as job hiring), this does not necessarily mean that they want Blacks to be disadvantaged by the policies, thus providing evidence that concerns about ingroup outcomes can be independent of concerns regarding outgroup outcomes. Thus, it is possible for the ingroup to maintain their dominance, privilege, economic power, etc., without wanting to disadvantage the outgroup.

Turning to nomenclature, threats may be considered to be personal or group level threats (Stephan et al., 2009). Personal threats generally refer to material threat, resource deprivation, or threat to an individual's identity, whereas group threats refer to those that threaten power/status or culture of the ingroup (Brylka, et al., 2015). With the exception of a

few studies (e.g. Brylka, et al., 2015) the literature on intergroup relations in general has largely overlooked the role of *gains* on outgroup attitudes. Just like for the definition of personal threats and group threats, personal gains and group gains refer to enhanced personal economic/material status, and personal safety, or enforcement of power, and enrichment of culture, respectively. In line with previous research (Brylka, et al., 2015), in the current study, winning money will be considered a personal gain, and losing money a personal threat/ loss. A recent meta-analysis on contact, threats, and prejudice, found that the majority of studies used group level threat, and that more research is needed in personal threats to better understand the contact-prejudice relationship (Aberson, 2019).

Emotions

Another aim of the current research is to measure emotions experienced while playing online poker. Emotions were not a focal part of the research, but rather exploratory, ancillary, analyses to see how valenced intergroup contact may affect emotions (e.g. those in the negative condition are likely to feel more anger compared to the other conditions). This would help to ascertain whether the contact valence manipulations were efficacious, and to test whether emotions mediate the effects of contact and prejudice. In my current study, participants will be asked to what extent they felt different emotions during the poker game.

The rationale for measuring emotions is to examine if emotions elicited from experiences during the game can drive changes (or mediate) implicit or explicit attitudes. Research has demonstrated that incidental emotions arise from intergroup unrelated stimuli. Incidental emotions are those that stem from features unrelated to the outgroup member, but coincide with the interaction e.g. emotions elicited by another ingroup member in the same context, the weather etc. (Paolini et al., 2021). For instance, incidental emotions have been linked to bias when they are applicable to the outgroup (Dasgupta et al., 2009). In this line of work, participants were induced to feel either anger or disgust and completed IATs. For an

arbitrarily created outgroup (novel outgroup), those made to feel anger and disgust displayed more implicit bias compared to controls, but for known outgroups, only emotions stereotypically linked to the outgroups increased implicit bias (e.g. disgust when the outgroup were homosexuals, and anger for an Arab outgroup; Dasgupta et al., 2009).

In other work, Butz and Yogeeswaran (2011), had participants read about economic threat or global warming and rated their levels of anxiety. In a supposedly separate study, they then rated their levels of prejudice toward Asian Americans. Anxiety elicited from economic threat significantly predicted prejudice against an economic-threat relevant outgroup (i.e., Asian Americans), but not an economically-unrelated outgroup (i.e., Black Americans).

In even more recent work, Paolini et al. (2021) demonstrate that emotions specific to intergroup contact and applicable to the (ethnic) outgroup, such as anger, are associated with bias, for integral *and* incidental sources of emotion. Integral emotions refers to emotions that stem from an outgroup member. The authors concluded that during intergroup interactions, sources of anger do not matter, as anger from either incidental or integral sources will still heighten bias.

Research on emotions in both positive *and* negative intergroup contact is scarce (Kauff et al., 2017; and see Maunder et al., 2019; White & Abu-Rayya, 2015 for positive E-contact mediating variables), and previous research on intergroup emotions has mainly focused on the role of anxiety (see Paolini et al., 2016). In an example of emotions studied with positive and negative contact, Hayward et al. (2017) found anger and anxiety to mediate the effects of both positive and negative contact. Seger et al. (2017) found that not only did negative emotions such as anger and anxiety mediate the effects of contact on prejudice, but positive emotions such as admiration did too. Furthermore, the mediation effects still held

even when the emotions measured arose from a specific contact situation (episodic), or were enduring emotions felt towards the outgroup (chronic).

In the current research, I examine emotions elicited during the game. Specifically, I ask participants to what extent they felt certain emotions *while playing the poker game*. These kinds of emotions, specific to a certain intergroup interaction, are considered episodic (Paolini et al., 2016). Other researchers have validated that incidental sources of emotions can also influence bias (e.g. Butz & Yogeeswaran, 2011; Dasgupta et al., 2009; DeSteno et al., 2004; Paolini et al., 2021). In my research I am not directly asking participants about how the outgroup member made them feel (in order to avoid raising suspicion), although the source of those emotions should still be the outgroup member, and for emotions such as anger, which is applicable to ethnic outgroups, the source is irrelevant in the interaction anyway (Paolini et al., 2021).

In addition, previous research has found that even subtle group symbols can trigger emotions felt as a function of one's group membership (Seger et al., 2009). In the current study, participants will have their country set as "New Zealand" and for those participants that chose the NZ flag avatar, the NZ flag will be displayed by their user name. It may be likely then that these cues will also induce some group membership emotions (Mackie & Smith, 2015; Smith et al., 2007).

Previous research has found integral intergroup emotions to mediate the effects of contact on prejudice (e.g. Hayward et al., 2017; Seger et al., 2017). Intergroup emotions (i.e. asking specifically about how an outgroup affected emotion, or the extent to which an outgroup makes the participant feel certain emotions) has been used previously for mediation analyses (Hayward et al., 2017; Kauff et al., 2017). In my current research, episodic emotions experienced in the game, but originating from the outgroup member (the messages they write

in the chat box), will be tested as exploratory potential mediators. This is exploratory because previous research with emotions as mediating variables has directly asked participants emotions the outgroup or an outgroup member elicits, but in my research it would raise suspicion to directly ask about emotions in this manner, therefore the emotions are inferred to come from the outgroup member, and instead participants will be asked about emotions felt whilst playing the game (and inadvertently due to having contact with the outgroup).

The current research

When contact occurs outside the laboratory, it is unstructured, unsupervised, and variable, that is, it may contain elements of positive and negative interactions, or one of either valence. The current research wanted to experimentally examine both positive and negative intergroup contact, but in a more naturalistic setting: playing an online game.

The current research is an extension to my previous research on vicarious contact of utilizing an online poker game to investigate intergroup relations, this time using an E-contact paradigm. It contributes the following to the literature:

1. Positive and negative contact experimentally tested together in an E-contact setting. This has not been done before. My participants were randomly assigned to have a negative or positive experience rather than just relying on recall of previous negative experiences.
2. Unstructured contact; a more casual, but common measure of contact. Although contact interventions are important (e.g. White et al., 2012), the most common way we encounter others over the internet needs to be investigated. Most contact online is unsupervised and participants can come and go as they please to various sites (Amichai-Hamburger et al., 2015). Admittedly, it is likely that positive contact in this

current research context is not likely to improve attitudes because it is competitive and superficial, but it should be considered alongside negative contact.

3. Relatedly, it is important to add to the emerging literature on intimate vs. superficial contact and additionally, how this applies to E-contact. Most encounters on the internet are superficial, as we do not take the time to get to intimately know the majority of people we encounter over the internet, be that on social media, through blogs, watching content, or playing games etc. The current studies consist of unstructured, superficial contact.
4. A measure of contact with an outgroup that has no history of conflict with the ingroup. A lot of previous research utilizes outgroups that are stigmatized or have a history of conflict (see Paolini & McIntyre, 2019). For the current study, Brazilians serve as a neutral outgroup to New Zealand based participants. Brazilians represent less than 1% of NZ's population (Statistics New Zealand, 2013) and there is no history of conflict between New Zealand and Brazil. There are a few reasons for using such a group over other salient outgroups such as Chinese, Americans, or Indians in the current context. Firstly, because the latter groups are more prevalent in the population, some of the participants may identify with these groups making novel positive or negative contact less likely to generalise to the whole group. Likewise, participants might have close prior contact with these groups e.g. if they are dating a Chinese/ Indian/American person, meaning contact in the game would mean little to their feelings about the group as a whole. A novel/ unfamiliar outgroup such as Brazilians allows for the exploration of attitudes without the contamination of strong pre-existing feelings about the group. Additionally, Brazil was the country of reference to keep with the realism of the story about countries that frequently play online poker (this was how previous contact was framed to participants), as gambling

in countries such as China and India is either illegal in all or some provinces respectively.

5. Electroencephalography (EEG) as applied to intergroup contact. This novel method of examining underlying cognitive mechanisms that may be occurring during interactions has not been applied to the contact literature.
6. Secondary transfer effects (STE). The current research is the first to undertake STE *experimentally* with negative contact, and additionally the first to look at these experimentally in an E-contact setting.
7. Adding economic loss vs. gains to intergroup contact to see how this affects implicit and explicit attitudes, if at all.
8. Measuring implicit attitudes in relation to intergroup contact broadly, but specifically, applying this measure to E-contact, which currently remains untested.
9. A broad range of emotions will be measured, as previous research has mainly focused on anxiety, with other emotions rarely studied in intergroup contact (with exceptions e.g. Hayward et al., 2017; White, Abu-Rayya et al., 2015).

Research details. Specifically, in my current study, participants played a game of online poker, whilst a Brazilian outgroup member either typed friendly messages into the chat box, offensive messages into the chat box, or no messages appeared in the chat box (Study 1: positive, negative, or no contact; Study 2: just positive and negative contact conditions). Explicit and implicit attitudes towards Brazilians were measured (and EEG was used in an exploratory fashion to examine brain activity during implicit tasks), as were secondary transfer effects (STE) towards another unrelated outgroup, and emotions. Brazilians were chosen as the outgroup for this research because they are a very small minority in New

Zealand, less than 1% of the population (Statistics New Zealand, 2013), and they are one of the top counties to play online poker (PocketFives).

Research questions. Each chapter has the explicit hypotheses listed for each variable and condition (see Chapter 2 and Chapter 3). Here I present the broad research questions that I aimed to answer: (a) does having negative vs. positive contact affect explicit attitudes towards an outgroup in an online setting?; (b) Does this contact also extend to implicit attitudes?; (c) Can the effects of contact with one outgroup, carry over to another unrelated outgroup?; (d) How do emotions felt whilst playing the poker game relate to negative and positive contact?; (e) What are the effects of adding in economic losses and gains to outgroup attitudes?

Chapter 2: Study 1

Several studies have utilised gaming and intergroup relations as outlined previously in Chapter 1. My research is the first to look specifically at online gaming and positive and negative intergroup E-contact. Accordingly, Study 1 sets out to establish if positive and negative contact can generalise to an outgroup as a whole, compared to a control/ no contact condition.

Outline and main hypotheses of Study 1

Building off the online gaming and intergroup contact literature—particularly that of Andrews et al. (2018), in the current study, participants will play a game of online poker and encounter chat messages from a Brazilian at the poker table. Unbeknownst to them, the Brazilian is actually the primary researcher and the comments have been designed to be negatively valenced, positively valenced, or there will be no chat messages (control condition). Various measures such as explicit and implicit bias, secondary transfer effects, emotions, and brain activity will be recorded, and the hypotheses for these are explained in the sections below. A brief overview of all hypotheses are displayed in table 1.

Table 1.

Brief overview of Study 1 hypotheses by condition (explicit/implicit attitudes and emotions felt towards Brazilians and secondary transfer effects [STE]).

| Hypothesis | Measure | Condition | Increase or decrease in bias compared to control condition |
|---------------|-------------------------|------------------|--|
| Hypothesis 1a | Explicit Attitudes | Negative Contact | Increase in bias |
| Hypothesis 1b | Explicit Attitudes | Positive Contact | Same amount as Control/ no difference |
| Hypothesis 2a | Implicit Bias | Negative Contact | Increase in bias |
| Hypothesis 2b | Implicit Bias | Positive Contact | Same amount as Control/ no difference |
| Hypothesis 3a | STE Explicit (Russians) | Negative Contact | Increase in bias |
| Hypothesis 3b | STE Explicit (Russians) | Positive Contact | Same amount as Control/ no difference |

| Hypothesis | Emotion | Condition | More or less of the emotion compared to control condition |
|---------------|-------------------------------|------------------|---|
| Hypothesis 4a | Anger, Anxiety, Fear, Sadness | Negative Contact | More |
| Hypothesis 4b | Anger, Anxiety, Fear, Sadness | Positive Contact | Same amount as Control/ no difference |
| Hypothesis 4c | Happiness | Negative Contact | Less |
| Hypothesis 4c | Happiness | Positive Contact | More |

Explicit attitudes hypotheses. In relation to the main hypotheses: Hypothesis 1a is based off previous research in negative intergroup contact (e.g. Barlow et al., 2012), and therefore predicts that participants that have negative contact with the Brazilian at the poker table will have more negative explicit attitudes towards Brazilians in general compared to both the positive and control conditions.

Even though previous research has demonstrated that positive contact leads to more positive attitudes towards outgroups compared to control conditions (e.g. Andrews et al., 2018; White & Abu-Rayya, 2012), this may not be the case in the current study due to a couple of reasons: firstly, the kind of interacting that participants are having is competitive, not cooperative because they are playing a game of poker. One of Allport's (1954) facilitating conditions for positive contact to be effective was that the interaction should be cooperative, and to work toward a common goal. That is not the case in the current study. Secondly, recent research suggests that positive contact is more influential in attitude appraisal when the contact is intimate (Fuochi, Voci, Boin et al., 2020). In the current study, participants will only be playing a one-off 10 minute poker session, so it is unlikely that this would be sufficient time for the participants to get to know the Brazilian very well, and in addition, they will be fully anonymous (i.e. no photo/video/voice chat). Thus, the combination of competition and superficial contact is unlikely to lead to more positive attitudes toward Brazilians compared to the control condition (Hypothesis 1b).

Implicit bias hypotheses. The predictions for implicit bias mirrors that of explicit attitudes: Hypothesis 2a predicts that participants in the negative contact condition should display more implicit bias towards Brazilians (as measured by a larger IAT D score), compared to the positive and control conditions. For hypothesis 2b, there will probably be no difference in implicit bias between the positive and control conditions.

STE hypotheses. In the current study, Hypothesis 3a predicts that STE will mirror the pattern of results for the primary outgroup. Specifically, because I predict that negative contact with Brazilians will lead to more negative attitudes, I likewise predict that negative contact with Brazilians will also result in Russians being rated more negatively compared to participants that have positive contact with Brazilians. Russians were the STE outgroup of choice because they frequently play online poker, and because they comprise less than 1% of the NZ population (Statistics New Zealand, 2013), so therefore participants are less likely to have particularly strong prior attitudes towards them. I would not expect a difference in attitudes between the positive and control conditions in terms of STE (Hypothesis 3b).

Emotions hypotheses. For the current study, although emotions are exploratory due to the focus on affect during the game as opposed to in response to an outgroup as done in previous research (see Chapter 1-Emotions), I shall make some tentative predictions; it is hypothesised that participants in the negative condition will display more anger, anxiety, fear, sadness, and less happiness compared to the positive and control conditions (hypothesis 4a). There may be no differences between the positive and control conditions in relation to anger, anxiety, fear, and sadness seeing as positive online contact is unlikely to make people shift on these emotions compared to baseline, especially for an outgroup that participants are likely to have few previous encounters with (hypothesis 4b). However, for hypothesis 4c the positive condition might be happier after encountering a friendly outgroup member (see Kauff et al. 2017 for intergroup contact and happiness). In relation to disgust for any of the conditions, due to the contact being online (i.e. not face-to-face), I would not predict disgust to differ between the conditions (hypothesis 4d), however it shall be measured for exploratory purposes. Mediation analyses will also be conducted, but there are no concrete hypotheses for all of the emotions, however, if anger and/or anxiety (the emotions most commonly associated with intergroup contact: Dasgupta et al., 2009; Paolini et al., 2016; Paolini et al.,

2021) were significant mediators, then it would be expected that negative contact should result in greater prejudice, via increased anger and/or anxiety.

EEG predictions. Due to the lack of previous work examining EEG in the context of intergroup contact, there are no concrete hypotheses about how ERP components might relate to the intergroup contact conditions, but based off Jin et al. (2017), negative contact may affect N400 amplitude, and in line with previous work (Hilgard et al., 2015; Williams & Themanon, 2011), incongruent trials should elicit a larger N400 effect (more negative amplitude).

Potential moderating variables

This research will also include individual difference measures as potential moderating variables to see how the person by situation context may affect outcome variables. For the current study, right-wing authoritarianism (RWA) and political orientation were measured.

Right-wing authoritarianism (RWA). RWA is theorized to be a threat-driven response to social cohesion and collective security (Duckitt, 2001). Thus, people high in RWA are particularly prejudiced toward others that threaten social cohesion, security, values, norms etc. (see Asbrock et al., 2012; Turner et al., 2020 for overviews). For the most part, those high in RWA try to avoid social threat situations, and therefore interacting with outgroups (Asbrock et al., 2012). However, when they do encounter outgroups; research has demonstrated that positive intergroup contact is most effective for individuals high in RWA (Asbrock et al., 2012), but conversely, negative contact may exacerbate prejudice for those high on RWA (Dhont & Van Hiel, 2009). In the current study, it may be that positive contact might be more effective for those high on RWA as they may not see the world as being so threatening (decreased perceived social threat). Conversely, if those high in RWA were to

experience negative contact, this may heighten their awareness of social threat, leading to more prejudiced attitudes.

Political orientation. Political orientation has been demonstrated to moderate the relationship between positive intergroup contact and having more support for African migrants for those more politically conservative (right-oriented). However, political orientation also moderated the effects for negative contact too, such that more politically conservative individuals had less support for African migrants if they reported negative contact (Graf & Sczesny, 2019). Although others have found that contact is more effective for left-oriented individuals (Homola & Tavits, 2018). In the current study, political orientation may moderate the effects of intergroup contact, by heightening attitudes in opposite directions for negative contact and positive contact, for those more politically conservative, compared to those more politically liberal. Seeing as previous research findings have been mixed, it may result in the opposite effect, or even null moderation effects.

Method

Participants

The study included 179 participants (102 female) with a mean age of 20.3 years ($SD = 4.32$). The ethnic composition of the sample as reported by participants was: European descent ($N = 122$), European Māori ($N = 7$), Māori ($N = 5$), Asian ($N = 17$), Pacific Islander ($N = 6$), Middle Eastern ($N = 4$), African ($N = 8$), and participants that identified with more than one ethnicity ($N = 9$). One participant did not disclose their ethnicity. A sensitivity power analysis revealed that the current sample size should be able to detect effects of at least

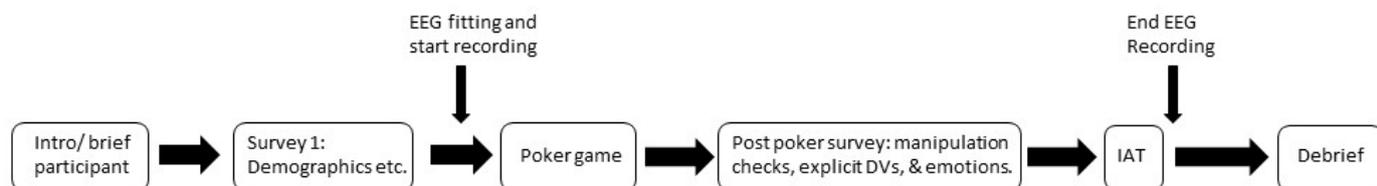
$f = .23$ (medium effect), when $\alpha = .05$, and 80% power¹. Participants were recruited via a participant pool of undergraduate first-year psychology students, or from fliers distributed around campus. Participants were compensated for their time with either course credit, or a \$10 petrol or mall voucher, respectively. Human ethics approval was obtained for all my studies.

Design

Participants were randomly assigned to either a negative, positive, or no contact (control) condition, in a between-subjects design. Figure 1 displays the diagrammatic overview of the order of events for the experiment. Participants were recruited under the guise that we were interested in investigating judgement and decision-making in an online poker setting and another unrelated setting for comparison.

Figure 1.

Overview of events/ the procedure of tasks that participants completed for Study 1. Note: Contact valence was randomly allocated to participants via chat box messages when they logged in to play the poker game.



Procedure

Participants were welcomed into the lab by a research assistant, and instructed to sit at a computer in an individual cubicle. Participants were briefed on the study and told that they

¹ In addition to the sensitivity power analysis, type I and type II errors were considered in the following ways: Type I error was accounted for by conducting a MANCOVA, however the Box's M Test of Equality of Covariance Matrices (homogeneity of variances and covariances) was significant, thus the assumption was violated, meaning further interpretation of the data was not advisable (although the results did still hold). Additionally, when applying a stricter alpha level, the results for Study 1 still did not change. Type II error was likely not an issue, as the effect sizes for non-significant results suggest even with double the sample size, the findings would still be the same.

would be doing a variety of decision making tasks whilst wearing an EEG headset. They would first fill out a questionnaire about their previous poker playing experience, and then be fitted with an EEG headset, and play several hands of online poker. Next, they were told that for the second part of the study, we wanted to compare decision making in an area other than online poker, in order to compare how judgements and evaluations may differ from decisions made whilst playing poker. This was framed as being all part of one study. The research assistant then opened up the first Qualtrics survey (see demographics and pre-poker survey [Appendix A] and materials section below) and closed the cubicle curtain whilst the participant completed it.

Next, they were fitted with the EEG headset and the research assistant explained how to play online poker, and opened up the poker game. The details about the game are described below in the section “Poker Game”. From here, participants were instructed to choose an avatar, and the research assistant showed them the functions of the software, where crucially they were told that the chat box is functional and demonstrated so by typing “hi” into the chat box. The research assistant demonstrated how to play the first hand dealt. For those with limited poker playing experience, there was a sheet to explain the terms/ buttons in the software, and another sheet that had hand rankings on it. The researcher then left the participant to play for 10 minutes and closed the curtain behind them.

Meanwhile, the primary experimenter was hidden in an adjacent room, and responded to chat messages (see Poker Game section below for more details). After 10 minutes, the research assistant returned and closed the poker game. Participants next completed the second Qualtrics questionnaire (the post-poker survey, see materials section below) which contained the manipulation checks, explicit dependent variables, and the discrete emotion questions. Following this, participants completed the IAT, and then were probed for suspicion.

Participants were then thoroughly debriefed both verbally and in writing as to the true purpose of the study. Finally, they were thanked and compensated for their time.

Materials

Demographic measures. In the first Qualtrics survey (Survey 1 from the Figure 1 flow chat), participants were asked (in this order) their gender, age, whether they were left or right-handed, ethnicity, and their citizenship. Additionally they were asked the following:

National identification (NZID). Participants were asked to what extent they identified with their country (NZ)², ethnic group, religion, gender, and all of humanity. These items were all rated on a 5-point scale from *1-fully disagree* to *5-fully agree* (adapted from McFarland et al., 2012). The mean NZID for Study 1 rating = 4.54 ($SD = .93$).

Political orientation. A scale taken from Pratto et al. (1994) measured political orientation. Participants were asked how liberal or conservative they consider themselves in the following dimensions: social issues, economic issues, and foreign policy issues. These were answered on a 7-point scale, with anchors indicating *1-very liberal*, *2-liberal*, *3-slightly liberal*, *4-neither liberal or conservative*, *5- slightly conservative*, *6- conservative*, *7-very conservative*.

Right-wing authoritarianism (RWA). A 6-item scale used in previous work (Perry & Sibley, 2013) measured RWA. Participants were asked questions such as: “It is always better to trust the judgement of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people’s minds” and “People should pay less attention to The Bible and other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral”

² Note: it was not a requirement for participants to be a New Zealander, rather NZID was controlled for in analyses to make sure that the effects still held over and above NZID.

(reverse scored item). Ratings were made on a scale from 1-*strongly disagree* to 7-*strongly agree*.

Previous poker playing experience. Previous experience playing both regular and online poker was measured by asking participants how often they play poker in general, and to estimate how many hours they have played online poker in their lifetime (it was not a requirement for participants to know how to play poker to participate in the study). See Appendix A for full details.

Previous contact. Previous contact was embedded into the previous poker playing experience questionnaire and was disguised as saying that the following countries have demonstrated to be most interested in online poker... how often have you...experienced contact with people from Brazil, the UK, Russia, and China (the UK, Russia, and China were included so participants were not suspicious about the true purpose of the study): “On a scale from 1- *not at all* to 7- *very often*, how often have you: Engaged in informal conversations with people from ____; Visited the homes of people from ____” (Lolliot et al., 2015).

Poker Game. A fictional poker game/website “EasySeven Poker” was designed and programmed using Unity software especially for this research. There was a client server that participants logged into and a manager server which the primary experimenter used to control the game (see Figure 2 for an example of the client server). The client server was linked to the manager server when a participant logged on. From the client server, participants could choose an image from a set list to display as their avatar during the game. Avatar options included flags from around the world including the NZ flag, faces, zodiac signs, animals etc. The over whelming majority of participants in both Study 1 and Study 2 chose the NZ flag (81% and 71%, respectively), probably because the first screen had a small selection of flags, including the NZ flag, although some people scrolled through multiple screens to choose

other avatars e.g. a dog, or even another flag (they were not specifically directed to choose the NZ flag avatar).

There was a chat box on the lower left-hand side of the server. Messages could be typed in real time between the client and manager's server. The experimenter would always start by firstly saying "hi again my friend" "how are you?" (positive condition) or "Don't speak to me dumbass UCP####" "I told you before"³ (negative condition), or did not respond at all (control condition).⁴ For the positive and negative conditions, there was a general script that the experimenter went through for each participant (see Appendix B). If the participant chatted to the Brazilian player then the experimenter would always reply with an appropriately valenced response.

The chat box flashed red when a message was received. The poker game itself was programmed to the rules of Texas Hold'em poker. The cards were dealt using a random number generator; however, odds for the participant to win or lose hands could be manipulated by the primary experimenter using the manager server. For this particular study (Study 1), this option was set at default, so that there was an equal likelihood of the participant winning or losing money (for comparing winning and losing money, see Study 2). The amount of chips held by each player, and the small (10¢) and big blinds (20¢) were displayed in cents.

The research assistant typed in the participant's user name, which would always take the form of UCP#### depending on the participation number assigned to participants at the

³ The first couple of participants were suspicious of the original script during the debrief, so to enhance the realism, it was suggested that the Brazilian thought they were encountering the participant again, which would justify the content and amount of chat.

⁴ When participants first logged into the software, they saw the Brazilian replying to another player at the table. This was done to enhance the illusion of it being a real game and to make the participants less suspicious. The dialogue was always: (Chipupplz69): "I folded QQ" (Chipupplz69): "It was pretty obvious you hit runner runner straight". The Brazilian then replied for the positive condition, (FelipeAlejo3): "Good fold then" (FelipeAlejo3): ":)"; and in the negative condition "no idiot I bluff" (FelipeAlejo3) "hahaha".

commencement of the experiment. All of the other players' avatars and names remained the same for each participant as they were all controlled by the primary experimenter. The player at the table that served as the target outgroup was a Brazilian player called "FelipeAlejo3". They always sat to the immediate left of the NZ player. This player was also controlled by the experimenter and always had the Brazilian flag displayed as the avatar, in addition to the country being displayed i.e. "Brazil". See Figure 2 for details of how each player at the table was presented. Every participant started the game with 1000¢ (\$10). For the five remaining experimenter controlled players, the chip stacks displayed each time a new participant logged on remained constant for each game as they were all pre-set in the manager settings.

Figure 2.

Example of what the poker game looked like. The participant always sat in the bottom centre, with the Brazilian always to the left of the participant.



Post poker survey and manipulation check questions. After playing the poker game, each participant rated on a second Qualtrics survey (Post-poker survey on the Figure 1 flow chart) how easy or hard they found the game they just played, along with other filler questions. To check to see if they had seen the chat box messages, participants were also asked “To control for outside influences”...”If you noticed any chat messages during the game, how would you rate the overall tone of the conversation?” Participants responded on scales from 1—*very friendly* to 5—*very unfriendly* and 1—*very unpleasant* to 5—*very pleasant*. The first manipulation check item (how very friendly to very unfriendly were the

messages) was reverse coded so that both manipulation check items were anchored such that higher ratings indicate more pleasant and friendly conversation tones.

Explicit dependent variables and discrete emotions. After the above post-poker questions, participants rated various outgroups on thermometers and semantic differentials, and then rated how they felt whilst playing the poker game. For the explicit dependent variables, participants were asked to rate a variety of outgroups, as this made the true purpose of the study less obvious, and additionally, the ratings for Russians were used to assess secondary transfer effects (STE). Russians were chosen for STE because they comprise less than 1% of the New Zealand population (Statistics New Zealand, 2013), and they are one of the top nations in terms of players in online poker, and thus would fit in with the experiment's cover story.

Feeling thermometer. A feeling thermometer (Converse & Presser, 1986) was used to gauge how participants felt towards various groups, including Brazilians. Participants were instructed to rate each of the outgroups (Russians, Brazilians, Chinese people, and New Zealanders). Participants were informed that a rating of 0-49 degrees indicates they feel cold or unfavourable toward the outgroup; 50 indicates they feel neutral, and 51-100 indicates that they feel warm or favourable toward the outgroup.

Semantic differentials. There were six items that asked participants how they felt about the various outgroups on 7-point scales. e.g. "How do you feel about Brazilians as a group? I feel... 1—*very negative* to 7—*very positive*"; "Think about Brazilians as a group. In your opinion what are they like? 1—*very incompetent* to 7—*very competent*"; "1—*very untrustworthy* to 7—*very trustworthy*" (Osgood et al., 1957).⁵

⁵ These semantic differentials were not group specific, but just general measures that each group can be based on i.e. they were not intended to be tapping into any specific a priori stereotypical measures about Brazilians.

Emotions. Items from the Discrete Emotions Questionnaire (DEQ; Harmon-Jones et al., 2016) were used to gauge emotions that participants felt whilst playing the poker game. Only six of the DEQ emotions were included in the study; a total of 24 items probing anger, disgust, fear, anxiety, sadness, and happiness.

Implicit dependent variables and Electroencephalography scan (EEG). Implicit bias was measured using an implicit association test (IAT; Greenwald et al., 1998). Written into the IAT script were EEG markers, used to mark when participants responded to incongruent and congruent IAT stimulus pairings and the associated brainwave activity.

Implicit Association Test (IAT). An IAT was used to test the strength of implicit associations of Brazilian and New Zealand surnames with good and bad stimuli (words). Specifically, participants had to categorize Brazilian surnames: Silva, Ferreira, Rodrigues, Santos, Fernandes, Azevedo; and New Zealand surnames: Smith, Campbell, Jones, Taylor, Walker, Thompson, along with good words (Beauty, Gift, Sunshine, Glory, Kindness, Love) and bad words (Filth, Vomit, Ugly, Poison, Sickness, Pain). Responses were made on a standard computer keyboard with “A” and “S” being the corresponding response keys for the left and right-hand side of the screen. Within the IAT instructions, participants were told that they were randomly assigned to distinguish between Brazilian and New Zealand surnames (the research assistant had also said that they would be randomly assigned a group from the initial Qualtrics survey to compare to NZ stimuli. This was to make it less obvious as to why Brazilian names were chosen).

Participants first completed practice trials in which they paired good stimuli with the word “good” and bad stimuli with the word “bad”. Next they had to accurately categorize Brazilian and New Zealand surnames. Error messages appeared when the wrong pairing occurred and the correct pairing had to be made to proceed. To counterbalance the trials, half

of the participants first classified good words with “Brazil” and bad words with “New Zealand” (incongruent trials). The other half classified Brazil and bad words, and New Zealand and good words (congruent trials). Participants then switched to do either the congruent (odd numbered participants), or incongruent (even numbered participants) trials. There were 20 practice block trials for incongruent trials, and 20 for congruent trials. Likewise, there were 50 critical blocks for incongruent and congruent trials respectively (total 140 trials).

Electroencephalography (EEG). EEG markers were written into the IAT script such that each major practice and critical trial was marked. Any brain activity associated to that number marker could be identified for later analyses. For the purpose of this research, that was the N400, therefore brain activity \approx 400ms after the onset of the IAT trial. There was a total of 140 trials (all IAT practice and critical blocks).

EEG set-up. Before participants arrived, the Emotiv TestBench software was opened and the serial port was configured correctly in order for the computers to send and receive markers. The wireless recording software had a sampling rate of 128Hz. Researchers also insured the headset was connected to the software via a Bluetooth connection.

Just before participants played the poker game, they were fitted with a 14 electrode Emotiv EPOC+ quick application EEG headset (Emotiv Systems, Inc., San Francisco, CA, United States). The headset’s 14 channel (gold plated contact grade hardened copper) felt pads were pre-moistened with saline solution. The 14 channels (AF3, AF4, F3, F4, F7, F8, FC5, FC6, T7, T8, P7, P8, O1, and O2) were positioned on participants’ head, in accordance with the 10-20 International System (see <https://www.emotiv.com/independent-studies/validation-of-emotiv-epoc-for-extracting-erp-correlates-of-emotional-face-processing/> for graphic of locations on the head that these channels relate to). Two electrodes positioned

over the mastoids served as online reference. Previous research has validated the use of Emotiv headsets as an alternative to standard EEG setups (e.g. Bobrov et al., 2011; Louwerse & Hutchinson, 2012).

Results

Manipulation check. Before conducting analyses, we checked to make sure that the participants had seen the chat box messages (for the negative and positive conditions). Participants in the neutral condition either did not answer this question, or chose “3” which was the middle value of the scale⁶. Scale reliability of the two manipulation check items demonstrated acceptable reliability, $\alpha = .77$ ($r = .63$), therefore the two items were combined to form a manipulation check scale. Due to the control condition not receiving any messages, an independent t-test was used to assess how the two experimental conditions interpreted the chat messages. This revealed a significant difference between the conditions and how they interpreted the chat messages, $t(118) = -15.72$, $p < .001$, $d = 2.88$. Looking at the means, those in the negative condition rated the messages as significantly more unpleasant and unfriendly in tone ($M = 1.51$, $SD = .73$), than the positive ($M = 3.98$, $SD = .97$) condition. This indicates that the messages were valenced sufficiently for the respective conditions and that they were accurately interpreted as such by the participants.

Previous poker playing experience. Approximately a third of participants had never played poker before (31.5 %). Another 42.5% had only played once a year or less, and 21.2% had played every few months. Cumulatively, this added to 95.5% of participants not having much experience playing poker (the other 4.5% of participants played poker from a few days per month to mostly every day). In relation to *online* poker, the majority of participants had never played (58.1%), another 30.2% had only played a few times in their life (cumulatively

⁶ For the manipulation check analyses, participants that did not enter a value had the number 3 entered which was the middle scale value.

88.3%), whilst 10.1% reported to have played a couple of hours on a few days each month. The remaining 1.7% played either a few times each week (1.1%) or played most days (0.6%). Due to most people mainly having little experience in playing both regular and online poker, poker playing experience was not entered as a covariate in any of the analyses.⁷

Explicit prejudicial attitudes towards Brazilians

Assumptions for normality, homogeneity of variances, homogeneity of covariances, and homogeneity of regression slopes were met for all following explicit measures analyses. Previous research in intergroup contact recommends that previous contact with outgroup members are controlled for (Lolliot et al., 2015), even in experimental effects of discrete contact experiences because familiarity with the outgroup may affect attitudes and outgroup variability (Islam & Hewstone, 1993). Therefore, previous contact with Brazilians was added as a covariate in the subsequent analyses. Two questions asked participants about how much previous contact they had had with Brazilians by asking “how often have you...: engaged in informal conversations with people from Brazil; visited the homes of people from Brazil”. These two items displayed poor internal reliability $\alpha = .59$ ($r = .54$). This is likely due to participants not having opportunities to visit the homes of Brazilians at all ($M = 1.16$, $SD = .66$) because Brazilians only comprise a negligible percentage of New Zealand’s population. For this reason, only the question asking how often participants had engaged in informal conversations with Brazilians was used to check for previous contact ($M = 1.85$, $SD = 1.41$).⁸

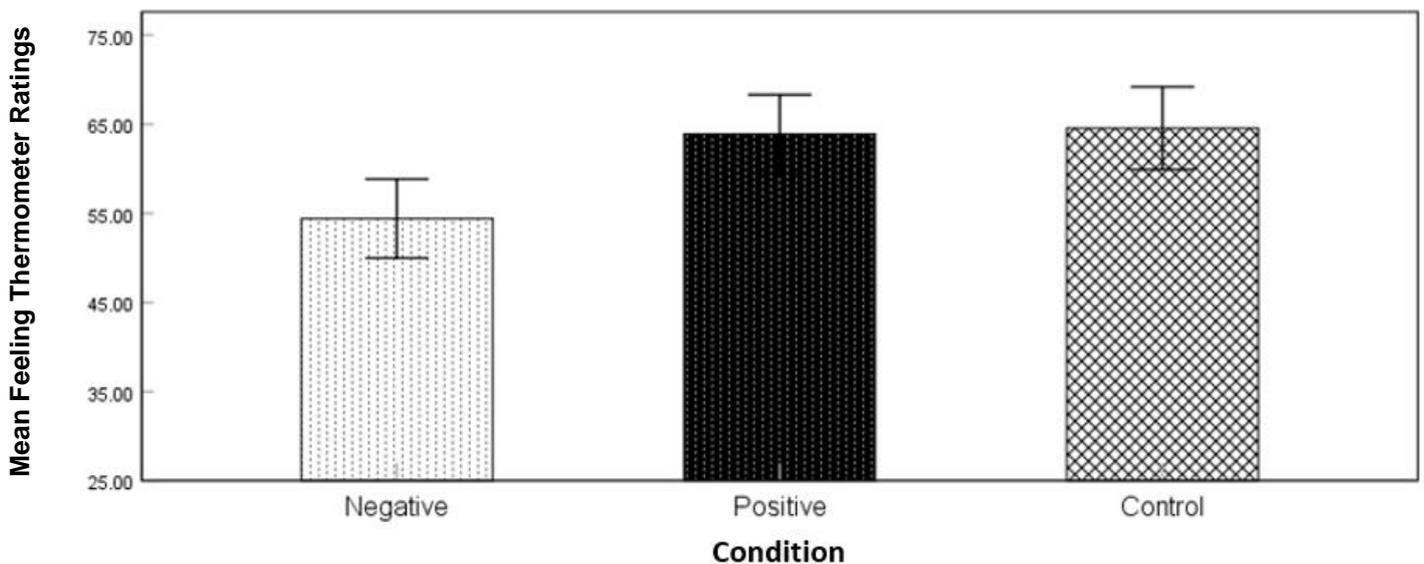
⁷ Including previous poker playing experience into the analyses did not change the results.

⁸ Given that I had some participants that were not NZ citizens, I wanted to check if the effects still held over and above level of NZ identification. To check for this, I entered the extent participants identified with New Zealand (NZID) as a covariate to check whether this affected the results. It did not change the main results. NZID was used because it would be a more reliable measure of affiliation with NZ than ethnicity due to ethnicity being an open-ended response option, which made it difficult to ascertain which participants were NZ European, or some other European. It is also good for ascertaining to what extent any participant, regardless of nationality, identifies with a NZ identity.

Feeling thermometer. A one-way ANCOVA revealed a significant effect of condition and the feeling thermometer ratings of Brazilians (see Figure 3 for means and 95% confidence intervals), $F(2, 166) = 6.28, p = .002, \eta^2_p = .070$, whilst controlling for previous contact with Brazilians. Follow up comparisons using Sidak correction revealed that those in the negative condition had significantly less favourable feelings towards Brazilians than both the positive condition, (Mean Difference = ± 9.49 , S.E. = 3.17), $p = .009, d = .58$, and control condition, (Mean Difference = ± 10.15 , S.E. = 3.25), $p = .006, d = .58$. However, there were no significant differences in feelings towards Brazilians between the positive and control conditions, (Mean Difference = $\pm .660$, S.E. = 3.24), $p = .996, d = .04$.

Figure 3.

Bar graph depicting mean feelings towards Brazilians by valence condition. Higher numbers indicate more warmth toward Brazilians.



Semantic differentials. In addition to the feeling thermometer, semantic differentials were also used to gauge explicit measures of bias toward Brazilians. Participants made ratings of how positive, pleasant, competent, ignorant, honest, and trustworthy they felt about Brazilians. To check that these items probe the same underlying factor, or if they are separate subscales, a principal components factor analysis was conducted.

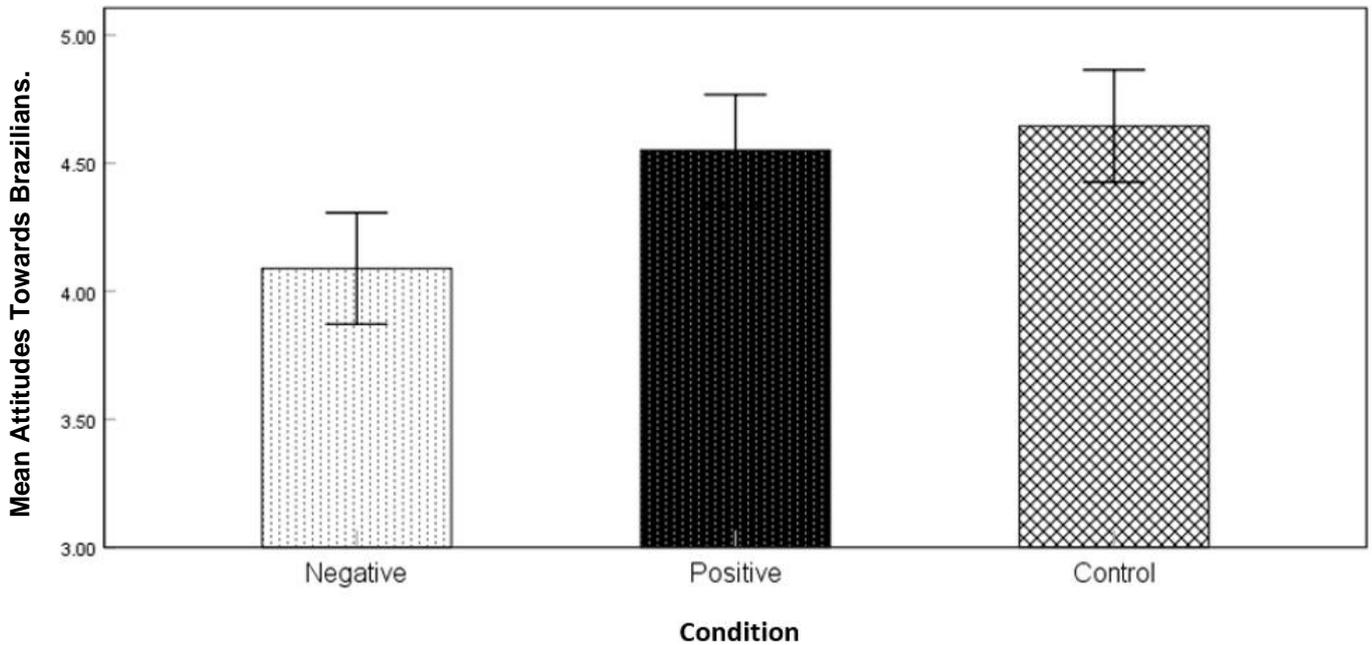
Principal components analysis and reliability analysis. A principal components analysis was conducted on the six semantic differential items with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin measure of sampling accuracy (KMO) was meritorious (according to Hutcheson & Sofroniou, 1999), and the KMO values for individual items were above .75. The analysis found only one factor that explained 65.44% of the variance. The scree plot also confirmed that the items all loaded onto one factor.⁹ Due to all six items loading onto one factor, a reliability analysis was conducted with all semantic differentials together. The items displayed good internal consistency $\alpha = .89$. These six items were then aggregated to make one scale of Brazilian Attitudes, where higher numbers indicate more favourable attitudes towards Brazilians.

Overall there was a difference between contact valence (negative, positive, or control/no contact) on Brazilian Attitudes, after controlling for previous contact with Brazilians, $F(2, 175) = 7.25, p = .001, \eta^2_p = .076$. Means are displayed in Figure 4.

⁹ To double check that it was loading onto one factor, I also ran a Monte Carlo Parallel analysis for principle components analysis (PCA) with 1000 data sets, and normally distributed random data generation. This analysis also confirmed one factor (only the first factor had raw eigenvalues greater than the 95 percentile of random data eigenvalues).

Figure 4.

Mean ratings of Brazilian Attitudes by condition. Higher scores indicate more positive attitudes toward Brazilians.



Follow-up comparisons using Sidak corrections revealed that those in the negative condition reported feeling significantly less positively toward Brazilians than those in both the positive (Mean difference = $\pm .461$, S.E. = $.156$), $p = .010$, $d = .54$ and control conditions (Mean difference = $\pm .556$, S.E. = $.157$), $p = .001$, $d = .64$. However, there was no difference in Brazilian attitude ratings between the positive and control conditions (Mean difference = $\pm .094$, S.E. = $.156$), $p = .907$, $d = .12$.

Implicit attitudes towards Brazilians

Scoring of the IAT. The IAT data was scored using the algorithm by Greenwald et al. (2003), to produce IAT D scores. Blocks B3, B4, B6, and B7 were retained (see Greenwald et al., 2003 for full scoring algorithm). Trials with latencies greater than 10,000ms and less than 300ms were eliminated following the standard IAT algorithm by Greenwald et al. (2003).

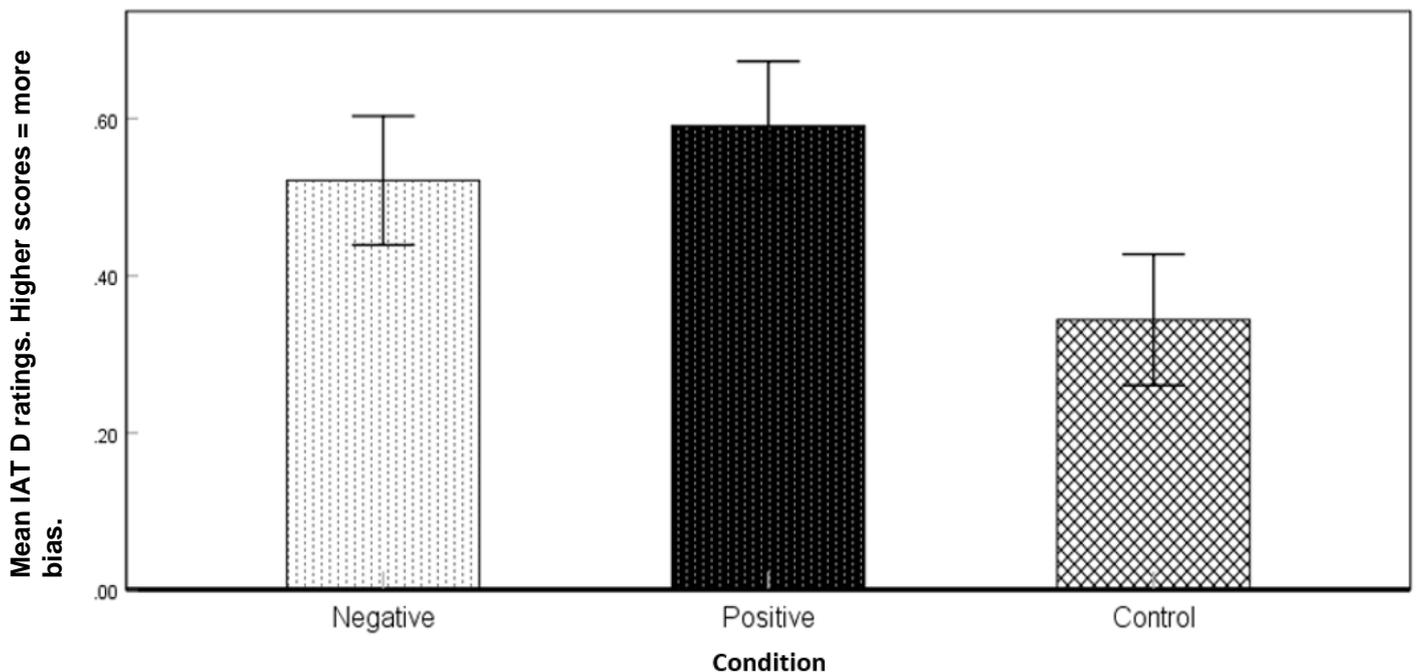
Implicit attitudes analyses. An analysis of covariance (ANCOVA) was conducted to determine whether there were any differences between condition and IAT D scores.

Normality and homogeneity of variances was acceptable. There was an overall significant difference between condition on IAT D scores, whilst controlling for previous contact, $F(2, 174) = 9.20, p < .001, \eta^2_p = .096$. See Figure 5 for means and confidence intervals.

Follow-up comparisons with Sidak corrections revealed that there was no difference in mean ratings between the negative and positive conditions (Mean difference = $\pm .070$, S.E. = $.059$), $p = .600, d = .22$. There was however, differences between the control condition and both the negative (Mean difference = $\pm .177$, S.E. = $.059$), $p = .010, d = .54$, and positive conditions (Mean difference = $\pm .247$, S.E. = $.059$), $p < .001, d = .81$, indicating that the negative and positive conditions displayed more implicit bias than the control condition.¹⁰

Figure 5.

Bar graph depicting mean IAT D score ratings and 95% confidence intervals per condition. Higher scores indicate more bias toward Brazilians.



¹⁰ Follow up one-sample t-tests per condition, revealed that all means were significantly different from the test mean of zero (all p values $< .001$).

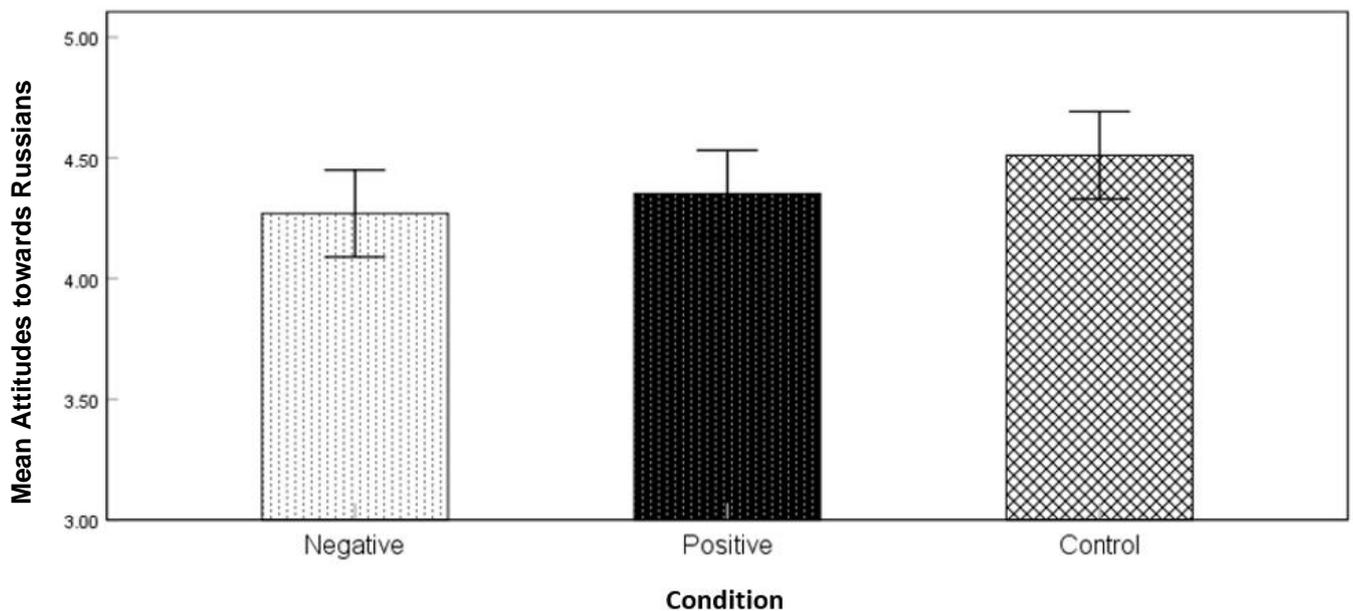
Secondary transfer effects

Russians were the outgroup chosen to test for secondary transfer effects (as detailed above). The six semantic differential items displayed good internal consistency $\alpha = .851$, so a composite variable that captured Russian Attitudes was created from the average of these items. An ANCOVA was conducted with previous contact with Russians as a covariate. Assumptions were met for homogeneity of variance, homogeneity of regression slopes, with skewness and kurtosis also being fine.

There was no significant difference between condition and Russian Attitudes, whilst controlling for previous Russian contact, $F(2, 175) = 1.80, p = .168, \eta^2_p = .020$ (means are displayed in Figure 6).

Figure 6.

Mean ratings of attitudes towards Russians by condition. Higher numbers indicate more favourable attitudes.



Secondary analyses

A variety of secondary analyses on the data that were exploratory in nature were conducted. These are outlined below. Alongside those mentioned below, RWA and political orientation were investigated as moderators of contact valence for both explicit and implicit measures (as previous research has found them to be moderators of contact and prejudice; Graf & Sczesny, 2019; Turner et al., 2020). However, in the current study, these did not significantly moderate the effects: no significant effect of condition x RWA on Brazilian attitudes, $\Delta R^2 = .02$, $F(2, 173) = 2.45$, $p = .089$, or IAT D score, $\Delta R^2 = .003$, $F(2, 172) = .325$, $p = .723$. There was also no effect of condition x political orientation on Brazilian attitudes, $\Delta R^2 = .0008$, $F(2, 173) = .078$, $p = .925$, or IAT D score, $\Delta R^2 = .02$, $F(2, 172) = 1.92$, $p = .150$.

EEG results. Brain Vision Analyzer 2.0 (BVA 2) software was used for pre-processing of the EEG recordings. To remove electrical noise which makes isolating brain activity related to ERPs difficult to detect, the following standard procedures were carried out: Firstly, the EEG data was band-pass filtered between 0.1 and 20 Hz.¹¹ Data (all markers including errors and correct responses) were first segmented into 1200ms epochs locked to each marker 200ms before, and 1000ms after the stimulus. Next artifacts, including blinks, were automatically identified via the following settings: -75 to 75 μV min/max threshold; maximum voltage step of 50 μV ; 0.5 μV lowest allowed voltage in 100ms intervals. Data was further segmented into 1200ms epochs locked to both incongruent or congruent trials, 200ms before and 1000ms after the presentation of the stimulus. These were then baseline corrected

¹¹ Blinks were originally removed using automatic ocular independent component analysis (ICA; HEOG and VEOG reference electrode = AF3), however visual inspection of the grand averages suggested that this made for higher frequency noise, therefore ICA was not applied (previous research has also not used ICA, but like my current study, have used the rejection algorithm; Agroskin et al., 2016; Prentice et al., 2020).

to -200ms to 0ms prior to the stimulus. All artifact free epochs were then averaged. This created average ERPs of incongruent and congruent trials for each participant.¹²

A grand average for incongruent trials and congruent trials was obtained by averaging all the single averages of each participant, to visually establish at what temporal time points post stimulus to export the data. The time window of interest that comprises the N400 was exported from 350-500ms. Previous literature has typically examined the N400 at mid-frontal electrodes (e.g. F3, F4; Hehman et al., 2014; Hilgard et al., 2015; Williams & Themanson, 2011), thus in this current study, the average activity across F3 and F4 electrodes for each participant was calculated for both incongruent and congruent IAT trials. This resulted in two mean amplitude variables for N4 activity, one for incongruent trials (F3F4N4_Incongruent), and the other for congruent trials (F3F4N4_Congruent).

To remove outliers for analyses, participants that had ERP scores less than -20 and greater than +20 μV were excluded from analyses separately for each outcome ERP variable. A mixed model ANCOVA was conducted, with handedness entered as a covariate (whether participants were left or right-handed). F3F4N4_Congruent and F3F4N4_Incongruent were entered as repeated measures, to measure overall Trial Congruency, and condition as the between-subjects effect. The covariate was not significantly related to Trial Congruency $p > .05$. Assumptions for normality, homogeneity of variance, and homogeneity of regression slopes were met.

The mixed ANCOVA revealed a significant interaction effect of Trial Congruency x condition, $F(2, 163) = 3.63, p = .029, \eta^2_p = .043$ (see Table 2 for means of condition with

¹² A difference wave was created by subtracting congruent from incongruent epochs for each participant. Due to incongruent trials hypothesised to contain the process of interest, this difference wave should theoretically isolate that process (or processes) unique to incongruent trials (if incongruent trials contain everything that congruent trials contain, except for the processes unique to incongruent trials). When analysed though, the difference wave did not significantly differ between the three valence conditions.

congruent and incongruent trials). Breaking this down further, an ANCOVA with congruent and an ANCOVA with incongruent trials were separately run to see which of the comparisons were statistically significant. Firstly, the ANCOVA with F3F4N4_Congruent as the outcome variable revealed a marginally significant result of condition on F3F4N4_Congruent, while controlling for handedness, $F(2, 167) = 2.45, p = .089, \eta^2_p = .028$. Follow up comparisons with Sidak corrections revealed no significant difference between any of the conditions with all p values $> .10$.

Likewise, there was a marginally significant result of condition on F3F4N4_Incongruent, while controlling for handedness, $F(2, 163) = 2.56, p = .081, \eta^2_p = .030$.¹³ Follow up comparisons with Sidak correction revealed no significant difference between any of the conditions with all p values $> .10$. Taken together, these results suggest that none of the conditions differed on congruent or incongruent trials, and the significant interaction of Trial Congruency x condition was due to the positive condition having congruent and incongruent trials trending in different directions.

In accordance with previous research (e.g. Williams & Thermanon, 2011), I will also present the omnibus analysis for the N400, which revealed a main effect of trial congruency, $F(1, 163) = 9.76, p = .002, \eta^2_p = .057$ (Congruent $M = -1.38 \mu\text{V}, SE = 0.47$; Incongruent $M = -.001 \mu\text{V}, SE = .47$). These results indicate that the congruent trials had more N400 activity, as the more negative the number, the more stereotype accessibility.

¹³ Both F3F4N4_Congruent and F3F4N4_Incongruent were tested in separate mediation models with IAT D as the outcome, condition as the X variable, handedness as the covariate, and the ERP variables as mediators. There was no mediation effect for either of the models.

Table 2.

Table depicting the average mean amplitude (μV) of the F3 and F4 electrodes for congruent and incongruent trials for the N400 by condition. Positive numbers mean less N4 activity, or less stereotype accessibility.

| Condition | Trial Congruency | Mean | Std. Error |
|-----------|------------------|-------|------------|
| Negative | Congruent | -1.84 | 0.797 |
| | Incongruent | -1.47 | 0.795 |
| Positive | Congruent | -2.52 | 0.833 |
| | Incongruent | .528 | 0.831 |
| Control | Congruent | .225 | 0.834 |
| | Incongruent | .941 | 0.832 |

Ancillary ingroup analyses. To confirm that the manipulation was not leading to ingroup love, independent of outgroup prejudice; I tested whether attitudes towards New Zealanders differed at all. A NZ attitudes variable with the same six semantic differential items as used for Brazilians (but phrased about NZers), was constructed and displayed good internal reliability, $\alpha = .86$.

An ANOVA revealed no significant difference between the conditions on NZ attitudes, $F(2, 176) = 1.30, p = .274, \eta^2_p = .015$ (Negative contact: $M = 4.91, SD = .821$; Positive contact: $M = 5.15, SD = .927$; Control: $M = 5.10, SD = .789$). This indicates that there were no differences between the conditions in regards to ingroup love.

Emotions. Emotions were analysed as secondary analyses with condition as a predictor and each emotion as the outcome variable.¹⁴ One participant was excluded due to missing data. Significant and marginally significant results for emotions, theoretically relevant to intergroup contact are reported below.¹⁵

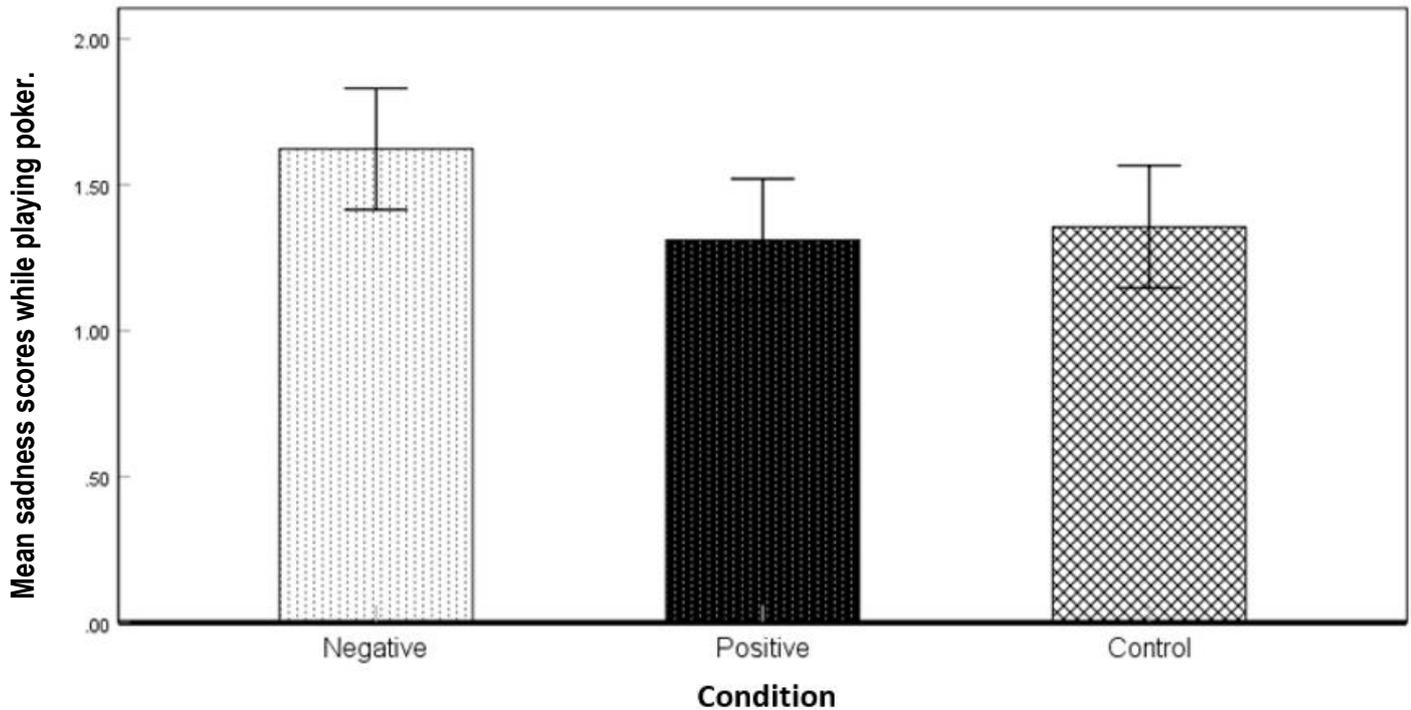
Sadness. The sadness scale comprised of items asking participants if they experienced feeling the following during the poker game: sad, grief, lonely, and empty. These items had acceptable internal reliability, $\alpha = .756$. A one-way ANOVA found no significant difference in experiencing sadness during the game between the conditions, although the result was marginal, $F(2, 175) = 2.54, p = .081, \eta^2_p = .028$. A bar graph of the means is shown in Figure 7.

¹⁴ Emotions were also tested as mediators, but none of the emotions significantly mediated the relationship between condition and either explicit measures, or IAT D scores (all confidence intervals contained 0). For anger as a mediator of Brazilian attitudes: The bootstrapped unstandardized indirect effect was .08, and the 95% confidence interval ranged from -.13 to .20 (positive vs. negative and control conditions); for the control vs. negative and positive conditions the bootstrapped unstandardized indirect effect was .08, and the 95% confidence interval ranged from -.14 to .20. For anxiety as a mediator to Brazilian attitudes: The bootstrapped unstandardized indirect effect was .05, and the 95% confidence interval ranged from -.10 to .10 (positive vs. negative and control); for the control vs. positive and negative conditions the bootstrapped unstandardized indirect effect was .05, and the 95% confidence interval ranged from -.10 to .09. For anger as a mediator of IAT D scores: the bootstrapped unstandardized indirect effect was .07, and the 95% confidence interval ranged from -.12 to .15 (positive vs. negative and control); for the control vs. positive and negative conditions, the bootstrapped unstandardized indirect effect and the 95% confidence interval range were identical. For anxiety as a mediator of IAT D scores: the bootstrapped unstandardized indirect effect was .04, and the 95% confidence interval ranged from -.03 to .11 (positive vs. control and negative conditions); and for the control vs. negative and positive conditions, the bootstrapped unstandardized indirect effect was .03, and the 95% confidence interval ranged from -.03 to .10.

¹⁵ Disgust, fear, and happiness did not significantly differ between the conditions. In the interest of space, these results will not be mentioned here. A correlation matrix of all emotions and how they related to the IV and DVs (except for EEG DVs) are included in Appendix C, Table C1.

Figure 7.

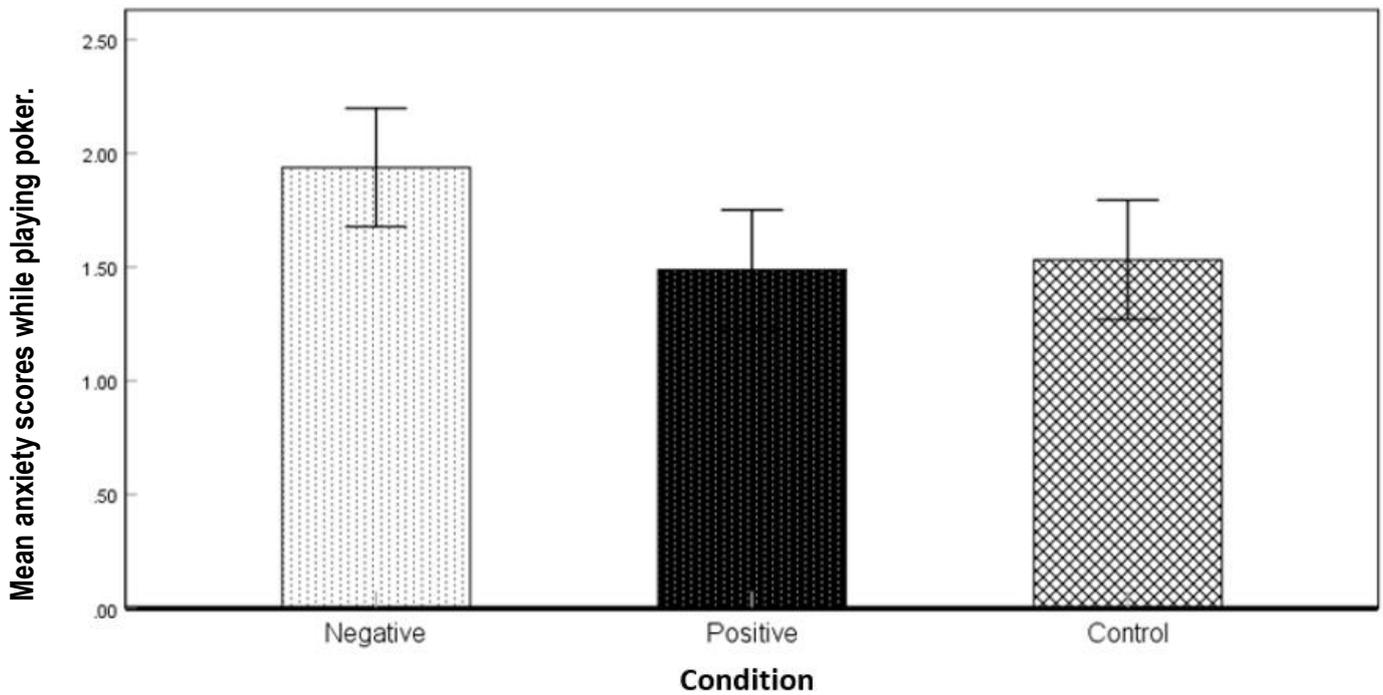
Means and 95% confidence intervals for feelings of sadness experienced when playing the online poker game by condition. Higher numbers indicate more sadness.



Anxiety. Anxiety was measured with items asking how much worry, anxiety, dread, and how nervous participants felt whilst playing the game. The items displayed good reliability $\alpha = .871$. A one-way ANOVA revealed a significant difference in the amount of anxiety felt during the game, $F(2, 175) = 3.51, p = .032, \eta^2_p = .039$. Means and 95% confidence intervals are displayed in Figure 8. However, follow up comparisons with Sidak correction demonstrated only a marginally significant difference in anxiety between the negative and positive conditions, $p = .052, d = .39$ and a marginally significant difference between the negative and control condition, $p = .092, d = .36$, but no difference between the positive and control condition, $p = .994, d = .06$.

Figure 8.

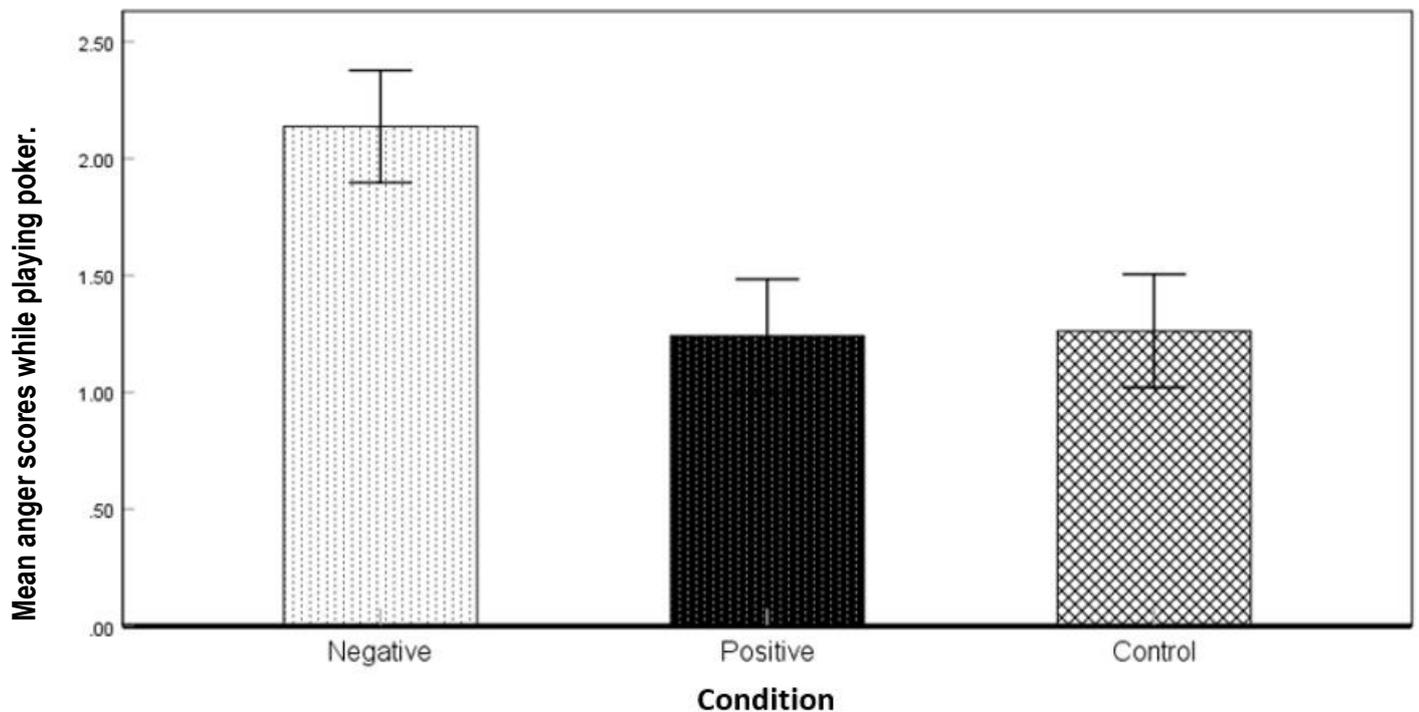
Mean anxiety ratings reported by participants when playing online poker per condition. Higher numbers indicate greater anxiety.



Anger. Anger was measured by items asking if participants felt the following during playing the poker game: anger, rage, mad, pissed off. These items displayed good internal reliability $\alpha = .886$. There was a significant difference in the amount of anger experienced overall, $F(2, 175) = 17.51, p < .001, \eta^2_p = .167$. Means and 95% confidence intervals are displayed in Figure 9. Follow-up tests with Sidak correction revealed a significant difference between the negative and positive, $p < .001, d = .85$, and negative and control, $p < .001, d = .80$ conditions. There was no difference in anger reported between the positive and control conditions, $p = .999, d = .03$.

Figure 9.

Mean levels of anger felt by participants whilst playing online poker by condition. Higher numbers indicate more anger.



Discussion

Explicit attitudes results

Taken together, the feeling thermometer and semantic differentials display an identical pattern of results: those in the negative contact condition had significantly less favourable attitudes towards Brazilians compared to both the positive and control conditions. Further, there was no difference in attitudes towards Brazilians between the positive and control conditions.

Negative contact condition results. The negative contact condition displaying less favourable attitudes towards Brazilians compared to the other two conditions supports Hypothesis 1a, and is consistent with previous research results (Andrews et al., 2018; Barlow et al., 2012; by Fuochi, Voci, Boin et al. 2020; Hayward et al., 2017). Although there have been mixed results in terms of positive-negative contact asymmetry (see Paolini & McIntyre,

2019 for a meta-analysis), the current study did find only the negative contact condition differed from the control group in terms of explicit attitudes. This might not indicate an asymmetry though, as it could be due to the control condition not being truly neutral in valence (being absolutely in the middle of a positive and negative valence). Also seeing as positive contact is more prevalent, and hence normative (Graf et al., 2014), and contributes to an understanding of what neutral contact is, there is thus more constraint in making room for positive contact to differ from the control. Nevertheless, this result highlights the potency of negative online contact at affecting attitudes, particularly in contexts which are superficial and competitive in nature. However, experiencing negative contact in intimate relationships has been associated with more favourable outgroup attitudes than experiencing negative contact in superficial relationships, indicating that intimacy in relations may have some protective effects (Graf, Paolini et al., 2020).

Positive and control conditions contact results. The positive and control conditions displayed similar non-significant patterns of explicit attitudes. Firstly, it was hypothesised that due to the competitive nature of playing poker (a violation of one of Allport's [1954] conditions), there would unlikely be a difference between the positive and control conditions' explicit attitudes. Therefore, Hypothesis 1b was supported. Additionally, this may not be surprising when considering participants' chat dialogue was more superficial and did not really disclose emotions, but rather simply exchanged information with the Brazilian e.g. "nah I didn't play the tournament". Thus the interaction was not very intimate. If contact is only casual (not intimate), stereotypes are not likely to change (Hasler & Amichai-Hamburger, 2013). This is also supported by research that has found that the better predictor of outgroup attitudes is positive intimate contact, and negative superficial contact (Fuochi, Voci, Boin et al., 2020), the latter of which, is also supported by the current results.

Another explanation for the positive and control conditions displaying the same pattern of results for explicit attitudes could be due to the anonymous nature of the contact reducing social presence. Research has found that anonymity can reduce perceived social presence and thus affect how warm participants feel about the outgroup (Schumann et al., 2017). Although in their study warmth toward the outgroup increased after CMC, there was an indirect effect of anonymity leading to less social presence, which in turn lead to greater prejudice. In the current study, participants were anonymous, so this could have indirectly lead to null prejudice effects in regards to the positive and control conditions.

It could also be that there was a ceiling effect with positive attitudes. It has been suggested that ceiling effects may occur for positive contact with groups that participants have relatively positive a priori attitudes about (Hasler & Amichai-Hamburger, 2013; White et al., 2020). Brazilians are not likely to be a stigmatized group to New Zealanders in general as they make up a negligible proportion of the population, and therefore are more of a neutral outgroup.

Additionally, it was difficult to be overly positive (without sounding flirtatious) in the positive chat condition in this study design. The tone of the conversation was thus likely to be mildly positive or neutral. Evidently, it could just be that short amount of positive contact is not enough to change attitudes (White et al., 2012). However, Cao and Lin (2017) demonstrated that just a seven minute chat was sufficient to reduce prejudice and improve attitudes. Their study design was similar to the current one, in that the participants just chatted without working toward a common goal (c.f. other studies e.g. White et al., 2012 where working toward a common goal was central to the interaction). Potentially what the current study highlights, is that having a positive chat in a *competitive* setting/environment, does not improve attitudes, especially when the interaction is superficial.

Implicit bias results

Contradictory to my hypotheses about the IAT, the positive and negative conditions displayed the most amount of implicit bias. Also unexpectedly, there was no difference in implicit bias between the negative and positive conditions. It was hypothesised that the negative condition would display more implicit bias compared to the other conditions (Hypothesis 2a) and that the control and positive condition probably would not differ in implicit bias (Hypothesis 2b). It is not uncommon in the literature to find that explicit attitudes do not map on to implicit attitudes, particularly due to implicit attitudes being automatic associations and explicit attitudes being deliberative (see Gawronski & Bodenhausen, 2006 for a review).

Nevertheless, there are a few possible alternative explanations for these results. Firstly, unlike the positive and negative conditions, the control condition did not have any messages to read in the chat box. This means that they could focus solely on playing the game. The chat box flashed red when there was a new message in the chat box, so for those in the experimental conditions, it was distracting enough to look at, and hard to avoid. The Brazilian player was frequently referring to the participant in the chat box e.g. by asking how they were, or by criticizing the participant. Consequently, it could be that when participants completed the IAT, those in the control condition were not as cognitively depleted as those in the experimental conditions.

Research on cognitive depletion and implicit prejudice has found that direct interracial contact can be cognitively depleting (Richeson & Shelton, 2003). In Richeson and Shelton (2003), participants firstly completed an IAT, then they interacted with either a black or white experimenter. Afterwards, they completed a Stroop task, designed to measure executive control. High-prejudiced white participants that interacted with the black experimenter performed significantly worse on the Stroop task than did those low in

prejudice, but also worse than those high in prejudice, but whom interacted with a white experimenter. The authors concluded that engaging in an exercise requiring self-regulation (interacting with a black experimenter for those high in prejudice), depleted cognitive resources required for the second (Stroop) task.

Depleting cognitive resources may not impact automatic stereotype activations though, but rather influence the resources needed to control responses in automatic tasks, such as the IAT (Govorun & Payne, 2006). Others have also demonstrated that cognitive control can influence IAT performance (Siegal et al., 2012) and when participants were told to suppress emotions during a video depiction of a gang leader (intended to elicit low self-regulation), their subsequent candy consumption was predicted by their automatic candy attitudes (as measured by a candy attitudes IAT; Hofmann et al., 2007).

Even though in the current study the positive condition was supposed to lead to less bias, participants may have become depleted simply by the continual friendly chat messages from the Brazilian player when they were trying to concentrate on the game. This, in addition to having to read the messages, plus trying to concentrate on the game may have led to more bias because they had to initially hold back on telling the Brazilian that they were trying to concentrate on the game. The manipulation check confirms that participants thought the Brazilian was being friendly, but the messages and trying to behave amicably could have been cognitively depleting for the participants. Some participants during the debrief did report that they found the Brazilian (in the positive condition), to be annoying with all their messaging.

Additively, in my current study the two experimental conditions had extra factors that the control condition did not: they had contact from the Brazilian (regardless of valence), they had messages in the chat box (and some participants replied to those), and the chat box

flashed red and likely distracted their attention away from the game. Also to note that playing the game was cognitively taxing in of itself, albeit all conditions played that game, only the experimental conditions had added cognitive load.

Another factor in my current study is that unlike the experimental conditions, the control condition did not receive any messages, therefore technically no *intergroup* interaction took place, and group salience was probably lower. Increasing the salience of group memberships can enhance ingroup favouritism and outgroup bias (Dasgupta, 2009). This, and/or in addition to cognitive load may be the reason why the positive and negative conditions performed similarly on the IAT, and displayed more outgroup bias compared to the control condition. Similarly related, is the mere exposure effect, which (possibly regardless of contact valence), Turner et al. (2007) hypothesise is an important influence on implicit attitudes.

EEG results. In relation to EEG findings, although there was a significant interaction effect of trial congruency (congruent and incongruent IAT trials) x condition, separate follow up analyses on the incongruent and congruent trials found only marginally significant omnibus results, and no significant follow up comparisons. This means that there were no differences between the contact conditions on the incongruent and congruent trials, but that the positive condition did show a trend for congruent and incongruent trails moving in the opposite direction, which likely lead to the trial congruency x condition significant effect. These results suggest that intergroup contact of any valence had no effect on N400 ERPs (i.e. the manipulation did not impact stereotype accessibility).

Although this is not what was predicted, there is little literature on applying EEG to intergroup contact. An exception is Jin et al. (2017), which found that priming with a negative media portrayal of the outgroup before the experiment was associated with larger

N400 deflections to positive words and/or smaller N400 deflections to negative words, compared to the (unprimed) control condition, indicative of more negative stereotypes. For the current study, it may be that the brief contact with a Brazilian poker player, was not sufficient to affect N400 ERPs.

However, there was a difference between overall trial congruency, with congruent trials eliciting a larger negative N400 amplitude. Previous research has demonstrated N400 amplitudes to differ across congruency trials (e.g. Hehman et al., 2014; Hilgard et al., 2015; Wang et al., 2011; Williams & Themanon, 2011), but the current results are not in the direction as expected. The congruent trials had more negative N400 activity, indicating more stereotype accessibility, either for Brazilian = bad, or NZ = good stimuli, or both of these stimuli. In Jin et al. (2017), reaction times to positive adjectives towards both ingroup and outgroups were quicker compared to reaction times for categorizing either group with negative adjectives. The authors surmised that for both ingroup and outgroup, the positive adjectives appeared to be congruent, meaning there was no favouritism for either the outgroup or ingroup.

Other authors have found that although ingroup favouritism may enhance personal self-esteem in certain situations, when the ingroup norm is for fairness, self-esteem is enhanced by not favouring the ingroup, but by being equal to both the ingroup and outgroup (Iacoviello et al., 2017). In the New Zealand context, there may well be semantic incongruences, where for the target outgroup of Brazilians, it seemed unnatural/unkind to see the pairing of Brazil and bad stimuli. Taken together with Jin et al. (2017), it may be that participants did not feel it was natural to pair negative words with a relatively novel outgroup and/or to think too highly about themselves.

The results for the N400 are of course what occurs roughly 400ms after the onset of the stimulus. This is not the same as the IAT reaction time. Decisions in the IAT happen hundreds of milliseconds after the N400 ERP (e.g. Schiller et al., 2016). Due to the ERPs being locked to the IAT stimuli (not locked to reaction times), it is important to integrate the EEG results to the IAT results. The IAT results showed no difference between the negative and positive conditions, which can still theoretically fit with the findings for the N400 (e.g. Schiller et al., 2016) as there was no effect of condition on the N400. In the IAT, the negative and positive conditions however, displayed greater implicit bias than the control condition. There are at least a couple of possibilities in relation to the EEG data. Firstly, the N400 only captures activity 350-500ms after the onset of the stimulus, and generally it is several hundred milliseconds after this time window that IAT responses are made (Schiller et al., 2016). Therefore, in the time after the N400 window, other processes may be occurring that account for the IAT effect patterns that we observe (this may not be the case, because when checking for the grand averages and correlations with other ERP components, there did not appear to be any processes occurring after 500ms that differed for trial congruency). Secondly, the control condition, as mentioned previously under implicit results, may have had more cognitive resources to respond to IAT stimuli more efficiently, and/or the experimental conditions had experienced more salient representations of the outgroup prior to the IAT.

Secondary transfer effects

Results indicate no STE from Brazilians to Russians. Previous research had found that STE effects for positive intergroup contact were stronger for groups that were similar, e.g. in ethnicity, religion, etc. (Bowman & Griffin, 2012; Pettigrew, 2009; Sparkman, 2020; Taucsh et al., 2010). Russia is geographically far away from Brazil, and the languages and cultures are very different, so these may have been a factor for the null results. However, other

authors have stated that similarity is not required for negative attitudes, and negative generalisations are likely to affect attitudes towards many outgroups, even when these groups are dissimilar (Shook et al., 2007; Tausch et al., 2010).

The null results do support some previous research that has looked at negative contact and STE. For instance, Harwood et al. (2011) and Lissitsa and Kushnirovich (2018) did not find STE for negative contact. Whilst others have found STE to occur as an indirect association to a secondary outgroup via attitudes towards a primary outgroup in relation to negative and positive contact (Brylka et al., 2016; Jasinskaja-Lahti et al., 2020).

For Study 2, it may be worthwhile to see if STE occur for an outgroup more psychologically similar and proximal to Brazil, such as Argentina. This way, it can test previous research findings that the more similar the primary outgroup is to the secondary outgroup, the more likely STE are to be facilitated (Sparkman, 2020).

Moderating variables. The results did not find either RWA or political orientation to moderate the effects of valenced contact and either explicit or implicit prejudice. This is not entirely unexpected as the sample was mostly comprised of students with the mean RWA score ($M = 3.34$) being below the mid-point of the scale, and the mean political orientation score ($M = 3.57$) being below the mid-point of the scale. In addition, the contact was computer mediated, so I would not expect Brazilians to necessarily threaten New Zealand-based participants' sense of security or values, which perhaps might be the case for groups much more salient in New Zealand.

Emotions. Negative contact led to significantly greater anger and anxiety, and marginally more sadness, compared to the positive and control conditions which did not differ on these emotions, partially supporting Hypotheses 4a and 4b. Happiness, fear, and disgust were not significantly different between any of the conditions. Finding anger and

anxiety to be greater for those that experienced negative contact is similar to that of previous research (Hayward et al., 2017). It is not surprising that the negative chat box comments elicited these emotions, as they were quite confronting. Unlike previous work though, emotions did not mediate the effects of contact and prejudice. The most likely reason is restriction of range in terms of responses. For example, just over 50% of respondents had a mean anger rating of 1 (the lowest possible value). The 75th percentile for anger was 1.5 on a scale of 1-7. This means that the percentile breakdowns would not show much variation in emotions. The same pattern was observed for sadness, although happiness had a little more variation in scores (they looked more normally distributed).

Another reason may have been due to using episodic emotions that asked about the kinds of emotions participants felt during the game, whereas previous research that has found mediation effects (e.g. Hayward et al., 2017; Seger et al., 2017), asked specifically about the target outgroups (e.g. how angry do Black Americans make you?). Still, other research has found mediation effects without probing for emotions specifically related to the outgroup (Butz & Yogeeswaran, 2011).

Hypothesis 4c predicted the positive condition to report greater happiness. Given the explicit and implicit results for the positive and control conditions, it is not too surprising that happiness did not differ between the conditions. Fear however, was hypothesised to differ, at least between the negative and other conditions. Due to the contact being online, there may not have been much for the participants to fear. Disgust likely did not differ for the same reasoning—the outgroup member was remotely located. The null effects of disgust supported Hypothesis 4d. Research has proposed that emotions such as anger and anxiety, but not so much happiness, and disgust, are more relevant to intergroup contact in general (e.g. Dasgupta et al., 2009; Paolini et al., 2021), so it is not unusual for these to not differ by condition.

Conclusions and limitations

The current study found evidence to support a positive-negative asymmetry where having positive intergroup contact in a casual online poker gaming session was not sufficient enough to improve attitudes towards the outgroup compared to the control condition; however, alarmingly, a brief negative encounter in the same paradigm was sufficient enough to worsen attitudes. These results were likely due to the contact being unstructured, casual/superficial, and competitive in nature. Implicit attitudes were more biased for the negative and positive condition. This may have been due to the salience of the outgroup in the experimental conditions, and task demands affecting IAT responding. Additional EEG analyses did not shed any more light on the implicit results as there were no significant effects of condition on congruency trials.

Secondary transfer effects were not found for the secondary outgroup; Russians. As discussed, this may have been due to Russians not being as similar to Brazilians. Therefore, for Study 2 a group more isomorphic to Brazilians—Argentinians, will serve as the secondary outgroup. The emotions of anger, anxiety, and to a lesser extent, sadness, were heightened in the negative contact condition compared to the other conditions. This indicates that the negative condition was sufficiently adverse enough to affect at least these reported emotions whilst playing the poker game. Happiness, fear, and disgust did not differ between the conditions. Due to lack of mediation effects though, increased anger and anxiety, did not seem to impact explicit or implicit evaluations of Brazilians.

One limitation is that the order of explicit measures and the IAT were not counter-balanced. The experimental design would have been overly complicated for the research assistants, if they had to keep track of what activity participants were doing (with two Qualtrics surveys and the IAT) which is why the post-poker survey, manipulation checks, and explicit measures including emotions were taken first as one Qualtrics survey, and the IAT

was completed last. It could have been that by the time participants completed the IAT, experimental effects had diminished. Hence, the next study will attempt to address this, by using a paper version of the post-poker questionnaire and manipulation checks, retaining the explicit measures and emotions on one Qualtrics survey, and therefore allow for easy counter-balancing of the IAT and explicit measures.

An aspect that was not accounted for in the current study, was whether participants won or lost money during the poker game. It could be that perhaps this affected attitudes and emotions too. It was not made salient to participants at the end of the game whether they won or lost, and there was no incentive for them to play in order to keep any profit, so it is unlikely to be case. Nevertheless, for Study 2 participants will be told prior to playing that they can keep any profit they make, and be made aware of whether they won or lost money. This can serve as a check to see whether the game outcomes affected participants responses at all, but also, it may be the case for example, that winning money buffers against negative contact effects, and/or losing money facilitates negative attitudes, regardless of contact condition.

Chapter 3: Study 2

Building off the previous study, the current study, Study 2, will introduce the prospect of participants being able to keep any profit they make from the poker game. This should help to answer the question posed by the previous study of whether the outcome of the poker game played a role in how participants evaluated the outgroup. Thus, the present work examines how monetary gains and losses we experience in online poker may affect prejudicial attitudes toward the outgroup.

Real life intergroup contact involves several situations where people have something to gain or something to lose to an outgroup member. Losses tend to be felt more strongly than gains (Kahneman & Tversky, 1984; Tversky & Kahneman, 1992), therefore, it may be that any loss regardless of whether one had prior positive or negative contact, would produce negative outgroup attitudes. On the other hand, it may be that a loss to an outgroup member preceded by negative contact leads to more negative outgroup attitudes, relative to losses preceded by positive intergroup contact (e.g., having a pleasant chat with an outgroup member before a job interview, but losing the job to them), as people are more likely to dissociate the individual from the group.

For the current research, because the end sum (either loss or gain) will be made salient to participants, I predict that when participants experience an overall loss in money, this will lead to more explicit and implicit prejudice than when monetary gains are made by the participant. This is based on several findings including: previous research suggesting that losses are felt more strongly than gains, for instance losing \$50 feels subjectively worse than winning \$50 feels good (Kahneman & Tversky, 1984; Tversky & Kahneman, 1992; but see Yechiam & Hochman, 2013); RGCT research where loss of resources for an ingroup member resulted in increased hostility for the outgroup; Baumeister et al. (2001) conclusion that bad events have stronger effects than good events; research on poker decision making that

stipulates that emotions such as anger are induced after monetary loss and players are compelled to try and win back lost money, to the detriment of rational decision making (Laakasuo et al., 2015); and research in gambling scenarios that suggests when participants believe there are others around, for instance watching, losses are magnified (Rockloff & Dyer, 2007). In online poker, players assume that at least other players at the table are watching them.

Contact valence and gains vs. losses hypotheses

A brief overview of hypotheses is displayed in table 3. The main effect of contact valence and the associated outcomes from Study 1 are predicted to be replicated here, such that for Hypothesis 1, those in the negative condition will display more explicit, but not necessarily implicit (Hypothesis 2), bias toward Brazilians, compared to the positive contact condition. The current study will not have a control condition, due to the control condition being similar to the positive condition in Study 1. It may be that the positive contact chat content was more neutral than overly positive in tone, but overly positive chat to strangers in the online poker chat box would likely come across as unnatural and flirty. Thus, essentially positive and neutral contact were collapsed into one condition of positive contact for Study 2. This resulted in Study 2 having a 2 (contact valence) by 2 (win/lose money) design.

As stated in the rationale above, in terms of winning and losing money, it is hypothesised that those that lose money will display more explicit (Hypothesis 3) and implicit (Hypothesis 4) bias toward Brazilians compared to the positive condition. For the contact valence x win/lose money interaction, I would expect those that have negative contact and lose money to display the highest levels of prejudice, with those that have positive contact and win money to have the least amount of prejudice (Hypothesis 5). It is unclear whether losing money facilitates prejudice and whether winning money can buffer against

negative contact, so there are no concrete predictions made in terms of explicit and implicit bias for those in the negative/win and positive/lose conditions.

Table 3.

Overview of hypotheses for Study 2 by condition: either positive or negative contact, and either the participant wins or loses money (main effects and interactions of explicit/ implicit attitudes and emotions towards Brazilians and secondary transfer effects [STE] towards Argentinians).

| Hypothesis | Measure | Type of Contact | Outcome |
|-----------------------------------|----------------------------|--|--|
| Hypothesis 1 | Explicit bias | Negative | Greater bias compared to positive condition |
| Hypothesis 2 | Implicit bias | Negative | Same amount of bias as positive condition |
| Hypothesis 6a | STE Explicit bias | Negative | Greater bias compared to positive condition |
| Hypothesis 8a | Anger, Anxiety, Sadness | Negative | Greater anger, anxiety, sadness compared to positive condition |
| Hypothesis 8a | Happiness | Negative | Less happiness compared to the positive condition |
| Win/Lose Money | | | |
| Hypothesis 3 | Explicit bias | Lose | More bias compared to win condition |
| Hypothesis 4 | Implicit | Lose | More bias compared to win condition |
| Hypothesis 6b | STE Explicit bias | Lose | More bias compared to win condition |
| Hypothesis 8b | Anger, Anxiety, Sadness | Lose | More anger, anxiety, sadness compared to win condition |
| Hypothesis 8b | Happiness | Lose | Less happiness compared to the win condition |
| Contact Valence x Win/Lose | | | |
| Hypothesis 5 | Explicit and Implicit Bias | Lose + Negative contact | Greatest amount of bias |
| Hypothesis 5 | Explicit and Implicit Bias | Win + Positive contact | Least amount of bias |
| Hypothesis 5 | Explicit and Implicit Bias | Lose + Positive contact & Win + Negative contact | Not certain where these results will sit in relation to the previous 2 conditions above. |

Secondary transfer effects

In Study 1, there was no difference in attitudes toward the secondary outgroup (Russians). This may have been due to the large number of differences between Russians and Brazilians (e.g., language, culture, geographical location, etc.) For the current study, the secondary outgroup will be Argentinians. Argentinians play online poker, which fits with our study narrative, and they comprise of less than 1% of NZ's population (Statistics New Zealand, 2013). Tausch et al. (2010) state that attitude generalization may be quite likely for groups that are not well recognised or relevant. Consistent with this, in their research, it was secondary groups that were relatively unknown, but more similar to the primary outgroup that saw the strongest effect of attitudes (Tausch et al., 2010). Even though Argentinians speak

Spanish, whereas Brazilians speak Portuguese, the two countries are at least geographically in the same place (South America), and probably seem more isomorphic to each other (compared to Russians). Due to this isomorphism of Brazil and Argentina, Hypothesis 6a predicts that those in the negative condition will display greater explicit prejudice towards Argentinians compared to the positive condition. This may also be affected by losing/ winning money, such that those that lose money (and potentially in addition to negative contact) will display greater prejudice toward Argentinians compared to those that win (Hypothesis 6b). I would expect those that win money and experience positive contact to display the less amount of prejudice towards Argentinians (Hypothesis 6c).

Moderating variables. Just like in the previous study, RWA and political orientation will be measured as moderating variables. This study will additionally add measures to examine whether an individual's competitiveness and/or how they view and value money moderate the effects, as this study will make salient any winning or losing of money. Questions probing social dominance orientation (SDO) will also be added. Previous work has shown higher SDO individuals see outgroups as a source of competition (Duckitt, 2006) and that SDO is probably an antecedent to realistic threat (Stephan & Stephan 2009). Thus, it would be worthwhile to see if SDO moderates the effects of contact valence and/or winning and losing money on both explicit and implicit attitudes.

Hypothesis 7a: because RWA and political orientation produced non-significant moderation effects in Study 1, it may be the case that this result is repeated in Study 2. Nonetheless, they will be included alongside SDO to check for a wider range of potential moderating variables. In regards to SDO, and in accordance with previous literature (Duckitt, 2006; Stephan & Stephan, 2009), it is predicted that those that lose money and are higher in SDO will display more explicit and implicit prejudice compared to those that win money (Hypothesis 7b). For Hypothesis 7c, I would not necessarily expect SDO to moderate the

effects of *contact valance* and prejudice, due to the previous literature on this being mixed (see Turner et al., 2020 for an overview).

Emotions. Building off the findings of emotions in Study 1, the following DEQ subscales were retained for the current study: anger, anxiety, sadness, and happiness. Hypothesis 8a: Similar to Study 1, I would also expect anger, anxiety, and sadness to be greater in the negative vs. positive condition. Conversely, I expect participants in the negative condition to be less happy than those in the positive condition. Hypothesis 8b: In relation to winning and losing money: I expect losing money to elicit more anger, anxiety, sadness, and less happiness than the winning condition. Anger towards outgroups has been associated with threats, especially economic threats (Cottrell & Neuberg, 2005), so I would expect that for Study 2, those that lose money, irrespective of contact valence, should feel more anger compared to those that win. For the other DEQ subscales, I had no specific predictions, but it is likely that anxiety and sadness may be amplified and therefore differ in the negative contact/lose money condition compared to positive contact/ lose money. I would expect those that win irrespective of condition to be happier (Hypothesis 8c).

EEG. Just like in Study 1, EEG will be recorded. Although there were no significant effects of contact condition on N400 activity, it would be valuable to examine if the added manipulation of winning and losing money impacts EEG activity in the N400 component. Specifically, I wished to test whether winning vs. losing money in online poker to an outgroup player impacted on stereotype accessibility; perhaps the added effect of losing and negative contact will elicit a larger N400 compared to the other conditions? Hence, EEG was retained in Study 2 for exploratory purposes, and due to the exploratory nature, there are no concrete predictions about how the various conditions will affect EEG activity (especially given the null effects of condition in Study 1). However, it would be interesting to see if the

unexpected effects of congruency are also found in Study 2 (where congruent trials had more stereotype accessibility consistent results than the incongruent trials).

Method

Participants

There were 226 participants (125 male), with a mean age of 21.43 years ($SD = 5.07$). The ethnic composition comprised of: European ($N = 148$); Asian ($N = 36$); Māori ($N = 2$); European Māori ($N = 11$); African ($N = 1$); Pacific Islander ($N = 3$); Indian ($N = 5$); Latin American ($N = 1$); Middle Eastern ($N = 4$); More than one ethnicity ($N = 14$). A sensitivity power analysis revealed that the current sample size should be able to detect effects of at least $f = .19$ (small-medium effects), when $\alpha = .05$, and 80% power¹⁶.

Participants were recruited via a participant pool of undergraduate first-year psychology students, or from fliers distributed around campus. Participants were compensated for their time with either course credit, or a \$10 petrol or mall voucher, respectively. Participants that won money from the poker game ($N = 117$) were paid these winnings in cash (NZ dollars) in addition to their participation compensation. The mean payout was \$12.23 ($SD = \8.01). The minimum win was 90 cents, and the maximum win was \$52.

Design

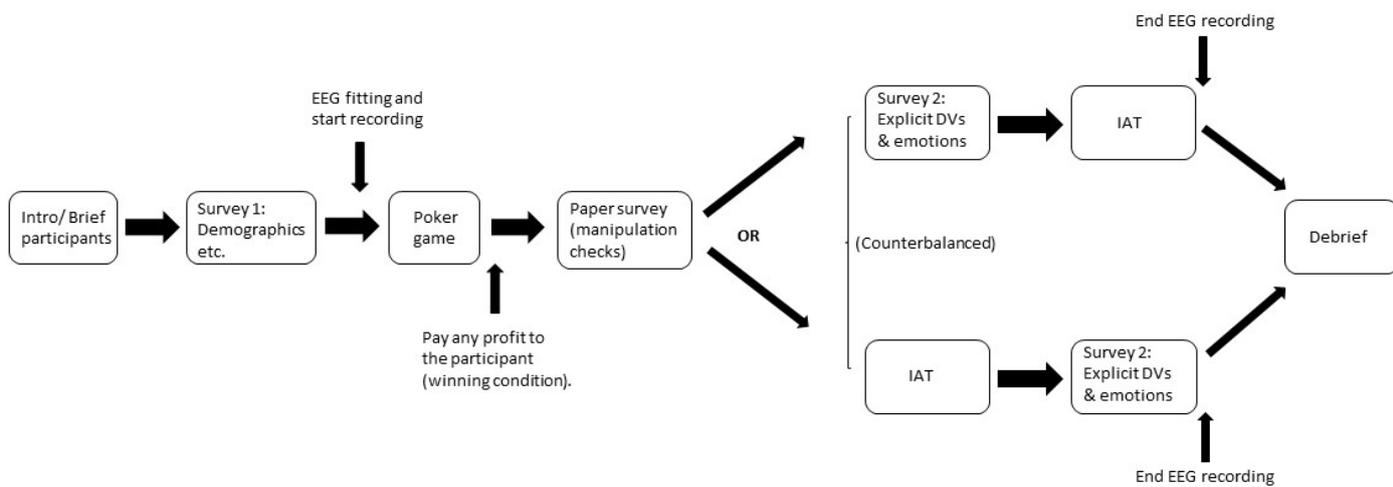
This study employed a 2 x 2 factorial between-subjects design, with the independent variables being whether they received positive or negative chat messages from the Brazilian

¹⁶ Similarly to Study 1, Study 2 took into account type I and type II errors by conducting a MANCOVA (this too had the assumption of homogeneity of variances and covariances violated though), and by considering more conservative p-values. Type II error was also not likely an issue as the effect sizes for non-significant findings suggest that even with double the sample size, the findings would still be the same.

player, and whether they won or lost money in the poker game.¹⁷ See Figure 10 for design/procedure for Study 2.

Figure 10.

Overview of events/ the procedure of tasks that participants completed for Study 2. Note: Contact valence was randomly allocated to participants via chat box messages when they logged in to play the poker game. Winning or losing money was also randomly assigned and manipulated by the primary experimenter by changing the odds of winning in the poker software.



Materials

Poker game. The poker game setup was identical to that in the previous study, including the script (see Appendix B). The only exception with this study was that the odds were rigged such that approximately half the participants won money, while the other half lost money. This was achieved by changing the probability that the participant won their hands to either 100% or 0% respectively, via the manager's software.¹⁸

¹⁷ The money lost and won was not necessarily just from the Brazilian player, it could also have been from the other players at the table.

¹⁸ To make it less suspicious that those in the winning condition were winning all of their hands, the other players often folded to them, in order for them to win the hand by default, or in some cases, the odds were changed so that they lost a hand or two, but overall they still made a profit.

Demographic Measures. The same basic demographic measures as the previous study were asked in Study 2 (for NZID, Study 2, $M = 4.51$, $SD = .944$). These included the following:

Previous contact. Due to the previous study's poor reliability on one item probing previous contact with Brazilians (Visited the homes of people from___), only the item asking about informal conversations with outgroup members was retained, and modified so that it captured any form of informal contact, be that online or in real life. Thus, previous contact about the current study's outgroups; Brazilians, people from the UK, Russians, and Argentinians, was measured by the item: "On a scale from 1—*not at all* to 7—*very often*, how often have you engaged in informal conversations with people from___, either online or in real life?"

Poker playing questions. These were mostly identical to that in the previous study (see Appendix A), however in the interest of time, a few of the filler questions asking about social influences of poker were omitted. Instead, participants were asked questions related to competitiveness. These questions were rated on a 7-point scale from 1—*strongly disagree* to 7—*strongly agree*, where participants were asked "to what extent do you agree or disagree with each statement in general": "I am a competitive individual", "I expect to win when competing against other groups", "I find competitive situations unpleasant" (reverse coded). These items were adapted from Houston et al. (2002).

Individual difference measures. RWA, political ideology, and national identification were probed for with exactly the same questions as in Study 1. The current study also gauged participants' levels of social dominance orientation (SDO), using a 4 item, 10-point scale (Pratto et al., 2013). Participants were asked "Show how much you favour or oppose each idea below by selecting a number from 1 to 10 on the scale below. You can work quickly;

your first feeling is generally best”. For example, they were asked: “In setting priorities, we must consider all groups”.

Given that in this current study participants could win money, they were asked to indicate to what extent they agree or disagree in general with statements gaging their attitudes towards money with the following: “I believe that the more money you have, the happier you are”, “I value money highly”, “Money is an important factor in the lives of all of us”. These items were rated on a 7-point scale from 1—*strongly disagree* to 7—*strongly agree* (adapted from Mitchell & Mickel, 1999; Tang, 1995).

Post poker survey and manipulation check questions. After playing the poker game, participants were handed a sheet of paper to answer the same filler questions about the poker game, and answer the same manipulation check questions. During this post poker survey, participants were asked if any of the players tried to communicate with them, and the nature of the communication (i.e. did they consider it friendly, or unfriendly, and unpleasant or pleasant). Both of those scales were 5-point scales, anchored from *very friendly* to *very unfriendly*; and *very unpleasant* to *very pleasant* (reverse coded). The two scales displayed good internal consistency $\alpha = .795$; $r = .67$, and all participants reported that they had seen some chat messages.

Explicit dependent variables and emotions. Similarly to the previous study, participants rated various groups (including Brazilians) on semantic differential scales and rated how they felt whilst playing the poker game. Accordingly, the exact same 6 item semantic differentials were used for this current study too. Likewise, the same discrete emotions questionnaire (DEQ; Harmon-Jones et al., 2016) was used, however in the interest

of space, only the items probing for the subscales of anger, anxiety, sadness, and happiness¹⁹ were retained for this current study.

Implicit dependent variable and Electroencephalography scan (EEG). Exactly the same procedures and items were used in this current study for the IAT and EEG measures, that were used in Study 1 (see Study 1 method sections on implicit association test, electroencephalography, and EEG set up for exact details). The exception being a minor change on the surnames used in the IAT. To ensure that the surnames were typically Brazilian, we consulted a Portuguese speaking colleague to look over and provide feedback. The new stimuli for Brazilian surnames were now: “Oliveira, Ferreira, Rodrigues, Carvalho, Verissimo, and Azevedo”. The New Zealand surnames remained the same except for swapping out “Campbell” from the previous study, and replacing it with “Williams” in the current study instead, after looking at various databases of popular Anglo surnames.

Procedure

Participants were welcomed into the lab by a research assistant, and instructed to sit at a computer in an individual cubicle. Participants were briefed on the study and told that they would be doing a variety of decision making tasks whilst wearing an EEG headset. They would first fill out a questionnaire about their previous poker playing experience, and then be fitted with an EEG headset, and play several hands of online poker. The research assistant also informed them that if they make any profit, they can keep it in cash. Next they were told that for the second part of the study, we wanted to compare decision making in an area other than online poker, in order to compare how judgements and evaluations may differ from decisions made whilst playing poker. The research assistant then opened up the first Qualtrics

¹⁹ Although happiness was not significantly related to IVs in Study 1, it was retained in Study 2 to give an option of a positively valenced emotion, particularly because in this study participants can win money, so this may affect happiness.

survey (demographics and pre-poker survey [Appendix A]) and closed the cubicle curtain whilst the participant completed it.

Next they were fitted with the EEG headset and the research assistant explained how to play online poker, and opened up the poker game. From here, participants were instructed to choose an avatar²⁰, and the research assistant showed them the functions of the software, where crucially they were told that the chat box is functional and demonstrated so by typing “hi” into the chat box. The research assistant demonstrated how to play the first hand dealt. For those with limited poker playing experience, there was a sheet to explain the terms/ buttons in the software, and another sheet that had hand rankings on it. The researcher then left the participant to play for 10 minutes and closed the curtain behind them.

Just like in Study 1’s procedure, the primary experimenter was hiding in an adjacent room controlling the poker game, and the positive or negative valence of the chat from the Brazilian, whilst the participants played (see Study 1 procedure for full details). This time however, approximately half of the participants were made to win money, while the others were made to lose money.

After 10 minutes, the research assistant returned and closed the poker game. If the participant made profit in the game, the assistant said “Looks like you have won money, I will get the money for you and you will have to sign for it”. The research assistant then converted the monetary amount from US dollars to NZ dollars (because most poker sites use USD, and also so that the participants could win more physical amounts of cash). The participants signed for their cash, and it was then given to them. If they lost money during the

²⁰ Just like in Study 1, the participants were not specifically instructed to choose the NZ flag for their avatar, they were free to pick any picture, however as the NZ flag was on the first page of options (there were only flags on the first screen of avatars), the majority of participants (71%) choose to display the NZ flag.

game, the research assistant said “Looks like you have lost money in the game, so unfortunately there is no cash pay-out”.

Participants next completed the paper questionnaire (the post-poker survey) which contained the manipulation checks and questions relating to the poker game. Following this, participants either completed the IAT, or the second Qualtrics survey. The explicit and implicit dependent measures were counterbalanced for this study. They then completed the other dependent measure depending on their counterbalanced order. Afterwards, the EEG headset was removed, and participants were probed for suspicion. Participants were then thoroughly debriefed both verbally and in writing as to the true purpose of the study. Finally, they were thanked and compensated for their time.

Results

Manipulation check

A factorial ANOVA with contact valence and win/lose money as independent variables was run to test whether the two valence conditions rated the nature of those messages differently, and to see whether winning or losing money affected how participants interpreted the chat valence. Results indicate that participants did rate the tone of the messages in the two valence conditions differently, $F(1, 222) = 570.75, p < .001, \eta^2_p = .720$, with the positive contact condition rating the messages as more positive ($M = 1.73; SD = .82$) than the negative condition ($M = 4.16; SD = .70$) (lower scores indicate more friendly and more pleasant messages). As expected, there was no main effect of whether participants won or lost money and how they interpreted the messages, $F(1, 222) = .023, p = .879, no\ effect$.

Explicit measures analyses

For the composite explicit dependent variable of Brazilian Attitudes, participants firstly made ratings of how positive, pleasant, competent, ignorant, honest, and trustworthy

they felt about Brazilians. To check that these items probe the same underlying factor, or if they are separate subscales, a principal components factor analysis was conducted.

Principal components analysis and reliability analysis. A principal components analysis was conducted on the six semantic differential items with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin measure of sampling accuracy (KMO) was meritorious (according to Hutcheson & Sofroniou, 1999), and the KMO values for individual items were above .83. The analysis found only one factor that explained 68.89% of the variance. The scree plot also confirmed that the items all loaded onto one factor.²¹ Due to all six items loading onto one factor, a reliability analysis was conducted with all semantic differentials together. The items displayed excellent internal consistency $\alpha = .91$. Just like in Study 1, a measure of Brazilian Attitudes was then constructed by averaging all six items.

In relation to previous poker playing experience, the majority of participants had either never played online poker (48.7%), or had only played between 0-20 hours in their lifetime (35.8%). Another 13.7% had played between 21-500 hours, and 1.7 % had played more than 500 hours of online poker in their lifetime. Thus, previous poker playing experience was not a significant variable that needed to be controlled for.²²

Previous contact with Brazilians was however, measured as a covariate. As such, an analysis of covariance (ANCOVA) was used. Assumptions for normality, homogeneity of variances, homogeneity of covariances, and homogeneity of regression slopes were all met. One participant was excluded, as they did not complete the explicit measures. Overall there

²¹ Just like in Study 1, a Monte Carlo Parallel PCA analysis was conducted to double check how many factors the items loaded on. Using 1000 data sets, and normally distributed random data generation, the analysis also confirmed one factor (only the first factor had raw eigenvalues greater than the 95 percentile of random data eigenvalues).

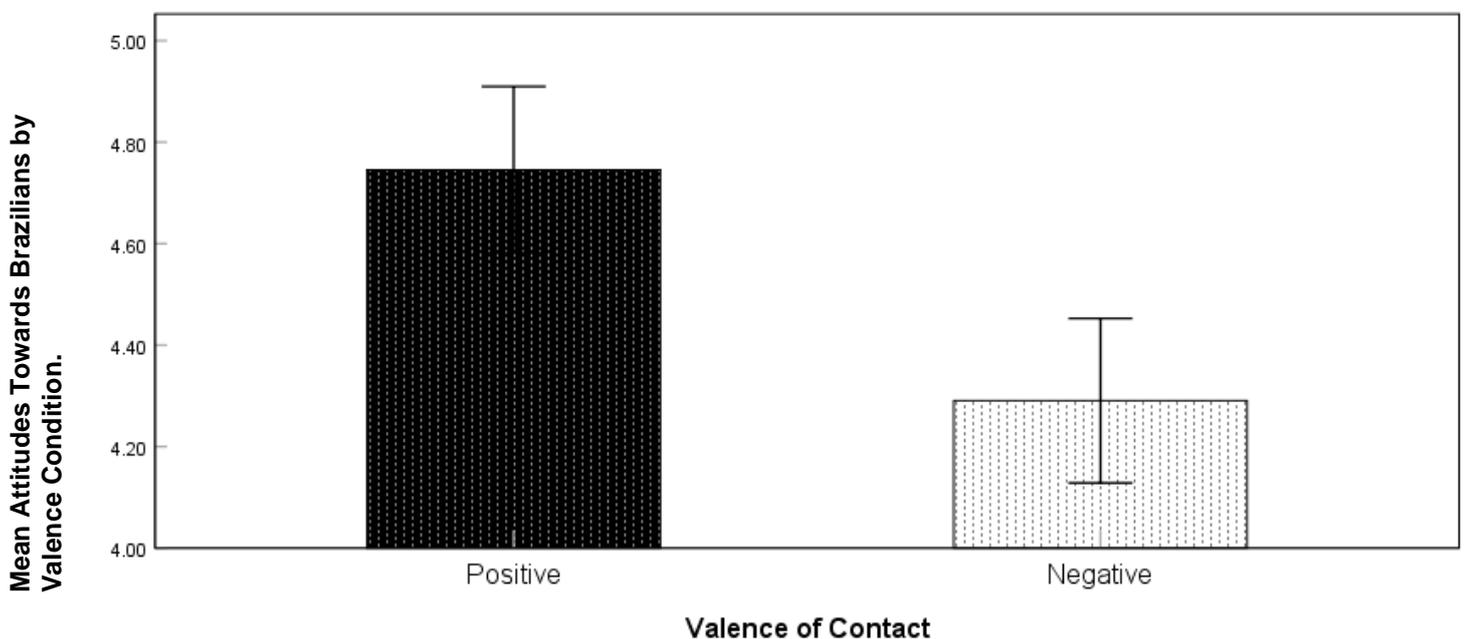
²² Just like in Study 1 this was checked as a covariate, but even when controlled for, previous poker playing experience did not change the results. NZID was also entered as a covariate, but this also did not change the results.

was a difference between contact valence (negative vs. positive) on Brazilian Attitudes, after controlling for previous contact with Brazilians, $F(1, 220) = 15.11, p < .001, \eta^2_p = .064$.

Visual inspection of the means show that those in the negative condition had more negative attitudes towards Brazilians compared to the positive condition (means for effects of valence on Brazilian attitudes are displayed in Figure 11).

Figure 11.

Means and 95% confidence intervals for Brazilian Attitudes by valence condition. Higher numbers indicate for favourable evaluations.



There was however, no significant difference between whether participants won money or not and Brazilian attitudes after controlling for previous contact with Brazilians, $F(1, 220) = .061, p = .806, no\ effect$ (See Table 4 for means). Nor was there a significant interaction effect of valence x win/lose money, $F(1, 220) = 1.55, p = .214, \eta^2_p = .007$, see Table 4 for the means of both independent variables together.

Table 4.

Means and standard deviations (SD) of attitudes towards Brazilians by whether participants were in the negative or positive contact condition, and whether they won or lost money during the poker game. Higher numbers indicate more favourable attitudes towards Brazilians.

| Dependent Variable | Valence of Contact | Win/Lose | Mean | SD | N |
|---------------------|--------------------|----------|------|-------|-----|
| Brazilian Attitudes | Positive | Lose | 4.79 | 0.893 | 55 |
| | | Win | 4.70 | 0.872 | 56 |
| | | Total | 4.75 | 0.880 | 111 |
| | Negative | Lose | 4.19 | 0.773 | 54 |
| | | Win | 4.38 | 1.052 | 60 |
| | | Total | 4.29 | 0.931 | 114 |
| | Total | Lose | 4.50 | 0.886 | 109 |
| | | Win | 4.54 | 0.978 | 116 |

Implicit Association Test (IAT) analyses

Scoring of the IAT was identical to the previous study (see Study 1 section: Scoring of the IAT). An analysis of covariance (ANCOVA) was conducted to determine whether there were any differences between valence and/or win/lose money, on IAT D scores.

Previous contact with Brazilians was entered as a covariate. Overall, there was no main effect of contact valence on IAT D scores, whilst controlling for the covariate, $F(1, 221) = 1.79$, $p = .182$, $\eta^2_p = .008$ (see Table 5 for means). However, there was a significant main effect of whether the participant won or lost money during the poker game on IAT D, $F(1, 221) = 17.92$, $p < .001$, $\eta^2_p = .075$, with means indicating that those that lost money had a higher IAT D score, or more implicit bias (see Figure 12).²³ There was no significant interaction between valence x win/lose though, $F(1, 221) = 1.03$, $p = .311$, $\eta^2_p = .005$ (see Table 5 for means).²⁴

²³ This effect was not magnitude dependent either (i.e. it did not make a difference how much money a participant won). Magnitude of winning was also checked against explicit measures, and again did not make a difference to the results.

²⁴ One-sample t-tests against zero within each cell confirmed that all means were statistically significant from zero.

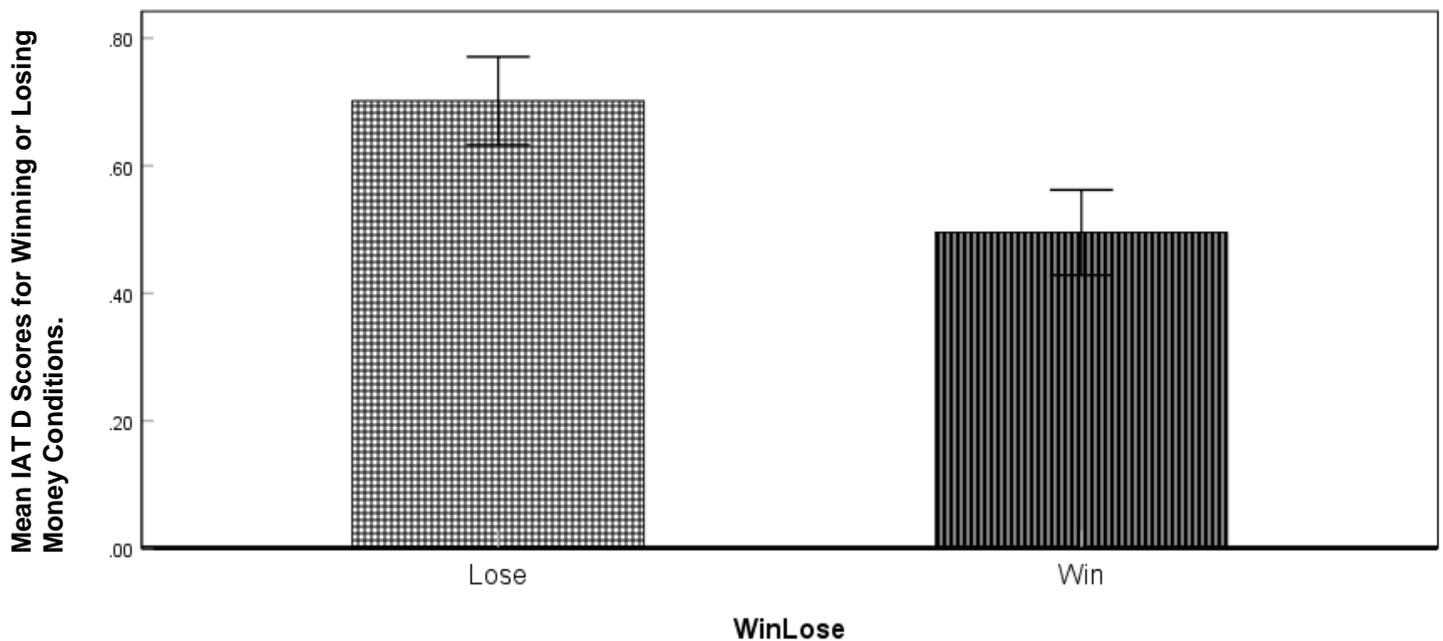
Table 5.

Means and standard deviations (SD) for IAT D scores by whether participants were in the negative or positive contact condition and whether they won or lost money. Higher numbers indicate more bias toward Brazilians.

| Valence of Contact | Win/Lose | Mean | SD | N |
|--------------------|----------|-------|-------|-----|
| Positive | | | | |
| | Lose | 0.710 | 0.425 | 55 |
| | Win | 0.551 | 0.331 | 57 |
| | Total | 0.629 | 0.386 | 112 |
| Negative | | | | |
| | Lose | 0.695 | 0.317 | 54 |
| | Win | 0.437 | 0.381 | 60 |
| | Total | 0.559 | 0.373 | 114 |

Figure 12.

Mean IAT D scores and 95% confidence intervals for the main effect of winning and losing money. Higher scores indicate more implicit bias.



Secondary transfer effects (STE)

For this study, the outgroup for STE was Argentinians (as outlined in this chapter's introduction). The six semantic differentials displayed excellent internal consistency $\alpha =$

.936. Therefore, a composite measure of Argentinian Attitudes was created by averaging all six items.

An ANCOVA with previous contact with Argentinians as a covariate was conducted. The overall main effect of valence was significant whilst controlling for previous contact, $F(1, 220) = 7.28, p = .008, \eta^2_p = .032$, with means indicating that those in the negative condition had less favourable attitudes towards Argentinians (see Figure 13). There was no significant main effect of winning/losing money though, $F(1, 220) = .415, p = .520, \eta^2_p = .002$ (see Table 6 for means). Nor was there a significant valence x win/lose interaction, $F(1, 220) = 1.35, p = .246, \eta^2_p = .006$ (see Table 6 for means).

Figure 13.

Mean attitudes towards Argentinians as a function of positive or negative contact with Brazilians (secondary transfer effects). Higher numbers indicate attitudes that are more favourable.

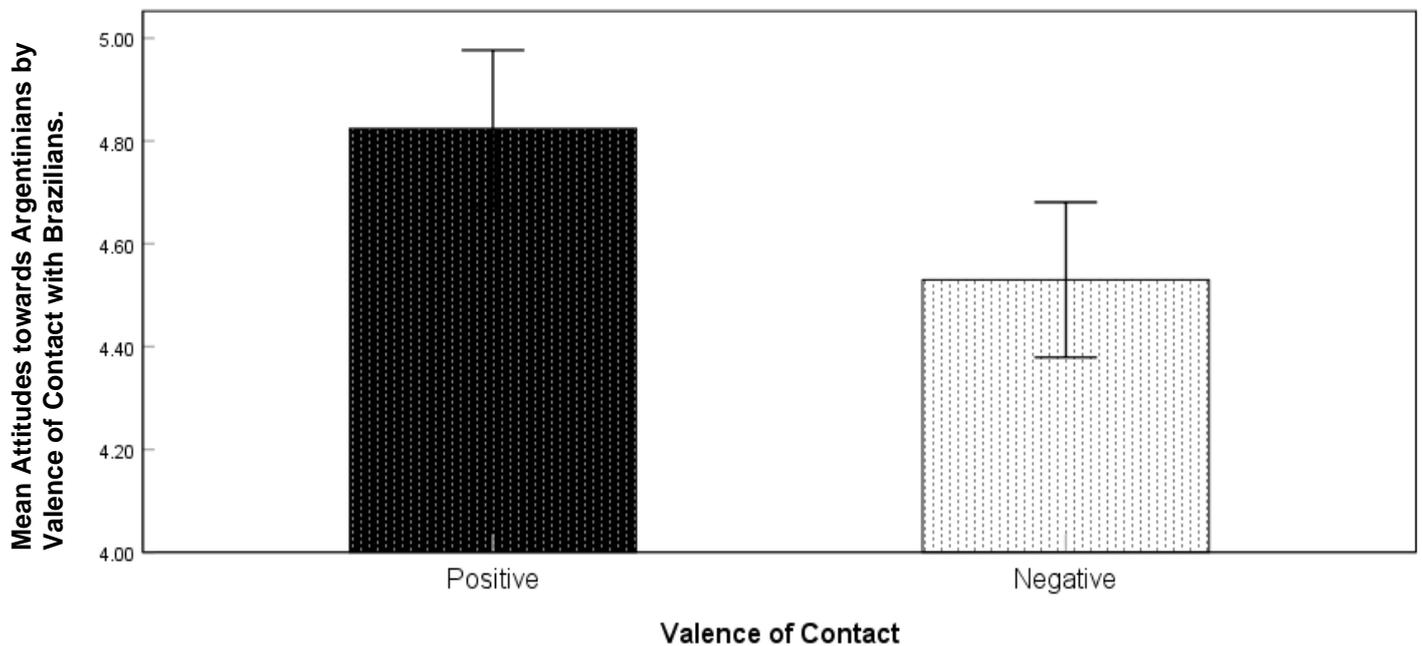


Table 6.

Mean (with standard deviations) ratings of attitudes towards Argentinians by whether participants were in the negative or positive contact condition, and whether they won or lost money during the poker game. Higher numbers are indicative of more favourable attitudes towards Argentinians.

| Valence of Contact | Win/Lose Money | Mean | SD | N |
|--------------------|----------------|------|-------|-----|
| <hr/> | | | | |
| Positive | | | | |
| <hr/> | | | | |
| | Lose | 4.84 | 0.958 | 55 |
| | Win | 4.80 | 0.777 | 56 |
| | Total | 4.82 | 0.868 | 111 |
| Negative | | | | |
| <hr/> | | | | |
| | Lose | 4.40 | 0.725 | 54 |
| | Win | 4.66 | 0.866 | 60 |
| | Total | 4.54 | 0.809 | 114 |
| Total | | | | |
| <hr/> | | | | |
| | Lose | 4.62 | 0.874 | 109 |
| | Win | 4.73 | 0.824 | 116 |

Secondary Analyses

Just like in Study 1, secondary analyses that were exploratory in nature were conducted, and just like in the previous study, RWA and political orientation did not moderate the effects, either as single moderators, or with winning and losing as an additional moderator. There was no significant effect of condition x RWA on Brazilian attitudes, $\Delta R^2 = .0001$, $F(1, 219) = .022$, $p = .882$, or IAT D score, $\Delta R^2 = .006$, $F(1, 220) = 1.55$, $p = .215$.

Also there was no effect of condition x political orientation on Brazilian attitudes, $\Delta R^2 = .006$, $F(1, 218) = 1.33$, $p = .250$, or IAT D score, $\Delta R^2 = .0005$, $F(1, 219) = .114$, $p = .736$.

SDO also did not moderate the effects, with no significant effect of condition x SDO on Brazilian attitudes, $\Delta R^2 = .0026$, $F(1, 219) = .631$, $p = .428$, or IAT D score, $\Delta R^2 = .007$, $F(1, 220) = 1.80$, $p = .181$. Competitiveness, or how people viewed money did not moderate

effects either, but these were more exploratory, and not theoretically relevant. Therefore, these will not be mentioned further.

EEG results. Just as in Study 1, Brain Vision Analyzer 2.0 (BVA 2) software was used for pre-processing of the EEG recordings. The EEG data was band-pass filtered between 0.1 and 30 Hz. All the other pre-processing steps remained identical (see Study 1 EEG results). Also just like in the previous study, after averaging incongruent and congruent trials for each participant, the time window of interest that comprises the N400 was exported from 350-500ms. The resulting variables were the average activity of both the F3 and F4 electrodes for N4 activity, one for incongruent trials (F3F4N4_Incongruent), and the other for congruent trials (F3F4N4_Congruent).

To remove outliers for analyses, participants that had ERP scores less than -20 and greater than +20 μV were excluded from analyses separately for each outcome ERP variable. A mixed model ANCOVA was conducted, with handedness entered as a covariate (whether participants were left or right-handed). F3F4N4_Congruent and F3F4N4_Incongruent were entered as repeated measures, to measure overall Trial Congruency, with valence condition and win/lose money as the between-subjects effects.

The mixed model ANCOVA found no significant effect of Trial Congruency x contact valence, $F(1, 200) = 1.90, p = .170, \eta^2_p = .009$. There was also no significant effect of Trial Congruency x Winning or Losing money, $F(1, 200) = .007, p = .934, \text{no effect}$. Finally, the three-way interaction of Trial Congruency x Valence x Win/lose was also not significant, $F(1, 200) = .385, p = .536, \eta^2_p = .002$. See Table 7 for all means. This indicates that congruent and incongruent trials N400 activity did not differ by whether participants had positive or negative contact, or whether they won or lost money.

The main effect of N400 activity revealed a marginally significant result of congruency trial, $F(1, 200) = 3.83, p = .052, \eta^2_p = .019$ (congruent $M = -.399 \mu\text{V}, SE = .49$; incongruent $M = .517 \mu\text{V}, SE = .45$). Although not significant, it is a similar pattern to Study 1, where the congruent trials have a more negative N400 amplitude, indicative of stereotype accessibility.

Table 7.

Mean average F3 and F4 N400 mean amplitude for incongruent and congruent IAT trials by contact valence and whether the participant won or lost money. Positive numbers mean less N4 activity, or less stereotype accessibility.

| Contact Valence | Win/Lose | Congruency Trial | Mean | Std. Error |
|-----------------|----------|------------------|--------|------------|
| <hr/> | | | | |
| Positive | | | | |
| | Lose | Incongruent | -0.019 | 0.928 |
| | | Congruent | -1.334 | 1.001 |
| | Win | Incongruent | 1.313 | 0.898 |
| | | Congruent | -0.504 | 0.969 |
| <hr/> | | | | |
| Negative | | | | |
| | Lose | Incongruent | 1.728 | 0.916 |
| | | Congruent | 1.133 | 0.988 |
| | Win | Incongruent | -0.956 | 0.883 |
| | | Congruent | -0.892 | 0.953 |

Ancillary ingroup analyses. Similar to Study 1, I wanted to confirm that the manipulations were not leading to ingroup love. A NZ attitudes variable with the same six semantic differential items as used for Brazilians was constructed and displayed good internal reliability $\alpha = .88$. A factorial ANOVA was conducted, and found a non-significant main effect of valence on NZ attitudes, $F(1, 222) = .518, p = .473, \eta^2_p = .002$, and a non-significant main effect of win/lose money, $F(1, 222) = .018, p = .892, no\ effect$, on NZ attitudes. However, there was a marginally significant interaction effect of valence x win/lose, $F(1, 222) = 4.07, p = .045, \eta^2_p = .018$ on NZ attitudes. Means are presented in Table 8.

Table 8.

Table depicting means and standard deviations (SD) of attitudes towards New Zealanders by both valence and win/lose money conditions. Higher scores indicate more favourable attitudes towards New Zealanders.

| Valence of Contact | Win/Lose | Mean | SD | N |
|--------------------|----------|------|------|-----|
| Positive | | | | |
| | Lose | 5.29 | .917 | 55 |
| | Win | 5.06 | .630 | 57 |
| | Total | 5.18 | .789 | 112 |
| Negative | | | | |
| | Lose | 5.00 | .904 | 54 |
| | Win | 5.20 | .746 | 60 |
| | Total | 5.11 | .827 | 114 |
| Total | | | | |
| | Lose | 5.15 | .918 | 109 |
| | Win | 5.13 | .693 | 117 |

Emotions. I then examined whether contact valence and winning vs. losing in the game impacted on emotions.²⁵ Participants were asked to what extent they felt the following items whilst playing the poker game:

Anger. The anger scale items: anger, mad, pissed off, and rage displayed good reliability, $\alpha = .808$. A factorial ANOVA revealed both a significant main effect of valence, $F(1, 222) = 18.02, p < .001, \eta^2_p = .075$, and Win/Lose money, $F(1, 222) = 9.32, p = .003, \eta^2_p = .040$, on anger felt whilst playing the poker game (for means see Table 9). Participants were

²⁵ Just like in the previous study, emotions did not mediate the relationship between any of the outcome variables. A correlation matrix of all emotions and how they relate to the IVs and DVs (except for EEG DVs) are included in Appendix C, Table C2. Here, I will provide the mediation omnibus indirect effects for the theoretically relevant emotions that were significantly related to the independent variables. All of the confidence intervals contained 0, indicating no mediation effects: For anger as a mediator of valence and Brazilian attitudes: The bootstrapped unstandardized indirect effect was .03, and the 95% confidence interval ranged from -.05 to .07; For anger as a mediator of win/lose and IAT D: bootstrapped unstandardized indirect effect was .01, and the 95% confidence interval ranged from -.003 to .04; For happiness as a mediator of win/lose and IAT D: bootstrapped unstandardized indirect effect was .03, and the 95% confidence interval ranged from -.002 to .11; For happiness as a mediator of Brazilian attitudes: bootstrapped unstandardized indirect effect was .02, and the 95% confidence interval ranged from -.08 to .02.

angrier in the negative condition, and participants that lost money were also angrier. There was no interaction effect of valence x win/lose, $F(1, 222) = .218, p = .641, \eta^2_p = .001$ (see Figure 14 for means).

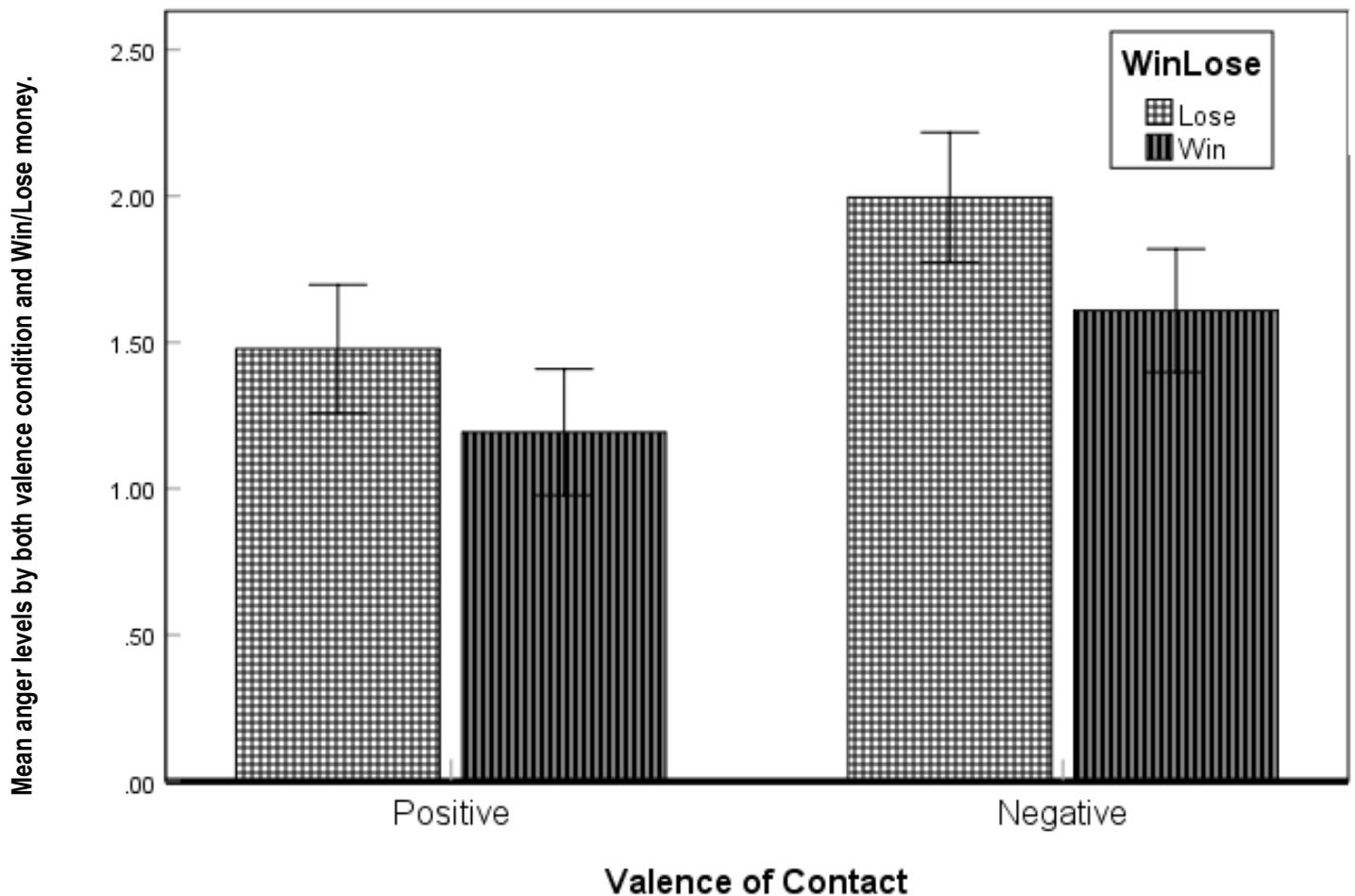
Table 9.

Mean anger (and associated standard deviations) felt during the poker game by contact valence and whether the participant won or lost money. Higher numbers indicate more anger felt.

| Independent Variable | | Mean | SD | N |
|----------------------|----------|------|-------|-----|
| Valence of Contact | Positive | 1.33 | 0.718 | 112 |
| | Negative | 1.79 | 0.944 | 114 |
| Win/Lose Money | Lose | 1.73 | 0.952 | 109 |
| | Win | 1.41 | 0.753 | 117 |

Figure 14.

Mean anger levels by valence condition and whether participants won or lost money during the poker game. Higher numbers indicate more anger felt.



Sadness. The sadness items: lonely, grief, sad, and empty, displayed acceptable reliability $\alpha = .762$. A factorial ANOVA revealed no significant effect of valence, $F(1, 219) = .499, p = .481, \eta^2_p = .002$, but there was a significant main effect of win/lose, $F(1, 219) = 23.30, p < .001, \eta^2_p = .096$, specifically participants reported more sadness in the losing condition (valence and win/lose means are displayed in Table 10). There was no significant valence x win/lose interaction, $F(1, 219) = .025, p = .874, no\ effect$. Means for both independent variables together are displayed in Figure 15.

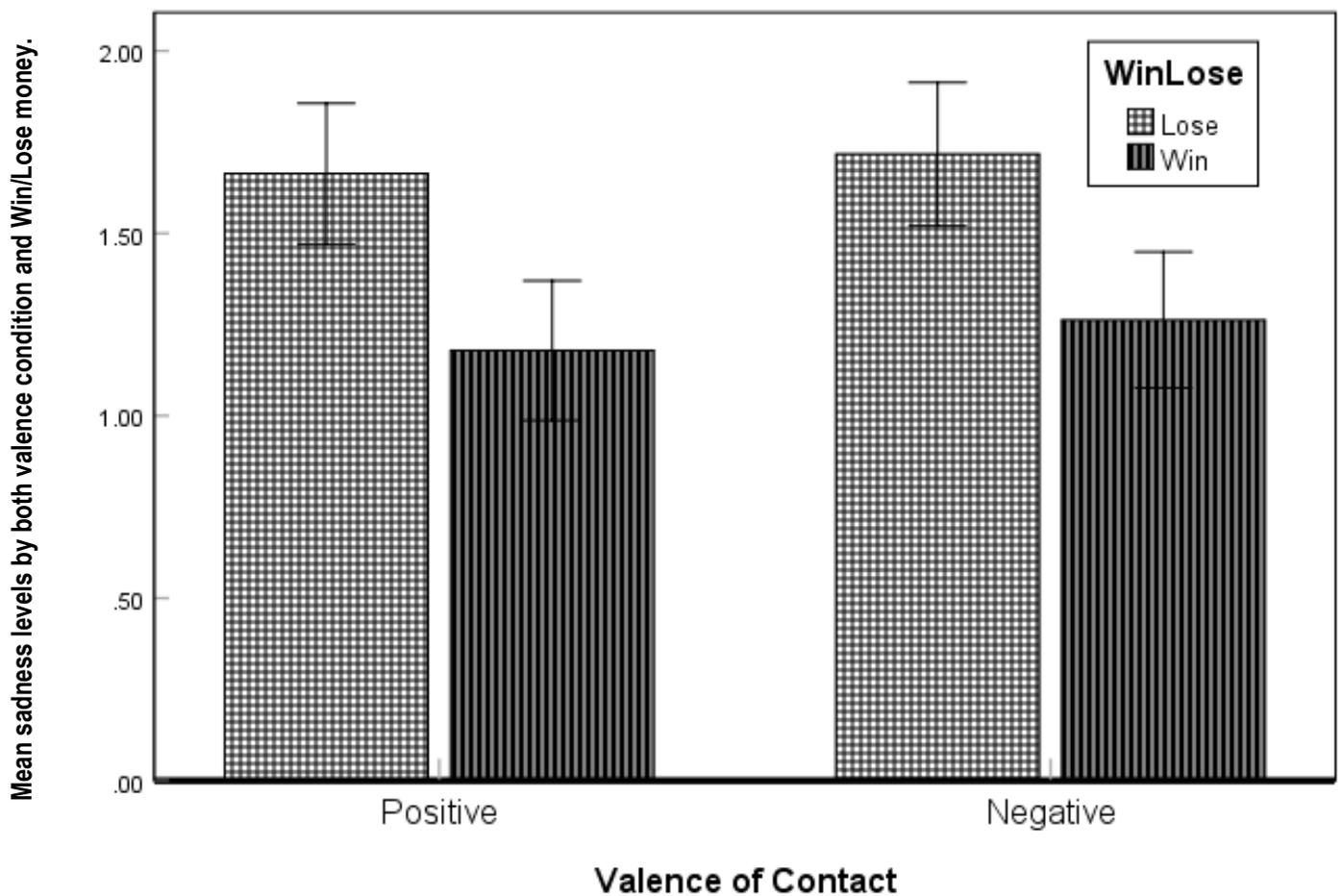
Table 10.

Means and standard deviations (SD) of sadness felt during the poker game by valence of contact and whether the participant won or lost money. Higher numbers indicate more sadness experienced.

| Independent Variable | | Mean | SD | N |
|----------------------|----------|------|-------|-----|
| Valence of Contact | Positive | 1.42 | 0.769 | 111 |
| | Negative | 1.48 | 0.751 | 112 |
| Win/Lose Money | Lose | 1.69 | 0.964 | 108 |
| | Win | 1.22 | 0.379 | 115 |

Figure 15.

Mean sadness levels (with 95% confidence intervals) by valence condition and whether participants won or lost money during the poker game. Higher numbers indicate more sadness felt.



Happiness. The happiness items were happy, enjoyment, satisfaction, and liking.

These displayed excellent reliability $\alpha = .904$. A factorial ANOVA revealed no main effect of valence on happiness, $F(1, 220) = 1.77, p = .184, \eta^2_p = .008$. There was however a main effect of win/lose, $F(1, 220) = 74.78, p < .001, \eta^2_p = .254$, with those winning significantly happier (see Table 11 for valence and win/lose means). There was no significant valence x win/lose interaction, $F(1, 220) = 2.39, p = .124, \eta^2_p = .011$ (see Figure 16 for each conditions means).

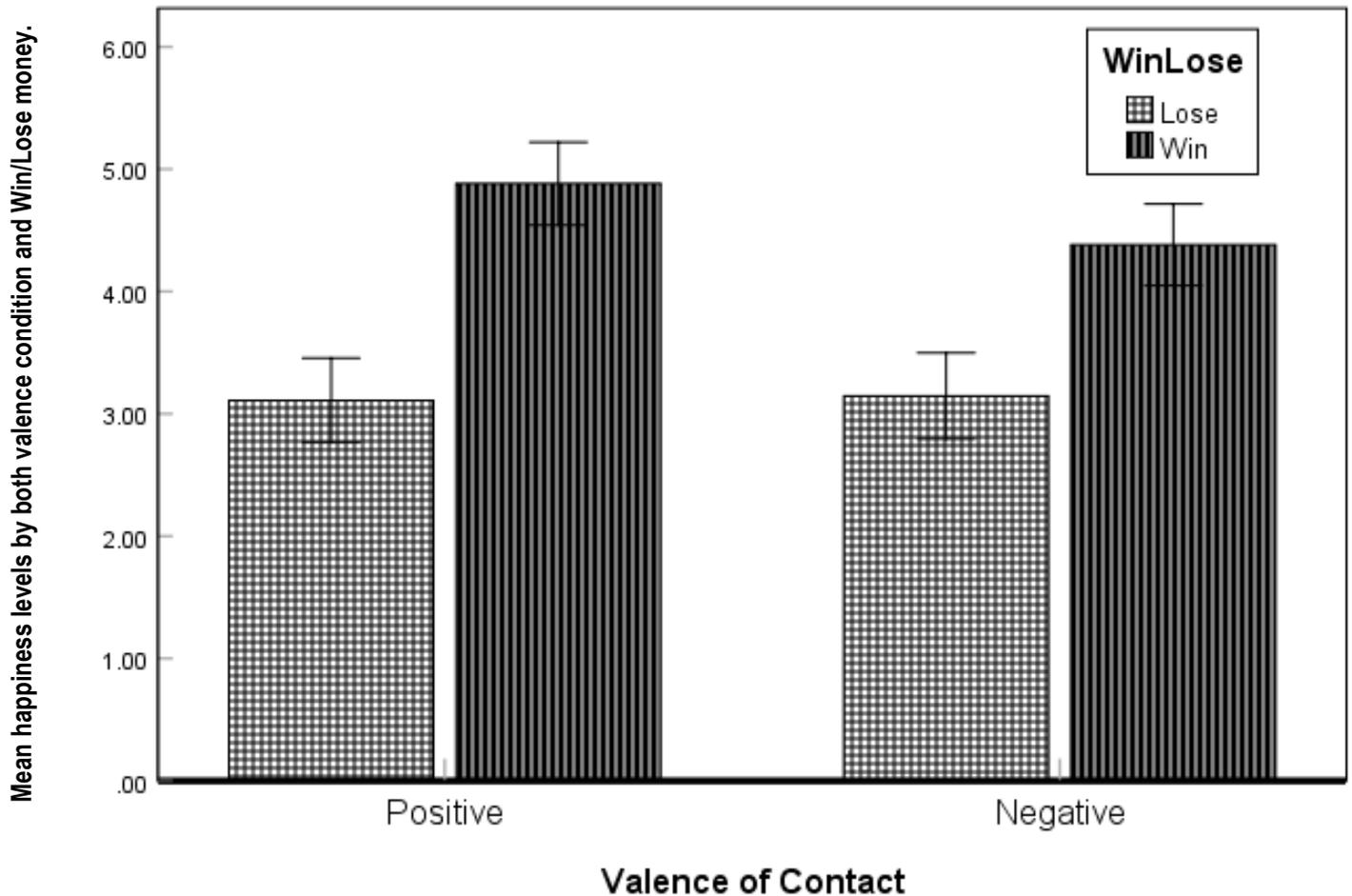
Table 11.

Mean Happiness (and standard deviations) felt during the poker game by valence of contact and whether the participant won or lost money. Higher numbers indicate more happiness experienced.

| Independent Variable | | Mean | SD | N |
|----------------------|----------|------|-------|-----|
| Valence of Contact | Positive | 4.01 | 1.612 | 112 |
| | Negative | 3.80 | 1.388 | 112 |
| Win/Lose Money | Lose | 3.13 | 1.233 | 108 |
| | Win | 4.63 | 1.372 | 116 |

Figure 16.

Mean happiness levels (and 95% confidence intervals) by valence condition and whether participants won or lost money during the poker game. Higher numbers indicate more happiness felt.



Anxiety. The anxiety items were: worry, anxiety, dread, and nervous. The items displayed good reliability $\alpha = .844$. A one-way ANOVA revealed no significant difference in the amount of anxiety felt during the game by contact condition, $F(1, 221) = .683, p = .410, \eta^2_p = .003$. There was also no main effect of win/lose, $F(1, 221) = .215, p = .144, \eta^2_p = .010$, and no significant contact valence x win/lose interaction, $F(1, 221) = 1.08, p = .301, \eta^2_p = .005$. Means and standard deviations are displayed in Table 12.

Table 12.

Mean anxiety ratings (and standard deviations) felt during the poker game by valence of contact and whether the participant won or lost money. Higher numbers indicate more anxiety experienced.

| Valence of Contact | Win/Lose | Mean | SD | N |
|--------------------|----------|------|------|-----|
| Positive | | | | |
| | Lose | 2.25 | 1.23 | 55 |
| | Win | 2.18 | .976 | 56 |
| | Total | 2.22 | 1.10 | 111 |
| Negative | | | | |
| | Lose | 2.54 | 1.43 | 54 |
| | Win | 2.15 | 1.03 | 60 |
| | Total | 2.34 | 1.24 | 114 |
| Total | | | | |
| | Lose | 2.39 | 1.33 | 109 |
| | Win | 2.17 | .998 | 116 |

Discussion

For Study 2, participants were assigned to either experience negative or positive contact from a Brazilian online poker player, and in addition, either won or lost money while playing online poker with an outgroup member (i.e., a 2 [contact valence] x 2 [win or lose money] between-subjects design).

Explicit attitudes towards Brazilians

Supporting Hypothesis 1, those in the negative contact condition had significantly less favourable attitudes towards Brazilians compared to the positive contact condition. This finding replicates that of Study 1, again underscoring the potential potency of negative contact to affect outgroup attitudes.

Hypothesis 3, however, was not supported, as there was no difference in whether participants won or lost money, and how they rated Brazilians on explicit attitudes. This

contradicts previous research that has found realistic threats to be associated with explicit attitudes (Aberson, 2015; Aberson & Gaffney, 2009). However, previous research has mainly focused on group level threats, whereas in the current study, the realistic threat was personal. However, Brylka, et al. (2015) did find personal threats, including realistic threats to be associated with explicit attitudes. In their study though, a 5-point scale was used to measure personal realistic threats, with items such as “Russian immigration to Finland threatens/improves my or my family’s safety”. In my current study, the realistic threat was purely economic, that is, the outcome was the profit from the game. At an explicit level, participants may have not attributed any loss or win to the Brazilian specifically, seeing as they were playing at a virtual poker table, so it is possible that the Brazilian player’s group identity was not salient.

Continuing on from the win/lose effects, there was no evidence to support Hypothesis 5, in which I predicted those that lost money and experienced negative contact to display the most amount of explicit prejudice, with those that win and have positive contact to experience the least. It seems that gains or losses from the game did not facilitate or buffer against prejudice. The same reasoning for this outcome might be like that mentioned above, in which the money (or loss of money) did not necessarily come from the Brazilian player specifically. When checking for ingroup love, there was a marginally significant interaction effect on NZ attitudes though, where those in the positive/lose condition, and the negative/win condition rated New Zealanders more favourably than those in the positive/win and negative/lose conditions. Bearing in mind, this is a marginally significant result, the effect size is small, and the pattern of results do not seem to make theoretical sense, the finding likely does not need to be over-stated, and elaborated on further.

Implicit attitudes towards Brazilians

In terms of implicit bias findings: Hypothesis 2 was supported, and replicated the findings of implicit bias not differing between the negative and positive contact conditions.

Interestingly, Hypothesis 4 was supported; where those that lost money had significantly greater implicit bias against Brazilians compared to the winning condition. This is a similar result for the divergence of explicit and implicit attitudes found by Mähönen et al. (2011). In their study, explicit attitudes were not associated with realistic gains, but implicit attitudes were. However, in their study, greater *realistic gains for the ingroup* was associated with more implicit bias. The authors hypothesised this could be because the ingroup country emphasised economic immigration too strongly, and seeing as economic competition has been linked to negative perceptions of immigrants, this may increase implicit, but not explicit bias (Mähönen et al., 2011). The current results also support the notion that implicit attitudes can be distinct from explicit attitudes with different processes underlying each approach (Gawronski & Bodenhausen, 2006; Kahneman, 2003; Rydell & McConnell, 2006; Rydell et al., 2006). Implicit attitudes are automatic and associative, whereas explicit attitudes are controlled and deliberative. It may be that participants may not have been consciously aware that competition that leads to monetary gains vs. losses affected their attitudes towards Brazilians, as reflected in null effects for explicit measures. However, when measured for their automatic responses, economic gains and/or losses did affect how they implicitly felt towards Brazilians.

Secondary Transfer Effects

The results for STE mirror that for the primary outgroup. There was significantly less favourable attitudes towards Argentinians in the negative condition compared to the positive condition, which supports Hypothesis 6a, but no main effect of winning/ losing money, and

no significant interaction effect of contact valence x win/lose money. Thus, Hypotheses 6b and 6c were not supported.

This is an interesting finding as it demonstrates that perhaps now that the secondary outgroup is more similar to the primary outgroup, there was at least a significant main effect of contact valence on STE. Due to the absence of a control condition, it might be that attitudes changed for only one condition, or both conditions. Based on Study 1's main effects of Brazilian explicit attitudes being only different for the negative condition, and how they mapped onto Brazilian explicit attitudes in Study 2, it is likely that the negative condition had more negative attitudes towards Argentinians also. Although the results of Russian attitudes in Study 1 were not significant, there was a trend of the negative condition having less favourable attitudes, but of course, future research with a control condition would be required to elucidate the relationship for Argentinians.

Other research in online contact has only found STE for positive contact (Lissitsa & Kushnirovich, 2018). In relation to positive and negative contact and STE, generally there have been no direct effects of STE and negative contact (Brylka et al., 2016), or no STE observed at all (Harwood et al., 2011; Mähönen & Jasinskaja-Lahti, 2016). The current results could be the first to provide evidence of direct STE for negative contact in an *online* context, and negative contact in general, but of course, this cannot be definitively ascertained without a control group. This is primarily based on evidence from Study 1, where the positive and control conditions were identical in their Brazilian attitudes results, indicating that only negative contact had an effect, compared to baseline.

Moderating variables. Just as in Study 1, RWA and political orientation did not moderate the effects of either independent variable, supporting Hypothesis 7a. I did expect SDO to moderate the effects of winning and losing though, due to those high in SDO seeing

outgroups as competition, but this was not supported (Hypothesis 7b). For Hypothesis 7c, I did not expect SDO to moderate the effects of contact valence and prejudice due to the mixed literature on this, and in my current study, this was supported as SDO did not moderate the effects.

Emotions

For emotions, I will first present the results, and then afterwards present the interpretation of these results together. Similar to Study 1, none of the emotions mediated the effects of the main outcome variables.

Hypothesis 8a predicted anger, anxiety, and sadness to be greater in the negative condition. Participants were angrier in the negative condition, partially supporting this hypothesis, and replicating the findings of anger and negative contact from Study 1. Anxiety and sadness did not significantly differ between the negative and positive conditions though. I also predicted that participants would be happier in the positive condition, but this was not the case, but it does replicate the findings of happiness from Study 1.

For Hypothesis 8b, I predicted the losing money condition to report more anger, anxiety, sadness, and less happiness compared to the winning condition. This was partially supported because although anxiety did not differ between the win/lose conditions, those in the losing condition were significantly angrier, sadder, and less happy than the winning condition. The effect size for happiness was large too. This indicates that those that lost money, irrespective of contact valence condition were angrier and sadder. This supports previous research on anger being associated with economic threats (Cottrell & Neuberg, 2005).

Finally, for Hypothesis 8c, none of the interaction effects of valence x win/lose were significant for any of the emotions. I did not have any real concrete expectations in relation to this hypothesis.

Taken together, it seems that although there was a main effect of contact valence on anger, this was the only significant effect of emotions with negative and positive contact. In relation to explicit measures, this may not have translated into any differences in evaluations of Brazilians. Much more consistently though, emotions were associated with winning and losing money. Emotions were separately tested as mediators though and were not significant mediators of explicit or implicit attitudes.

EEG. There was a similar pattern of results as Study 1 in terms of null N400 activity by contact condition, and additionally for Study 2, there were no significant effects of winning or losing money, or any interactions between the independent variables and N400 activity. There was also a replication of the congruent trials being associated with greater N400 activity, with the result being marginally significant. This could be due to similar reasons discussed earlier (see Chapter 2, Study 1 EEG results discussion), or perhaps methodological issues (see Chapter 4: General Discussion for limitations).

Even though winning and losing money appeared to have an effect on IAT scores, it was not related to N400 activity. This could be due to the timing, like that mentioned in Study 1 discussion, where it is possible that the time window pre-IAT response facilitates similar N400 activity across economic loss/gain conditions (and valence conditions), however after the N400 window, other processes occur which are reflected in the IAT response. Schiller et al. (2016) demonstrated that incongruent trials do not elicit more processes, but that participants required more time in certain microstates (such as perceptual processing and motor responses), which is then reflected in the IAT effect. This may likely be

the case here too, but how, or even if economic loss/gains can affect any processes, may require more rigorous EEG methodology and hardware (discussed in further detail in the Chapter 4: General Discussion, limitations and future research).

Conclusion and limitations

Study 2 results revealed a replication of results from Study 1 in terms of participants in the negative contact condition displaying more prejudice towards Brazilians; no difference in implicit attitudes between the two conditions; no main effects of the various conditions on N400 activity; and a similar pattern of congruent trials associated with greater N400 activity. Adding winning or losing money in the poker game did not affect explicit attitudes, however, those in the losing condition had more implicit bias toward Brazilians.

Although study 1 did not find STE, a refinement of the secondary outgroup to one that is more isomorphic to Brazilians, Argentinians, revealed a STE, with results mirroring the explicit results for Brazilians. Although anger was associated with contact valence, emotions in general were more reliably associated to winning and losing money.

It should be noted that for this study there was no control group. Therefore, it may be that positive and/or negative attitudes changed. Conclusions cannot be conclusively made as to which condition was driving the effects. Comparing the means of Brazilian attitudes to Study 1 though, the means are similar, indicating that at the least, those in the negative condition's attitudes did change as a function of contact valence. Likewise, for winning and losing money, the lack of a control condition in which participants were not made aware of economic loss or gains makes it harder to ascertain for implicit bias, whether it was the winning or losing condition driving the effects. Future research should address these issues.

Chapter 4: General Discussion

The aim of this dissertation was to investigate negative and positive intergroup contact, experimentally, in an online setting. In order to achieve this, my dissertation drew from and synthesised a variety of research areas: intergroup contact, online gaming, neuropsychology, and economic psychology.

Research into positive E-contact has been developing steadily in the past decade; however, previous research has largely overlooked experimentally testing negative E-contact, with the extant literature in negative E-contact in general being scarce. The current research furthermore aimed to introduce ecological validity to the E-contact literature, by looking at the most common way we encounter others on the internet: in an unstructured, unsupervised fashion.

Likewise, the focus of past research has mainly been on explicit dependent variables. My current work is, to my knowledge, the first to examine implicit attitudes in relation to E-contact. Relatedly, there is very little research applying EEG technology to intergroup contact. I aimed to examine cognitive processes that occur during implicit bias tasks, via EEG. Another aim of my research was to help investigate the gap in the literature on secondary transfer effects (STE). This is the first work to look at STE experimentally with negative contact, and additionally, the first to look at STE experimentally in an E-contact setting.

Finally, I wanted to investigate the effects of economic losses and gains in E-contact. Scarcely any work in online gaming or the contact literature has experimentally examined realistic threats and gains.

For this dissertation, in Study 1, I examined how negative, positive, and no contact from a Brazilian outgroup member in an online poker game can affect explicit and implicit

attitudes towards Brazilians. Additionally I measured secondary transfer effects (STE) on an unrelated group, Russians. Furthermore, I measured what kind of emotions participants felt whilst playing the poker game, and took EEG scans to determine any underlying cognitive processes. In Study 2, I added in whether participants won or lost money in the poker game, to see how economic losses and gains affect attitudes. Again, I measured emotions, EEG, and STE, this time towards Argentinians.

Summary of findings across both studies

Explicit attitudes. In both studies, those in the negative contact condition had less favourable explicit attitudes. Only Study 1 had a control condition, and for explicit attitudes, there was no difference between the positive and control conditions on explicit attitudes. Collectively, it seems that in this online poker setting, negative contact was more potent at influencing explicit attitudes towards the outgroup. This is an interesting finding, given that the game lasted only 10 minutes. It was however, a competitive contact setting, which might be one reason why positive contact did not increase favourable attitudes compared to the control condition (Study 1).

Study 2 added in the variable of participants keeping any money they won (winning), or being told that unfortunately they lost money so there would be no pay out (losing). There was no main effect of winning or losing money on explicit attitudes towards Brazilians, nor was there a significant interaction between contact valence and win/lose money. This was unexpected, as it was predicted that the heightened threat of losing money should increase prejudice, especially in the negative contact condition. Perhaps consciously, participants were able to reason that they lost the money because of external reasons not related to the Brazilian, such as getting dealt terrible cards, they (the participant) were not a good player anyway, or understand that gambling comes with risks of loss etc. On the other hand, winning money did not seem to influence explicit attitudes towards Brazilians either.

Implicit bias. For the IAT results, there was a peculiar finding, where both the negative and positive conditions had equally the same amount of implicit bias and greater levels of implicit bias compared to the control condition (Study 1). Likewise, for Study 2, there was no difference between the negative and positive condition in terms of implicit bias. This may have been due to cognitive depletion from the poker chat box and/or heightened outgroup saliency for the experimental conditions (Study 1).

Interestingly though, in Study 2, there was an effect of winning and losing money on implicit bias: those in the losing condition, irrespective of contact valence, displayed greater implicit bias. This may reveal a novel finding for the field to research further. Monetary gains and losses may have a unique effect on our automatic outgroup attitudes.

Unfortunately, the EEG data did not shed any more light on implicit bias results. Overall, there were no significant effects of contact, or winning and losing money, affecting N400 activity. Across both studies however, there was an unexpected result of the congruent trials displaying more N400 activity, which is associated with stereotype accessibility. This is a unique finding for the field, and warrants further investigation. It may be that New Zealanders do not think of Brazilians negatively in relation to congruent trials of pairing Brazil with bad stimuli.

Ancillary outcomes. In terms of STE, in Study 1, STE were not found for Russians as a secondary outgroup, however, in Study 2, STE were found when Argentinians were the secondary outgroup. Those that had negative contact with Brazilians had significantly less favourable attitudes towards Argentinians compared to the positive contact condition. These findings support the notion that it is more likely for STE to occur when the secondary outgroup is more similar to the primary outgroup (Sparkman, 2020). This may mean that *negative* contact with one outgroup, might have carry-over effects to another unrelated

outgroup, not directly involved in the interaction. With Study 2, this cannot be determined for certain, as there was no control group to establish which way the results were trending. Nevertheless, if negative contact effects can carry over to other groups, then this is another cause for concern in regards to intergroup relations.

For emotions: Study 1 found anger and anxiety to be significantly higher in the negative condition compared to the other conditions, and sadness was marginally significantly higher for the negative condition too. No other differences between the conditions were found for happiness, fear, and disgust. Study 2 found only anger to be related to contact valence, but winning and losing money was more consistently related to emotions; with those that lost money more angry, sad, and less happy than those that won money. These findings highlight anger as an integral emotion in intergroup contact, and potentially, realistic gains and losses as central to influencing emotions too.

Relevance to the online contact/ E-contact literature

The preceding studies contribute significantly to the E-contact literature by being the first to experimentally examine both negative and positive contact in an E-contact setting. Previous work had provided evidence that positive E-contact, at least that which is structured and supervised, can reduce prejudice towards a variety of groups (Abu-Rayya, 2017; Maunder et al., 2019; Schumann et al., 2017; White & Abu-Rayya, 2012; White, Turner et al., 2019; White, Verrelli et al., 2019, see also White et al., 2020 for a meta-analysis of E-contact reducing prejudice).

Other research which had looked at negative contact, had found that when online contact such as internet forums, Facebook etc. was construed as negative, the associated attitudes towards the outgroup were negative (Lissitsa & Kushnirovich, 2018). Although another study by the same authors found decreased subtle prejudice towards Arabs for those

that have more virtual contact with Arabs, even when the content negatively portrayed Arabs (Lissitsa & Kushnirovich, 2019). Both of these studies were survey-based though, which left a gap in the literature for whether negative contact affects prejudice, or whether there is self-selection bias occurring, or even if the participants accurately recalled their experiences. My current research can help answer this question: it seems negative contact online does affect prejudice, at least in a short-time frame after the encounter, and that positive contact in online settings that are unstructured, superficial, and/or competitive, do not seem to increase favourable attitudes.

There is a word of caution for interpreting the positive condition findings though. Brazilians may not be an outgroup that New Zealanders feel too negatively about to begin with. Additionally, the contact may have been more neutral in nature, but it is difficult to make chat messages that are overly positive without coming across as unnatural, flirty, and weird to participants. In White and Abu-Rayya (2012), it was possible to have more intimate positive contact, because the task required them to get to know their online chat partners. This kind of intimacy building is probably the exception in the many forms of online contact that one can have though.

The current research found anger to be a fundamental emotion in intergroup contact, at least for negative contact. This supports findings by others, in which anger was significantly related to intergroup contact (Hayward et al., 2017; Kauff et al., 2017; Paolini et al., 2021), but adds to the literature by demonstrating anger can be heightened by online contact too. However, emotions were not found to mediate the effects of contact and explicit or implicit bias, suggesting that emotions did not impact on how participants evaluated the outgroup.

Implications for negative intergroup contact

The current work also has implications for negative contact in general. Firstly, it seems, at least with the outgroup I used, only negative attitudes moved in relation to the control condition (Study 1), and this was supported by different explicit attitudes towards Brazilians between the positive and negative conditions in Study 2. This of course may have been due to the control condition in Study 1 not being genuinely neutral, and not distant enough from the positively valenced condition. Secondly, as mentioned, these are the first experimental negative E-contact studies, but additionally they add to the small amount of experimental studies in general that have looked at negative intergroup contact (e.g. Andrews et al., 2018; Hayward et al., study 3, 2017; Joyce & Harwood, 2014; Paolini et al., 2010).

Compared to my previous work (Andrews et al., 2018), it seemed that negative contact was more powerful at shaping attitudes, and unlike my previous work, positive attitudes did not change relative to the control. It is worth noting though, that in my previous work, the contact was vicarious. This could have made a difference because participants were able to see a model of *how* intergroup contact can take place (whether that be positive or negative). A similar contrast has been found in previous research, where watching, but not playing, a poverty game, increased positive attitudes towards the poor (Roussos & Dovidio, 2016). In Andrews et al. (2018), participants could also form more intimate vicarious relationships with ingroup and outgroup members as it seemed like they had known each other for a while, making the conversations sound more personal. Contrast this with the current studies, participants did not have the more relaxed perspective of being a watcher; they were actively receiving the chat messages, and the friendship/ hostility would not have been as established as it would have appeared to in Andrews et al. (2018).

The current results also partially support Paolini and McIntyre (2019) in which the positive-negative asymmetry was found for negative contact when the target outgroup was

stigmatized (e.g. such as race); and for positive contact with admired outgroups (e.g. the elderly). I assert partial support, because Brazilians are not a stigmatised group in New Zealand, but they would probably fit better with being categorised as a stigmatized group (due to nationality), than to being an admired group, but also due to the above-mentioned issue regarding how neutral the control condition was relative to the positive condition (Study 1).

Further, this research supports previous work that has found negative contact to be more influential in evaluations when the level of contact is superficial, whereas positive contact is more influential in intimate contact (Fuochi, Voci, Boin et al., 2020). The contact in my research was superficial, much like that of many interactions over the internet, and especially in Study 1, the negative condition was the only condition different from the control in terms of explicit measures and emotions.

Lastly, previous work in negative contact, has suggested prior positive contact can buffer against the effects of negative contact (Árnadóttir et al., 2018; Graf et al., 2014). In my samples, seeing as Brazilians are a negligible minority in New Zealand, most participants would not have had much prior contact, let alone positive contact, to act as a buffer. My previous contact questions also did not probe for the quality of previous contact, just quantity. Therefore, future research should include previous quality of contact, to see if this could buffer against negative E-contact.

Relevance to intergroup contact more broadly

Broadly, the current research adds to the intergroup contact literature by synthesising different parts of the contact literature that had previously been studied separately (in a lot of cases), or at least this particular combination had not been studied together: negative contact, E-contact, economic losses and gains, secondary transfer effects, and emotions. It adds to the

online gaming literature too, demonstrating how attitudes and emotions can be affected differentially by interactions with other players.

Previous research has started to apply emotions to intergroup contact (Hayward et al., 2017; Kauff et al., 2017; Paolini et al., 2021; Seger et al., 2017), but they have largely been overlooked as potential facilitators at reducing and heightening prejudice (but see Paolini et al., 2021). Although the current research did not find mediation effects, negative contact did heighten negative emotions such as anger; and economic loss was also associated with negative emotions, and decreased happiness. In fact, economic losses and gains were most reliably associated with emotions. This is a novel finding for the intergroup contact literature more broadly, and should be further explored in future research.

Studies 1 and 2 highlight ideas recently emphasized in the contact literature, such as superficial vs. intimate contact. As stated in the above negative contact section, superficial contact may drive the positive-negative asymmetry effect for negative contact, and intimate contact may drive it for positive contact (Fuochi, Voci, Boin et al., 2020). There needs to be more investigations into superficial and intimate levels of contact over the intergroup contact context in general (Graf, Paolini et al., 2020). My studies provide another piece in the puzzle, and more importantly, provide evidence of how unstructured contact, the most common contact type over the internet, may affect attitudes towards outgroups. Future researchers should endeavour to find out what happens when contact is superficial and unstructured or intimate and unstructured. Online gaming is not the only place where unstructured and superficial contact can occur; we can have this sort of contact via forums, social media, and even in direct contact settings such as with work colleagues. For example, research has found that comments left online by an outgroup member (homosexual) decreased threat and social distance (Kim & Wojcieszak, 2018). Hence, an active interaction with an outgroup member is not essential to affect attitudes.

Another addition to the literature is providing evidence for one of Allport's (1954) contact conditions that is almost certainly quite important for reducing contact: cooperation between groups. Although previous research has stipulated that not all of Allport's (1954) conditions are necessary for prejudice reduction (Pettigrew & Tropp, 2006), violating cooperation by having participants compete against each other, did not appear to elicit more favourable attitudes for positive contact compared to control (Study 1). Even with all of Allport's other conditions met, competition may actually heighten prejudice, and from my research, perhaps it did in relation to the positive condition's implicit attitudes.

A final addition of my research to the intergroup contact literature more broadly, is the application of EEG scans to intergroup contact. Although I did not find any significant main effects of contact or economic loss/gains affecting N400 activity, this could have been due to various methodological reasons, and therefore, future research should endeavour to use more rigorous EEG software, hardware, and methodology to see if automatic cognitive processes can be affected by intergroup contact. The current research did reveal that congruent trials were associated with greater N400 amplitudes, or more stereotype accessibility. This result largely is in contrast to the extant N400 literature, but it may be explained by the experiment context (New Zealand) and/or the use of a novel outgroup (see Chapter 2 EEG results discussion for more detail).

Implicit and explicit attitude divergence

Implicit and explicit attitudes did not map on to each other: explicit measures demonstrated greater negative attitudes, whereas implicit measures revealed no difference between negative and positive contact. This is not an unusual finding in the literature though (e.g. Nosek, 2005). Several scholars have surmised at least two different systems that are behind our differing evaluations of targets (Gawronski & Bodenhausen, 2006; Kahneman, 2003; Rydell & McConnell, 2006; Rydell et al., 2006). In support of this, Gawronski and

Bodenhausen (2006) proposed that there are two different systems of learning behind our thinking, behaviour etc. One system is based on information and associations that have accrued over time, and have associations in memory. The other system is more deliberate and rule-based. Furthering this notion, Kahneman (2003) proposed that the first system, labelled System 1, is intuitive and influences a list of characteristics that are for example, fast, automatic, emotional, associative, implicit etc. System 2, is reasoning that is slow, deliberative, rule-based, controlled, explicit etc. It could be that participants were deliberately controlling their explicit responses, particularly in the positive condition, but when automatic associations were measured in the IAT, these associations were more influential, leading to similar levels of implicit bias as the negative condition.

There is another possibility to entertain though: both negative *and* positive contact did lead to greater implicit bias (Study 1, but also in Study 2 negative and positive conditions implicit bias was the same). Explicitly, participants in the positive condition can consider the friendly Brazilian, and accordingly rate Brazilians more favourable than at least those in the negative condition. However, when it is not possible to control responses, implicit attitudes may emerge, resulting in greater implicit bias. Why then, did both experimental conditions display greater implicit bias than the control condition? It could be that the experimental conditions, due to the increased saliency of Brazilians, have had more associative connections made, thus when taking the IAT, these associations were already salient and heightened implicit bias. This could have been further fuelled by the competitive nature of poker. Stephan and Stephan (1996) state that when contact is positive, voluntary, personalised, and equal; realistic and symbolic threats are more likely to be causes of prejudice. Another possibility is that the experimental conditions experienced more cognitive depletion, as they had more task demands via the chat box feature. Previous research has implicated cognitive

depletion as an explanation for the lack of cognitive control on automatic responding tasks (Govorun & Payne, 2006; Hofmann et al., 2007).

Economic losses and gains

The current research has also contributed to the implicit bias research by examining economic losses/gains and emotions. In fact, only economic losses and gains significantly affected implicit bias (Study 2). Moreover, those in the losing condition were angrier, sadder, and less happy compared to the positive condition. These emotions were irrespective of contact valence, and may help explain why those in the losing condition displayed more implicit bias toward Brazilians.

Certain emotions such as anger and disgust have been associated with greater implicit bias (Dasgupta et al., 2009), even to neutral groups. This effect seems to only be for negatively valenced emotions, such as anger, but not all negative emotions (e.g. sadness is not associated with increased bias; Dasgupta, 2009). Simply feeling angry for reasons unrelated to the outgroup can spill-over into implicit evaluations of them (Dasgupta, 2009), and because anger is linked to economic threat (Cottrell & Neuberg, 2005), and can deplete cognitive control (Dasgupta et al., 2009), this could be potentially potent for bias. If the cognitive depletion of playing the poker game is coupled with the cognitive depletion of anger elicited from economic loss, this additive effect may explain why those that lost money displayed more implicit bias compared to the winning condition.

The effects of realistic threats on implicit but not explicit attitudes is also supported in prior research (Aberson & Gaffney; 2009; Mähönen et al., 2011). Previous research did not find indirect effects for realistic threats for *explicit* attitudes, but there was an indirect effect for realistic threats on *implicit* attitudes (Aberson & Gaffney; 2009). The current study could not test for indirect effects though as I did not measure realistic threat, but rather induced it

via losses vs. gains, however, the results support that of Aberson and Gaffney (2009) because explicit attitudes were not affected by realistic threat; only implicit attitudes were.

Conversely, negative contact, which was also associated with anger, was not a significant predictor of implicit bias. Gawronski and Bodenhausen (2006) argue that different kinds of external input stimuli may activate different associative patterns for a particular attitude target. For instance, the same object (Brazilians and/or New Zealanders) can be evaluated differently depending on the context, and pre-existing associative memories (indicative of System 1 and implicit responding; Kahneman, 2003). For this study the context can be contact valence or economic losses/gains. Participants are likely to have pre-existing dispositional associative memories in regards to economic losses and gains (regardless of source), which may be automatically activated by the salience of whether they won or lost money. Previous research has found that a threat to self-esteem from any source (not even from the target outgroup), can lead to prejudice (Whitley & Kite, 2010). This is analogous to Gawronski and Bodenhausen (2006) example that a rotten egg will elicit a negative affective response regardless of the context, economic losses (and perhaps gains), will likely also elicit a particular implicit response, regardless of the context (i.e. irrespective of whether it was an intergroup encounter).

This is an interesting finding, as it may potentially provide a contrast of how economic losses/gains, but not contact quality can affect implicit attitudes. This would be a significant finding for the contact/ intergroup relations literature. Is it that participants are (automatically) derogating the outgroup and favouring the ingroup in a bid to restore self-esteem (Branscombe & Wann, 1994)? Is there something inherent to economic threat, but not necessarily negative or positive contact, that leads to unconscious bias? For instance, would the positive (or even negative) interactions with a fellow outgroup workmate and consequential outgroup generalizations, be irrelevant if that outgroup workmate got a

promotion over you? To elucidate this, longitudinal designs, and studies in which outgroup members are more frequently encountered, and importantly, the role of cross-group friendships should be studied further in relation to economic losses and gains in intergroup contact.

Secondary transfer effects (STE)

Study 1 did not see STE when Russians were the secondary outgroup. However, in Study 2 STE did occur for Argentinians, and the results were the same as for the primary outgroup, with negative contact having less favourable attitudes to Argentinians. Although in Study 2 there was no control group for contact valence to say for certain which condition was driving this effect, when piecing together all the results from Study 1's explicit measures (both for Brazilians and for Russians), and Study 2's Brazilian attitudes results, it is likely that the negative condition was driving the results.

Most previous research in STE, that have looked at both positive and negative contact, have found positive contact to be associated with STE, not negative contact (Harwood et al., 2011; Lissitsa & Kushnirovich, 2018). This could be the first instance of negative contact directly facilitating STE; it is at least maybe the first E-contact study to demonstrate negative contact STE. Due to no control condition in Study 2 though, this is a cautionary conclusion. Past research has found an *indirect* effect where both positive and negative contact with the primary outgroup mediated the effects towards the secondary outgroup (Brylka et al., 2016). This was not a direct effect like my results, and the study's primary outgroup was the majority group in the country (the participants were minority immigrants, and the secondary outgroup was another immigrant group).

In terms of positive contact facilitating STE, this could be a possibility for Study 2. Indeed, it could also be that both conditions' attitudes diverged in opposite directions. Future

research should utilize a control group to confirm the pattern of results. Either way, it seems that the more isomorphic the primary and secondary outgroup are, the more likely STE will occur. The heightened competition in Study 2 of course may have had an effect too.

The prospect of negative online contact facilitating STE is a concern, as it may not be just the primary outgroup that has negative attitudes attached to them, but also other similar outgroups, making the task of reducing prejudice even more complicated.

A potential limitation is, due to using similar scales to measure attitudes, it may be that there was a shared method variance. However, Study 1 did not see significant effects when Russians were the outgroup, and other research that found STE has used a multi-method approach, which likely rules out common methods inflating the results (Lolliot et al., 2013).

Limitations and future directions

Many limitations were touched on under the respective headings above, however there are additional limitations to consider. Firstly, this limitation relates to a lot of social psychology research: the sample was primarily comprised of educated students. Future research should aim to assess attitudes from people from different stratum of society, particularly because the majority of the world's population uses the internet (Kemp, 2020). Following on from this, Brazilians are not really a disliked group in New Zealand. What would similar negative contact look like with other groups, particularly those that for the ingroup, may have a history of hostile relations? For E-contact, how would negative contact affect prejudice if the outgroup member was stigmatized, such as a homosexual, or an outgroup that is a higher profile minority for the participants?

In the current research (particularly Study 2), the money wagered was not participants' own, which does pose the question: would realistic threat be even more

heightened, and subsequent attitudes more negative if it were their own money, and if it was substantially more money? If it was individuals' own money, or if it was a larger amount of money, perhaps there might even be effects seen in explicit attitudes in terms of economic gains and loss?

Another consideration is that participants spent 10 minutes playing poker, and were measured on their attitudes not long after. The time playing may not have been sufficient for positive contact to be effective, but the effects of negative contact after only 10 minutes of contact does emphasise the influence of negative contact. Future research needs to measure negative contact effects at intervals after the initial contact e.g. a week or so after, and longitudinal research in negative E-contact should be conducted.

In both studies, although not a focal part, emotions did not mediate the effect of either explicit or implicit bias. This could have been due to using episodic measures of emotions, instead of (intergroup emotions). However, the most plausible explanation is that for both studies, there were restrictive ranges of responses in terms of emotions, meaning there was not enough variability in emotion responses to detect mediation effects.

For EEG limitations, the EEG headset that was used for my current research was only a 14 channel Bluetooth headset, which may not be as accurate or as reliable as those used by other researchers (e.g. 64 electrode caps; Wang et al., 2011), due to N400 ERPs not being typically maximal at F3 or F4 sites, but rather at midline central, or parietal sites (Duncan et al., 2009). The current headset did not have electrodes at midline central sites (i.e. Cz). Other researchers have taken measures to reduce electrical noise too (e.g. Khateb et al., 2010), so perhaps future studies could use a Faraday cage to shield out excessive electrical noise.

A major limitation of my EEG data was that I could not separate error and correct responses from the corresponding trials (although they were both marked). This in contrast to

other research where only correct trials were used (Fleischhauser et al., 2014), or separate epochs were created for correct and error trials (van Nunspeet et al., 2015). This would likely require response-locking, which unfortunately, the current research did not employ, as this would require identifying responses with individual triggers in the EEG software, and therefore response-locked ERPs could not be analysed. This was due to each correct (and error) response having the same marker assigned to it (i.e. I could not isolate just Brazilian with bad word trials and the corresponding correct response due to all stimuli having the same correct response marker), meaning these could not be traced back to their respective stimulus-locked trial, hence another consideration for future researchers.

A final word for future studies: Amichai-Hamburger et al. (2015) state that structured online contact would be more suitable to groups in conflict (or even with previous histories of conflict). This assertion is certainly wise for positive contact, but my current research highlights that even for groups that do not have a history of conflict (or are not currently in conflict), contact if it turns negative, is deleterious, and can occur if the contact is unstructured, which essentially accounts for most of the contact that we have online.

I argue that negative online contact needs more research in unstructured online settings as this is the most prevalent way that people utilize the internet. The contact needs to be looked at from unsupervised, supervised; superficial, intimate; anonymous, non-anonymous, with admired, stigmatized outgroups, from a majority, minority perspective, and across a range of internet activities e.g. gaming, forums, blogs, social media sites etc. The current research has only just scratched the surface of the possible combinations of interactions that people have online.

Broader implications

My research has broader implications for online comments in general. Whether that be blogs, forums, or comments on news stories or YouTube videos; if the content is negative (or pose an economic threat), then people may be influenced, perhaps even more so than any positive comments. Kim and Wojcieszak (2016) state that online comments are prevalent for anyone online, and perhaps repeated exposure to comments can strengthen their effects. This is concerning if the content is negative about an outgroup. Negative content may heighten negative emotions, prejudicial attitudes, and radicalise someone's opinion of an outgroup. If there are few instances of positive contact to buffer against this negativity, then this could be even more toxic for intergroup relations.

As a remedy, websites/ gaming companies could build their interfaces so that they are less likely to incite intergroup hostilities. Of course it is hard to try and moderate the whole internet, this could be where education may be helpful in letting, especially the younger generation, know about the potency of online interactions, and sometimes not everything on the internet is an accurate portrayal of an outgroup offline. This is even more imperative to emphasise as iGen (people born between 1995-2012), spend more time on electronic communication than in-person interactions (Twenge, 2017). Without adequate education and measures, future generations may be more susceptible to the influence of negative content online.

Economic threat and gains also occur in online situations, particularly so in online gaming such as online poker, but even in other games where tangible items such as weapons, can be won (e.g. massively multiplayer online role-playing games [MMORPGs]). Players may inadvertently hold implicit bias towards outgroup members that they meet online and that threaten resources. The same could be said for comments online that suggest an economic threat for a particular ingroup by an outgroup. In real-world settings, economic

threat from outgroups can occur too, such as in competition for jobs, resources etc., and these may affect implicitly how we feel about an outgroup. If the stakes are high enough, perhaps this could translate into explicit attitudes too?

Finally, research on intergroup contact now, more than ever, needs to focus on online interactions. The COVID-19 pandemic will likely change the way scientists in general conduct research, both theoretically and practically. For social psychologists, this means adapting to the “new normal” (Rosenfeld et al., 2020). Globally, citizens were asked to stay home to prevent the spread of COVID-19 and adopt strategies such as working from home. This meant that people had significantly less daily face-to-face interactions, and more online interactions, both for work and social purposes. Additionally, there is likely to be heightened hostility towards outgroups as a result of COVID-19 (Rosenfeld et al., 2020). Due to E-contact being considered more of a “direct” form of contact (Dovidio et al., 2011; c.f. to other indirect methods), and the increased reliance of online interactions, it is imperative that both positive and negative online interactions are given more precedence in the intergroup contact literature. Online intergroup contact, especially unstructured contact, is likely to become more prevalent for the foreseeable future.

Chapter 5: References

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Appendix A

In this section of the study, we want to know about the amount of time you've spent playing poker:

Where have you played poker before? Check all that apply to you:

- At my own or a friend's house either for cash or fun
- At a casino
- At a public establishment other than a casino e.g. a pub
- Online, either for real or play money
- As an app on your phone or tablet
- Other please state: _____

If you had to guess, how often do you play poker?

- I've never played poker before
- Once a year or less
- Every few months
- A few days or less each month
- Once a week
- A few times a week
- Almost everyday

The following questions in this section relate to online poker:

In your lifetime, how many hours would you estimate you have played poker online? (Note examples are given of how many hours someone may have played over a course of a year)

- I have never played online poker
- 0-20 hours (e.g. played a few times in your life)
- 21-500 hours (e.g. you play a couple of hours on a few days each month)
- 501-2000 hours (e.g. you play a few times each week)
- 2001-3000 hours (e.g. you play most days of the week)
- 3000+ hours (e.g. you have played frequently for a number of years/ or you play more than 8 hours a day every day for at least a year)

When playing online poker what stakes do you mostly play?

- I do not play online poker
- Micro stakes (1¢/ 2¢ blinds – 5¢/ 10¢ blinds)
- Low stakes (10¢/ 20¢ blinds – 50¢/ \$1 blinds)
- Medium stakes (\$1/ \$2 blinds - \$3/ \$6 blinds)
- High stakes (\$5/ \$10 blinds - \$400+ blinds)
- Play money

In this section of the study, we want to know about social influences of poker.

[This is where participants were asked about how often they have had previous contact with people from the UK, Russia, and China. This was disguised as saying that these countries have been demonstrated to be most interested in online poker.]

A lot of people that play poker are introduced to the game by family or friends. Do you or your close friends or family play poker?

- Yes
- No

In this section of the study we want to ask you questions regarding personality differences/ personal preferences:

How would you personally describe your style of poker play? If unsure write “not sure”. (e.g. purely psychological; 50% psychological 50% statistical):_____

[This is where questions about political ideology were asked, this was followed by the RWA scale]

Finally, have you ever read any books on poker strategy (e.g. Dan Harrington’s “Harrington on Hold’em”), or searched poker forums for strategy advice (e.g. “pocketfives” forum):

- Yes
- No

Appendix B

Sample typical chat messages from the Brazilian player, FelipeAlejo3:

Negative contact script

Don't speak to me dumbass

I told you before

AHAHAHA and what kind of name is UCP### anyway?

You were on here before on another account? ucp?

Did you need to keep making accounts because you bust your bankroll all the time

Because you are a shit player?

Are you still crying from an hour ago when you busted your bankroll

Learn to play poker donk. This is why you are broke.

I will take all of your money anyway

Wow UCP### you really suck at poker

Ha ha what a loser

I'm not sure if you are drunk or just stupid. Maybe both

Positive contact script

HI again my friend

How you today?

:)

Oh, were you on here before with another account?

Maybe hour ago?

UCP### have you played the tournaments on here on Sundays?

I was just saying before that they are pretty good because so many bad players :P

Its easy to take all their chips haha

not as big a field as pokerstars and not as much prize money, but good chance of cashing

Do you play much on here UCP###?

Anyways you should join the tournaments because its easy money :P

Good luck UCP###

Appendix C

Table C1.

Study 1 Means (M), standard deviations (SD), and correlations for emotions and how they relate to the main outcome variables and condition.

| Variable | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------|----------|-----------|--------|-------|------|------|-------|-------|-------|-----|
| 1. Condition | 1.99 | 0.82 | | | | | | | | |
| 2. Brazil Attitudes | 4.42 | 0.89 | .27** | | | | | | | |
| 3. IAT D | 0.48 | 0.33 | -.22** | -.11 | | | | | | |
| 4. Russian Attitudes | 4.37 | 0.73 | .16* | .44** | -.11 | | | | | |
| 5. Fear | 1.63 | 1.01 | -.15* | -.05 | -.05 | -.03 | | | | |
| 6. Sadness | 1.43 | 0.82 | -.13 | -.15* | -.14 | -.11 | .67** | | | |
| 7. Anxiety | 1.65 | 1.04 | -.16* | -.04 | -.05 | -.04 | .98** | .67** | | |
| 8. Anger | 1.55 | 1.03 | -.35** | -.15* | .03 | -.09 | .58** | .59** | .57** | |
| 9. Happy | 3.02 | 1.36 | .01 | .05 | .19* | .01 | -.002 | -.02 | .02 | .11 |

Note. The condition was coded as follows: Negative contact = 1; Positive contact = 2; Control (no contact) = 3. For the IAT D, greater scores indicate more implicit bias. * indicates $p < .05$. ** indicates $p < .01$.

Table C2.

Study 2 Means (M), standard deviations (SD), and correlations for emotions and how they relate to the main outcome variables and conditions (contact valence and Win/Lose).

| Variable | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------------|----------|-----------|--------|--------|-------|------|-------|-------|-------|-----|
| 1. Contact Valence | 0.50 | 0.50 | | | | | | | | |
| 2. Win/Lose | 0.52 | 0.50 | .02 | | | | | | | |
| 3. Brazil Attitudes | 4.52 | 0.93 | -.25** | .02 | | | | | | |
| 4. IAT D | 0.59 | 0.38 | -.09 | -.28** | -.03 | | | | | |
| 5. Argentina Attitudes | 4.68 | 0.85 | -.17* | .06 | .74** | -.03 | | | | |
| 6. Anger | 1.56 | 0.87 | .27** | -.19** | -.05 | -.03 | -.03 | | | |
| 7. Sadness | 1.45 | 0.76 | .04 | -.31** | -.07 | .04 | -.09 | .39** | | |
| 8. Anxiety | 2.28 | 1.17 | .05 | -.10 | .03 | .05 | .04 | .34** | .44** | |
| 9. Happy | 3.90 | 1.50 | -.07 | .50** | .19** | -.03 | .24** | 0 | -.17* | .11 |

Note. The contact valence was coded as follows: Positive contact = 0; Negative contact = 1. The coding for Win/Lose is: Lose = 0; Win = 1. For the IAT D, greater scores indicate more implicit bias. * indicates $p < .05$. ** indicates $p < .01$.