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THE PSYCHOPHYSIOLOGY OF INTERGROUP ANXIETY IN THE CYPRUS CONTEXT

DOCTOR OF PHILOSOPHY DISSERTATION

DORA GEORGIOU

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THE PSYCHOPHYSIOLOGY OF INTERGROUP ANXIETY IN THE CYPRUS CONTEXT

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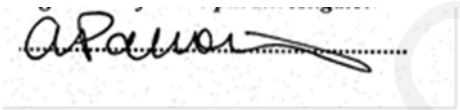

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DECLARATION OF DOCTORAL CANDIDATE

The present doctoral dissertation was submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy of the University of Cyprus. It is a product of original work of my own, unless otherwise mentioned through references, notes, or any other statements.

Dora Georgiou

ABSTRACT IN GREEK

Σε έναν κόσμο που γίνεται ολοένα και πιο ποικιλόμορφος και παγκοσμιοποιημένος, οι ταχείες κοινωνικές και πολιτικές μεταμορφώσεις οδηγούν στην ανάγκη καλύτερης κατανόησης της αλληλεπίδρασης μεταξύ ομάδων ανθρώπων. Ορισμένες μορφές διομαδικών συσχετίσεων, όπως η διομαδική αρνητική προκατάληψη και οι μεροληψίες, παρουσιάζουν ιδιαίτερο ενδιαφέρον, καθώς ενδέχεται να οδηγήσουν σε βίαιες συγκρούσεις (Lillis & Hayes, 2007) και διαχωρισμό με βάση την ιδιότητα μέλους εθνικής ομάδας (Hewsone, 2014).

Στο πλαίσιο αυτής της μελέτης η συναισθηματική διάσταση της προκατάληψης εξετάζεται μέσω πολλαπλών δεικτών. Συγκεκριμένα, μετρήσαμε την ενεργοποίηση του αυτόνομου νευρικού συστήματος (ενδεικτικό του συναισθήματος προτού επέλθει στη συνείδηση) μετά την δημιουργία συνθηκών ταύτισης με την ένδο-ομάδα με την έκθεση των ελληνοκύπριων συμμετεχόντων σε υποτιθέμενους Τουρκοκύπριους απεικονισμένοι σε οθόνη σε μορφή φωτογραφιών, και υποτιθέμενους Ισπανούς (ομάδα ελέγχου) επίσης απεικονισμένοι με τον ίδιο τρόπο. Μέσα από αυτή τη μελέτη εξετάσαμε πώς η προ-συνειδητή προκατάληψη, υπό τη μορφή διομαδικού άγχους, ξεδιπλώνεται σε ένα απλό πειραματικό μοντέλο προβολής εικόνων, το οποίο είναι ένας τύπος επαφής παρόμοιας με την έκθεση, λαμβάνοντας παράλληλα υπόψη τους σχετικούς με την Κύπρο παράγοντες που σχετίζονται με το συγκεκριμένο πλαίσιο. Επιπρόσθετα, εξετάσαμε κατά πόσον η επαφή μεταξύ των δύο κύριων εθνικών ομάδων στην Κύπρο, οι οποίες διαχωρίστηκαν ιστορικά και πολιτικά κατά μήκος των φυσικών γραμμών, επηρέασε το διομαδικό άγχος στις διάφορες πειραματικές συνθήκες. Τέλος, εξετάσαμε μια σειρά άλλων εμπειρικά προερχόμενων ατομικών μεταβλητών σε σχέση με την διομαδική προκατάληψη, όπως η προσωπικότητα και οι πολιτικές πεποιθήσεις, και κατά πόσο το διομαδικό άγχος μεσολαβεί στην επίδρασή τους στην διομαδική επαφή και στις αρνητικές στάσεις απέναντι στην εξω-ομάδα.

Τα ευρήματα μας υποδεικνύουν ότι υπήρχαν διαφορές στην αυτόνομη ανταπόκριση μεταξύ πειραματικών συνθηκών με βάση την επαγωγή που έλαβαν, με την ομάδα που πίστευε ότι είδε εικόνες Τουρκοκύπριων να επιδεικνύουν την υψηλότερη αμυντική αυτόνομη αντιδραστικότητα. Η επαφή μεταξύ ομάδων εξάλειψε τις διαφορές στην μεταξύ συνθηκών στην μέτρηση της αγωγιμότητα του δέρματος αλλά όχι στην μέτρηση του αιφνιδιασμού.. Τέλος, το αυτό-αναφερόμενο διομαδικό άγχος δεν είχε επίδραση διαμεσολάβησης μεταξύ των μεταβλητών που εξετάστηκαν, αλλά ήταν επιτυχής μόνο στην πλήρη μεσολάβηση της επίδρασης της συμπονετικής ανησυχίας στις αρνητικές στάσεις απέναντί στην εξω-ομάδα Τα αποτελέσματα των αναλύσεων μας για το φύλο δείχνουν ότι το φύλο των ερεθισμάτων (εικόνες) διαδραμάτισε σημαντικό ρόλο στην αλλαγή των αντιδράσεων, ενώ το φύλο των συμμετεχόντων δεν είχε αξιοσημείωτο αντίκτυπο.

ABSTRACT IN ENGLISH

In a world that is quickly becoming increasingly diverse and global, rapid social and political transformations mean that a better understanding of interaction between identified groups of people (intergroup relations) becomes crucial. Certain types of intergroup relations, such as intergroup bias and prejudice, are of particular interest, as they may lead to violent conflict (Lillis & Hayes, 2007) and segregation (Hewsone, 2014).

Within the context of this study the affective dimension of prejudice is examined through multiple indices. Particularly we measured activation of the autonomous nervous system (indicative of preconscious emotion) after eliciting maximal social identity saliency by exposing Greek Cypriot participants (ingroup) to contact with supposed Turkish Cypriots (outgroup) and supposed Spaniards (control group) in a picture viewing paradigm. Through this study we examined how preconscious prejudice in the form of intergroup anxiety unfolds in a simple experimental picture viewing paradigm, which is a type of contact akin to exposure, while keeping in mind contextual factors that are relevant to Cyprus (i.e. no physical cues of difference between ingroup and outgroup faces) and relevant in general (i.e. gender). In addition, we examined whether intergroup contact between the two major ethnic groups in Cyprus, who have been historically and politically segregated along physical lines, altered group differences in intergroup anxiety. Finally, we examined a host of other empirically derived individual difference variables in relation to prejudice, such as personality and political attitudes, and the capacity of self-reported intergroup anxiety to mediate their effect on intergroup contact and negative outgroup attitudes.

Our results indicate that there were differences in autonomous responding between groups based on the induction they received, with the group who believe they were witnessing pictures of Turkish Cypriots eliciting the highest defensive reactivity in the form of skin conductance and startle potentiation. Intergroup contact eliminated differences in group responding on skin conductance but not startle reactivity. And finally, self-reported intergroup anxiety did not have a cross-cutting mediation effect between the variables examined, rather, it was only successful in fully mediating the effect of empathic concern on negative outgroup attitudes. The results of our analyses on gender indicate that the sex of stimulus played a large role in altering responses, whereas gender of participants did not have a noteworthy impact.

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Chapter 1. Introduction

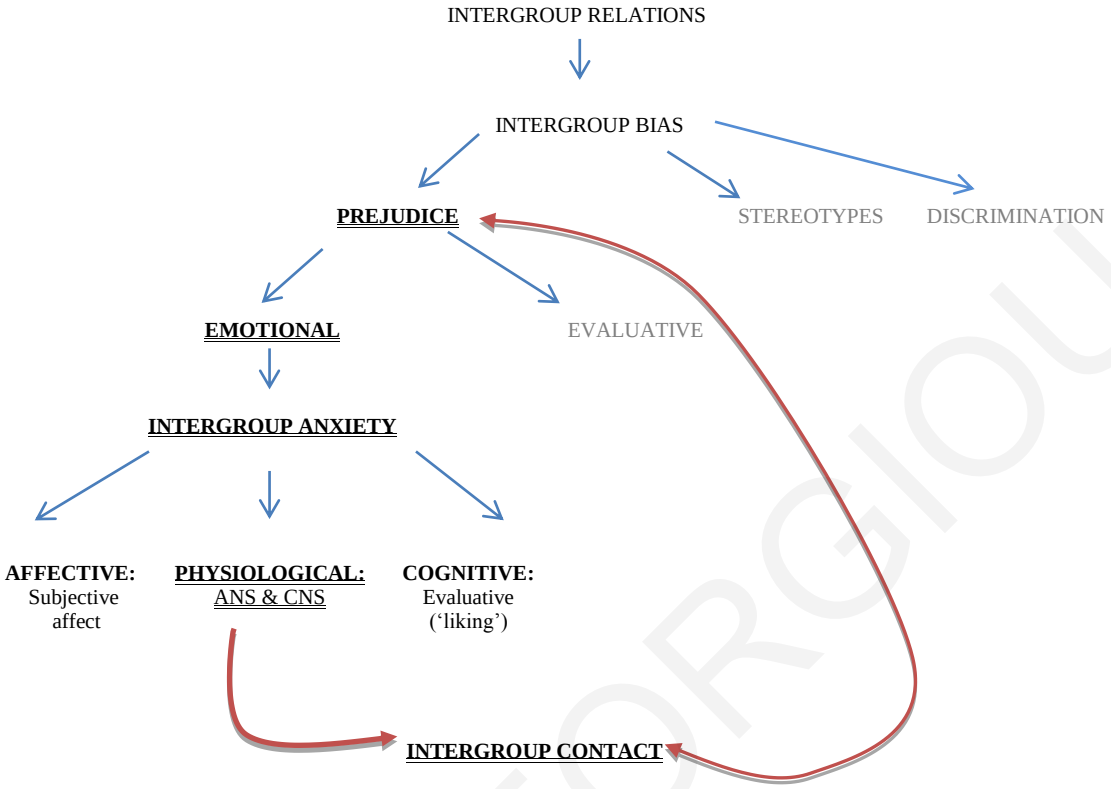
Individuals are intrinsically embedded in social units, and know no other existence. Consequently, psychological phenomena develop through social processes, and for this reason it is useful to study intergroup relations (Psaltis, Gillespie & Perret-Clermont, 2015). Certain types of intergroup relations, such as intergroup bias, are of particular interest, as they may contribute to violence, (Lillis & Hayes, 2007; Hayes, Niccolls, Masuda & Rye, 2002) war, displacement and segregation (Hewstone, 2014), negatively impacting all levels of contemporary society to a tremendous degree.

Individuals are effected by violent intergroup conflict at the core of their existence because basic human needs for safety and physiological equilibrium are disrupted (Maslow, 1943) as are dimensions of psychological well-being (Ryff & Keyes, 1995). Societies are effected because violent conflicts not only constrain human development and security, but also reverse achievements that have been made (Stern & Ojendahl, 2010). Ever increasing diversity in a globalizing world lends urgency to the need for humans to develop a better understanding of intergroup bias (Rollock & Vrana, 2005).

Intergroup bias is viewed as having three distinct but related components: prejudice as the emotional part, stereotypes as the cognitive part and discrimination as the behavioural part (Wilder & Simon, 2003). After extensive focus on the study of stereotypes, researchers have more recently emphasized emotions as important mediators of intergroup relations (Brewer, 2003; Talaska, Fiske & Chaiken, 2008; Smith & Mackie, 2015). It is the emotional component of intergroup bias that we are interested in studying, for the purpose of examining potential mechanisms of bias reduction. Therefore, we focus our examination on the emotional aspect of intergroup bias - prejudice.

To operationalize 'prejudice' we use a definition provided by Stephan & Stephan (1985), which views prejudice as *negative affect associated with outgroups*, but includes both an *emotional* and *evaluative* component. The evaluative component refers to a sense of 'liking' or 'not liking' rather than to cognitive judgments of the characteristics of the out-group, and is therefore not referencing stereotypes. Breaking it down even further, we focus on a specific element of prejudice – intergroup anxiety – and particularly, how it relates to intergroup contact (Figure 1).

Figure 1: Component Schematic; elements that constitute a major focus of this study are in bold with a specific focus on those underlined.



Prejudice as affect

The most influential theorist for the study of prejudice in social psychology is Gordon Allport (1954), who defines prejudice as an *antipathy*, emphasizing negative emotions as a critical element, but, he also recognized the function of prejudice as 'rationalized exploitation' of inequality (Dovidio, Glick & Rudman, 2005). Fishbein (2004) conceptualizes prejudice as having a normative basis in evolution, in that intergroup hostility likely had a protective effect on subsistence groups, but, he views the reduction of prejudice also as normative in that the necessity of gene flow for evolution counteracts the ingroup bias (through 'outgroup attractiveness'; Fishbein, 2004). In other words prejudice as emotional prejudgment (or emotional evaluation) is a normal and unconscious process that serves an evolutionary function, but, how values are assigned to prejudgement (the content, meaning and emotional impact of prejudice) is based on instrumental intergroup relations through history and social learning over time.

Furthering the inquiry into how emotion relates to prejudice, on a scale of social identity, Mackie & Smith (2004) argue that appraising events and situations from the point of view of the group rather than the individual occurs when people define themselves as group members (Intergroup Emotion Theory); the more salient the group membership, the more specific the group appraisals that dictate specific group based emotional experience. In fact, numerous studies

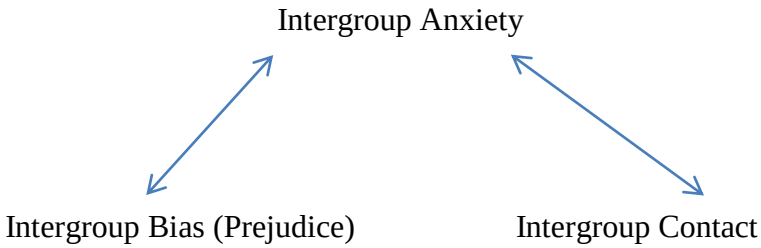
demonstrate that the mere activation of even a fictional group membership *(minimal group identity)* in the absence of any precipitating event produces ingroup favouritism on a number of levels (Brewer & Silver, 1978), and convergence of emotional experience with the ingroup (Rydell et al., 2008). From this perspective, emotional experience is not solely the property of the individual, so that, if there is a particular emotional response, it is not merely indicative of the individual's information processing capacity or personality or experience of his/her context, rather, it is indicative of intergroup processes at play (Miller, Smith & Mackie, 2004).

Intergroup Contact

If amplified ingroup favouritism is the normative outcome of group membership, (Tajfel & Turner, 1979) increasing diversity may in fact lead to ingroup segregation (Putnam, 2007) rather than intergroup contact. Despite this potentiality, social identity is fluid enough to allow new group formations through intergroup contact. According to Allport (1954), *contact* is the key to the reduction of intergroup bias, which may lead to changes in group identity. This occurs because, under certain conditions, contact with outgroup members results in reduced prejudice, that is, reduced negative affect towards outgroup, thus eroding the intergroup distinction on an emotional level. The conditions that Allport posits as necessary (but not sufficient) are: a) common goals, b) equal status, c) cooperation, and d) institutional support. Research has consistently shown that intergroup contact reduces prejudice, and that Allport's conditions are favorable but not essential for reduced prejudice (Pettigrew & Tropp, 2006). Contact typically leads to positive outcomes even in the absence of Allport's conditions, but contact is not always effective– on occasions contact leads to increased prejudice, which Pettigrew & Tropp (2006) maintain has to do with particular emotions such as anxiety and threat. Consequently, theorists added the notably affective conditions of e) intimacy and f) friendship, which, together with Allport's, create optimal real conditions for contact (Shook, & Fazio, 2008).

In sum, the emotional mechanisms behind acquiring, sustaining, expressing and extinguishing prejudice in a diverse society, are numerous and act on different levels. 'Contact theory suggests that diversity erodes the in-group/out-group distinction and enhances out-group solidarity or bridging social capital, thus lowering ethnocentrism. Conflict theory, on the contrary, suggests that diversity enhances the in-group/out-group distinction and strengthens in-group solidarity, thus increasing ethnocentrism' (Putnam, 2007). Both of these perspectives are valid. Hewstone (2014) arrives at the conclusion that diversity gives people the *opportunity* for contact, which, when taken, will foster reduced prejudice. Thus, it becomes necessary to investigate the mechanisms that foster and inhibit contact. One of the proposed hindrances to intergroup contact is the distinctly affective variable of intergroup anxiety (Stephan & Stephan, 1985; See Figure 2).

Figure 2: Relational schematic between prejudice, intergroup anxiety and the outcome of intergroup contact



Intergroup Anxiety

The construct of intergroup anxiety embodies both feelings of threat and uncertainty people may feel in intergroup contexts (Pettigrew & Tropp, 2006). According to Stephan & Stephan (1985), intergroup anxiety is the 'fear of negative psychological or behavioral consequences for the self and fear of negative evaluations by ingroup or outgroup members'. Therefore, intergroup anxiety is four pronged in that it involves a fear of (1) psychological (e.g. discomfort, frustration, irritation) and (2) behavioral (e.g. violence, ostracization) outcomes to the self, as well as a fear of negative evaluations by (3) ingroup (e.g. rejection) and (4) outgroup members (e.g. disapproval, ridicule, scorn).

Stephan & Stephan (2000) consolidated intergroup anxiety into an Integrated Threat Theory (ITT) of prejudice, to account for the mechanism of fear as a fundamental cause of prejudice, and outlined four threats, including intergroup anxiety as a threat in its own right: 1. realistic (e.g. war), 2. symbolic (e.g. moral correctness of value system), *3. intergroup anxiety (conscious and unconscious feeling of personal threat due to a concern about negative outcomes for the self, such as being embarrassed, rejected, ridiculed, or physically harmed and exploited),* and 4. negative stereotypes (e.g. negative expectations from contact with outgroup)

In putting forth a working definition of intergroup anxiety, Stephan & Stephan (1985) distinguish three interrelated components - the affective, the physiological and the cognitive aspects of intergroup anxiety. Although intergroup anxiety is itself an affective variable that comprises all systems, including physiological, behavioral, and subjective, this distinction set forth by Stephan & Stephan (1985) refers specifically to: the affective as *subjective* report of discomfort and negativity that is mediated by conscious processing, the cognitive refers to an appraisal component (i.e. negative evaluation of liking or disliking that could be implicit or explicit), and the physiological refers to autonomous nervous system responding that captures an implicit and automatic emotional component. This definition serves us well as it takes into account conscious and unconscious

negative emotional components of intergroup anxiety, both of which will be examined in the current study.

Findings have shown emotional consequences of intergroup anxiety include augmented emotional responses Curtis & Locke, 2005), increases in fear (Van Zomeren & Fischer, 2007), anger (Plant, Butz & Tartakovsky, 2008) and general negative emotions (Binder et al., 2009). Other consequences include avoidance (Hutchison, Fox, Laas, Matharu & Urzi, 2010), reliance on schematic processing, intensified self-awareness (Barlow, Louis & Terry, 2010), or even preemptive behavior such as aggression (Zomeren & Fischer, 2010). Evidence suggests that affective changes are as (or even more) important as interventions such as increasing knowledge of, and physical proximity to outgroup, for prejudice reduction (Prestwich, Kenworthy, Wilson & Kwan-Tat, 2008). The meta-analysis conducted by Pettigrew & Tropp (2006), on contact studies, revealed that affective factors seem to be more influential for the effects of intergroup contact than cognitive processes.

In fact, contact is most effective when it has positive affective consequences compared to positive cognitive and behavioral consequences. Pettigrew & Tropp (2006) estimated that 20-25% of the effect of contact on reducing prejudice is due to a reduction in intergroup anxiety, and that Allport's optimal conditions are not essential but act as facilitators.They posit that contact reduces prejudice because familiarity has a tendency to breed 'liking', and, this may be the reason that Allport's conditions for positive contact seem to be unnecessary (yet helpful) for prejudice reduction. Furthermore, Pettigrew & Tropp (2006) suggest that uncertainty reduction may be the mechanism underlying the relationship between contact, familiarity and liking, in that, uncertainty of how to act or what will happen to the self in contact with outgroup is mitigated by exposure.

Despite evidence illustrating the importance of examining affective consequences of intergroup anxiety, research in this area is lacking compared to research on the cognitive and behavioral consequences (Stephan, 2014). The utility and role of prosocial emotions and behavior to mediate the effect of intergroup anxiety is critical, but under recognized (Thomas, McGarty & Mavor, 2009). However, contemporary advances in science allow us to develop and refine our examination of emotion by examining its expression at a neural level, and in this study we will be looking at activity of the peripheral nervous system (autonomous and somatic), as well as subjective affect in relation to intergroup anxiety. In the ensuing discussion, we will take a closer look at psychophysiological indices of emotional reactivity and previous research that has linked these to intergroup anxiety. We will focus on peripheral measures of sweat and heart activity, as well as the startle eye-blink response, and electromyography of the facial muscles, as these will be used in the current study.

Peripheral markers of emotion

The startle reflex basically refers to muscular tension that occurs in an organism with surprise, hence the name startle. In humans the startle reflex most often refers to an automatic and unconscious eye-blink reflex that interrupts ongoing processing to reorient towards potential danger and defend the organism by promoting escape from danger (Blumenthal, 2015). The startle reflex can be modulated by attentional processes (Panayiotou & Vrana, 1998) and affective processes (Vaidyanathan, Patrick & Bernat, 2009). Of most interest to us is the *affect modulated startle reflex*, as we examine autonomic reactivity in relation to the threatening affective state of intergroup anxiety. Particularly, we examine the startle reflex as an indicator of defensive reactivity, as a marker of withdrawal in preparation for danger, indexed by fear (Vaidyanathan et al., 2009).

The affect modulated startle reflex is most robustly effected by valence (Bradley, Cuthbert & Lang, 1996) but it is also effected by arousal, and these are thought to exercise effects independently of each other (Panayiotou, van Oyen Witvliet, Robinson, & Vrana, 2011). Under conditions of fear (negative valence), the startle response is magnified, whereas under conditions of happiness (positive valence) the startle response diminishes. Under conditions of highly arousing emotions (i.e. fear) the startle response is potentiated whereas under conditions of low arousal (i.e. sadness) the startle response is smaller. These processes are thought to be indicative of the approach and avoidance functions of the startle reflex, in that, it is largest when the organism requires inhibition in order to prepare for defense. If no inhibition is taking place, and the organism is somehow engaged already, especially in positive emotionality, the startle reflex will be at its smallest.

In a picture viewing paradigm the affect modulated startle eye-blink reflex habituates over time due to the repetition of the probe causing an overall diminution, but it does not stop responding with potentiation and inhibition to unpleasant and pleasant picture stimuli (valence), despite repeated presentation of the same pictures (Bradley, 2000; Bradley, 2002). The eye-blink response is one of the earliest and most sensitive startle components based on elicitation at low stimulus intensities (Blumenthal, 2015). For these reasons startle amplitude is considered to reliably index valence from picture content and is used as a preconscious indicator of fear.

Another measure we will be examining in relation to intergroup anxiety is average heart rate (HR; beats per minute, BPM). HR habituates fast and is highly sensitive to perceptual processes like picture content, including stimulus novelty. Initial HR deceleration during picture perception is larger for negative pictures and especially negative novel pictures, suggesting that initial deceleration is associated with an orienting reflex that is elicited in the context of stimulus change

and valence. The initial deceleratory response of HR to aversive sensory cues ('fear brachycardia') is eliminated with repetition, and subsequently the sympathetic system dominates with HR acceleration (Bradley, 2000; 2002).

According to Porges' (2007) polyvagal theory, in the face of threat, the parasympathetic nervous system (PNS) will withdraw, in order for the organism to engage attention and gather information to employ a strategy that will ameliorate threat. If this does occur, then the PNS re-engages to reduce arousal and reach a state of calm again; if this does not occur, then the sympathetic nervous system (SNS) is activated for a more intense response (Neblett & Roberts, 2013). Parasympathetic activity slows heart rate (through the vagus nerve) while sympathetic activity increases heart rate, so that HR is a result of both and cannot differentiate between the two, although it is often described as an indicator of cardiovascular reactivity, with an overall increase indicating activation and an overall decrease indicating rest. HR, however, is extremely sensitive to task characteristics, and demands of context, so that, in a picture viewing paradigm aversive images seem to elicit a slowing of heart rate due to the low threshold of autonomous activation involved in mere viewing of pictures.

Another autonomic nervous system response we will look at in the context of this study is skin conductance reactivity (SCR), which increases with arousal regardless of valence, so that it can be said to be more sensitive to arousal than valence. The SCR is also sensitive to novelty so that it is larger for novel pleasant/unpleasant than novel neutral stimuli. SCR reflects action preparation because the pattern of responding persists even when the sensory foreground is removed, and it habituates slowly for pleasant and unpleasant pictures. Both sympathetic and parasympathetic divisions of the ANS have been implicated in electrodermal activity (EDA), however, it is generally agreed that human sweat glands have predominantly sympathetic cholinergic innervation but that some adrenergic fibers also exist in close proximity (Malmivuo & Plonsey, 1995).

Finally, the last measure of peripheral nervous system functioning we will be examining, facial electromyographical activity (EMG's) provide a non-invasive way to sample automatic and often unseen by the naked eye facial expressions that are sensitive to both affective valence and intensity (Dambrun, Despres & Guimond, 2003; Van Boxtel, 2010). Even though facial expressivity can be consciously controlled, in psychophysiological studies EMG's are thought to indicate implicit affective responses, as even the weakest responses can be detected, since most facial muscles are located at close to surface electrodes. EMG's correspond to the somatic nervous system as muscles are innervated by neural impulses that extend throughout the body. Muscle activity that is automatic and implicit, creating facial expressions under the visual threshold of the human eye, is likely informed by the ANS (Keir, Kroll, Ludwig, Schuler & Vigen, 2011). The

corrugator supercilii and zygomaticus major facial muscles are the ones most commonly sampled to show valence (Van Boxtel, 2010); the corrugator muscles pull the eyebrows forward to express frowning and the zygomaticus muscles pull the outer lips up to express smiling, both showing the degree of pleasure (valence) in opposite directions associated with exposure to stimuli (Larsen, Norris & Cacioppo, 2003).

Peripheral markers of emotion in relation to intergroup anxiety

Psychophysiological measures of prejudice were developed from the mid 1950's as an alternative to obviously biased self-report ratings. The very first studies using psychophysiological measures to examine prejudice, commonly using a paradigm of white people exposed to black people, found, from the very beginning, a strong emotional component to prejudice (Guglielmi, 1999). Particularly, initial studies showed that whites displayed elevated galvanic skin response (GSR) in the presence of blacks (Rankin & Campbell, 1955; Vidulich & Krevanick, 1966), and that prejudice towards blacks is positively correlated with GSR arousal in reaction to blacks by whites in an in vivo paradigm, where whites experienced touch by blacks (Porrier & Lott, 1967). Additionally, highly prejudiced whites who merely heard blacks described in a favorable light exhibited increased skin conductance response (SCR) (Cooper & Siegel, 1956; Cooper & Singer, 1956). This study demonstrated that parameters relating to ingroup identity saliency may be perceived as threatening, thus activating defensive responses, without the co-occurrence of close proximity and physical contact.

In the same set of studies, although white participants reported that they liked the white and black experimenters equally well, they exhibited larger SCRs when interacting with the black experimenter. This was one of the first studies to suggest a possible dissociation between explicit and implicit reactions to racial stimuli, which was subsequently replicated by several research studies using electrodermal and cardiovascular responses (Dambrun et al., 2003), opening up the question of whether participants were concealing or unaware of their prejudices (Jost, Nam, Amodio & Van Bavel, 2014). In terms of facial EMG and intergroup anxiety, Vanman, Paul, Ito & Miller (1997), found that the more self-reported prejudice, the more right corrugator supercilli muscle activity was exhibited by whites to pictures of blacks (compared to pictures of whites), but, even without taking into consideration the self-report of prejudice, whites generally had this reaction across the board whether they reported prejudice or not. In sum, facial EMG is a valid indicator of both emotional intensity (arousal) and the evaluative direction (valence) of outgroup stimuli, regardless of conscious processing. It turns out that the intergroup anxiety component of prejudice often occurs under the radar, as several research studies suggest that both cardiovascular

and electrodermal responses to outgroup related stimuli are not significantly related to explicit prejudice level as measured by self-report (Dambrun et al., 2003).

Even though this study focuses on the peripheral nervous system, it is useful to make the connection with the brain as this may aid in understanding further the relationship with the peripheral nervous system. In terms of central nervous system activity (CNS), Phelps & Thomas (2003) discovered that amygdala activation (measured through FMrI and the startle response) following exposure to black (vs. white) faces was correlated with individual differences in implicit racial bias that is acquired through cultural learning about other social groups and individual prior experience and knowledge. Amodio, Harmon-Jones & Devine (2003) observed a significant increase in amygdala activity immediately following exposure of whites to black (vs. white) faces, thereby linking implicit racial responses to a neural mechanism of fear processing. Amodio and colleagues (2004) went on to study (with EEG's) the regulation of intergroup bias, and found that this involves at least two mechanisms: (1) the detection of an undesirable response tendency (i.e., a "bias"), which should be associated with activity of the dorsal anterior cingulate cortex (ACC), and (2) the implementation of a more desirable, overriding (i.e., egalitarian) response, which should be associated with regions of the lateral prefrontal cortex (PFC).

Amodio and Devine (2006) corroborated that implicit prejudice and stereotypic associations were uncorrelated and that each was associated with a unique set of behavioral outcomes (Amodio & Hamilton, 2012; Gilbert, Swencionis, & Amodio, 2012). Amodio and Devine (2006) observed that whereas the amygdala has a well-established role in basic affective and attentional processes, including responses to fear and threat (LeDoux, 2000) it is not involved in the kind of high-level cognitive functions that support stereotyping (or other conceptual associations). Fear-conditioned responses can be learned very rapidly, even after a single exposure to the stimulus in a threatening context (Bouton, 1994; Schiller et al., 2009). Conceptual associations, such as stereotypes, are known to form through a slower learning process more directly expressed in trait impressions, deliberative decisions, and instrumental actions (Smith & DeCoster, 2000). Such differences suggest that the affective component of prejudice, that which we view as 'intergroup anxiety' (Stephan & Stephan, 1985), undergoes *habituation* (a decrement in psychophysiological aspect of fear with repeated exposure), whereas the cognitive component of prejudice, that which we view as *stereotypes*, undergoes *extinction* (a decrement in learned responses due to repeated, non-reinforced exposure) (Mineka & Thomas, 1999).

Affective and cognitive processes occur at different temporal thresholds, so, it could be a matter of timing, wherein the brain offers an initial and rapid primer to a new stimulus (a fear response), but holds off on goal driven behaviour until semantic processing occurs. The perceptual

categorization process of a face involves multiple processing stages. Evidence suggests the brain implicitly registers a person's race in as little as 120 milliseconds and his or her sex within approximately 180 milliseconds (Ito & Urland, 2003). Other studies reveal that stereotyping based on race (Bartholow, Pearson, Gratton, & Fabiani, 2003) and sex (Bartholow, Fabiani, Gratton, & Bettencourt, 2001) occurs within 450 milliseconds—after the initial categorization, but before extensive conscious deliberation. Amodio (2009) suggests that the effect of intergroup anxiety on controlled processing is in fact driven by a physiological component rather than an experiential component. He found evidence for a physiological pathway (using a neuroendocrine model measuring salivary cortisol) through which intergroup anxiety can effect control of cognitive processing ability. Particularly, Amodio (2009) illustrated that intergroup anxiety in a minimal group paradigm (two random, fictitious groups that are used to create ingroup/outgroup distinction, like color – the blue vs. green team) can lead to implicit perception of ingroup faces as having more positive physical and psychological attributes. He concluded that perception of faces at the level of mental representation is influenced by social identity and accompanying intergroup anxiety.

Additionally, Ratner and colleagues (2014) showed that people form different mental images of ingroup and outgroup members based on a fictitious minimal group designation, and these differences in visual perception are sufficient to elicit ingroup favoritism, impressions, attitudes and behaviors. It is evident that, although different pathways, mechanisms and outcomes exist for fear vs. conceptual associations with outgroup, these do indeed transact with each other, and it is 'contact' or lack thereof, that drives both habituation and extinction.

Intergroup Anxiety in the Cyprus Context

Cyprus is the third largest island in the Mediterranean, after Sicily and Sardinia, with an area of 9,251 square kilometres (Trimikliniotis & Demetriou, 2012). Human habitation on the island is evidenced from the 11th millennium B.C., making it one of the earliest occupied Mediterranean islands (Simons, 2007).

Cyprus is the most populous island in the region, hosting an estimated 864, 236 thousand people (Eurostat, 2018). Cyprus inhabitants are known as Cypriots, of which there are two major ethnic groups living on the island, Greek Cypriots and Turkish Cypriots (Eurostat, 2018). It is estimated that Greek-Cypriots constitute 77% of the population and Turkish-Cypriots constitute 18% of the population, whilst 'others' constitute 5%, however, these figures arise from the demographic constitution of the island upon independence from British colonial rule in 1960. More current estimates place Turkish Cypriots at 10% of the total population of the island (Trimikliniotis & Demetriou, 2012).

The nation of Cyprus is a presidential republic, de facto partitioned into the south, effectively under control of the Republic of Cyprus and accounts for 59% of the island, and the north, administered by the self-declared Turkish Republic of Northern Cyprus. Despite joining the EU (2004) as a de facto divided island, the whole of the Republic of Cyprus is EU territory. This means that both Turkish Cypriots and Greek Cypriots are EU citizens, but, in practice, EU law is suspended in areas where the Republic of Cyprus is not able to exercise control.

The Turkish Cypriots and Greek Cypriots have been physically segregated since the island was partitioned in 1974 by a dividing line marked by military checkpoints. These were in place until 2003, after which certain military checkpoints were opened for the first time, revealing a valuable opportunity to examine the Contact Hypothesis and its attributes in the context of long standing conflict and complete prior segregation for almost 30 years. During this 30-year period of de facto partition there were two separate 'stories': that of the Greek-Cypriots and that of the Turkish-Cypriots who rarely, if ever, had a chance to meet (Trimikliniotis & Demetriou, 2012).

Placing contact studies in context is important, as the impact of contact likely changes with contextual characteristics. Accordingly, theorists have (Salomon, 2006; Wagner & Hewstone, 2012) differentiated between contact in regions with a recent history of serious intergroup conflict and contact in regions without it. Cyprus is in the former category, in that currently 'The Cyprus Problem' remains unresolved for over 40 years, moreover, there is a history of conflict beyond those 40 years. Rouhana and Bar-Tal (1998) characterized such conflicts as protracted, central in public life, violent, and perceived as irreconcilable. Contact in these contexts is likely surrounded by a pervasive air of hostility (Salomon, 2004) or negative contact norms (that is, contact is devalued).

Unique characteristics of the Cyprus context are the lack of clear visual indicators of difference between Turkish Cypriots and Greek Cypriots, while a major difference is language, as Greek Cypriots speak a dialect of Greek whilst Turkish Cypriots speak a dialect of Turkish. After partition, separate educational systems and mass media promoted one sided historical narratives of victimization and negative stereotypes of the outgroup (Psaltis, 2016). Language barrier aside, the greatest difference may be religious, adhering to the Christian-Muslim divide. Additionally, although hostility abounds, there have been no incidents of violence in recent decades. The relatively violentless, longstanding and intractable conflict in Cyprus accompanied by geographical partition and lack of contact is perpetuated to this day.

In contexts of protracted conflict, the presence of ongoing intergroup tensions, as well as the accompanying narratives of the involved groups may create unique challenges for achieving positive effects from contact (McGarry & O'Leary, 1995). In such a context of hostility and

segregation opportunities for contact remain rare and contact is generally not encouraged. Contact opportunities are rarely available in daily life and if they do occur are likely to be part of an exception. However, research shows that even in such contexts contact does correlate with reduced prejudice (Tausch, Hewstone, Kenworthy, Cairns, & Christ, 2007; Gibson & Claassen, 2010; Malhotra & Liyanage, 2005). Perhaps in contexts when frequency of contact is relatively low, compared to when it is relatively high, positive contact is particularly notable and therefore acutely effective (Wagner & Hewstone, 2012). Abrams and Eller (2017) highlight contextual variations in the effects of contact as a function of how people feel towards contact and threat (e.g., from none to past to continuous) through time. Nonetheless, intergroup contact has empirically demonstrated benefits for improved intergroup relations both in and out of the laboratory (Lemmer & Wagner, 2015). Furthermore, researchers looking deeper into the mechanisms behind the impact of contact have implicated a range of affective variables, especially, reduction of intergroup anxiety (Pettigrew & Tropp, 2006; Ioannou, 2013) and increased trust (Husnu, 2017), both of which have been demonstrated in the Cyprus context.

The current study is concerned with further researching the construct of intergroup anxiety in the Cyprus context. By utilizing the approach of embedding constructs like intergroup anxiety into the microgenetic process (Psaltis & Zapiti, 2014) we hope to draw on social representations people hold of the outgroup and the ingroup in relation to their social identity. Dominant social representations of the other in Cyprus have at times purposefully and methodically cultivated feelings of fear and threat through past, present and future (Makriyianni & Psaltis, 2007). Studies in Cyprus reveal that fear and mistrust towards the other are reinforced through the social system of the school, exerting influence on people from a young age (Johnson, 2007). Individuals exposed over the long term to fearful social representations, may feel more anxious at the prospect of contact with outgroup, and such anxiety is likely compounded by other social and environmental constraints and individual idiosyncrasy. This kind of anxiety – intergroup anxiety – occurs as a function of apprehension and fear of negative consequences of interacting with outgroup (Stephan, Ybarra, & Morrison, 2009).

Previous descriptive research on contact in Cyprus, using self report measures, has shown the beneficial effects of contact on prejudice reduction and increase in trust in children ages 9 and up (Psaltis, 2015). Secondary transfer effects as a result of direct contact between Greek Cypriots and Turkish Cypriots across the UN Buffer Zone have also been demonstrated (Tausch et al., 2010). Moreover, quality contact (above contact quantity) was associated with higher levels of future contact intentions in Turkish Cypriot and Greek Cypriot adults through higher levels of intergroup trust (McKeown & Psaltis, 2017). In addition, a limited number of contact interventions have been

scientifically implemented and empirically evaluated in Cyprus using a variety of contact paradigms.

Even though the social psychological study of contact in the Cyprus context is in its infancy, the handful of studies on direct and the few more on indirect contact provide evidence that contact has beneficial effects on intergroup anxiety and prejudice reduction (Ioannou, 2013). Direct contact interventions have included an athletic camp experience with Greek Cypriot and Turkish Cypriot children with a duration of six days (Lyras 2007) and an in vivo interaction with a confederate in an experimental setting (Ioannou, 2009; Ioannou, 2013)

Indirect forms of intergroup contact implemented and studied in Cyprus include: vicarious contact with adults (Ioannou, 2013) and children (Husnu, Mertan, & Cicek, 2016), imagined contact with adults (Ioannou, 2013) and children (Husnu & Crisp, 2010), and extended contact with children (Husnu, Mertan, & Cicek, 2016). Summarily, findings show that all types of contact yield effects, such as less intergroup anxiety, and greater intentions to engage in future contact with the outgroup (Husnu & Crisp, 2010; Ioannou, Hewstone, & Ramiah, 2015), but they do not remain equally over time (Ioannou, 2013). Moreover, newer forms of contact such as interethnic online friendships (Žeželj et al., 2017), have been associated with more positive feelings towards outgroup, mediated by reduced self-reported intergroup anxiety.

Intergroup anxiety has been implicated as an important mediator of contact and prejudice reduction in Cyprus that may have temporally enduring effects. It has been shown to mediate the relationship between contact and forgiveness in the Cyprus context as well (Stathi, Husnu, & Pendleton, 2017). Evidence suggests that increased positive contact, and supportive ingroup contact norms are associated with decreased intergroup anxiety which predicts increased forgiveness towards outgroup. Research shows the relevance of intergroup anxiety for intergroup contact and its outcomes on intergroup relations (Pettigrew & Tropp, 2008), but intergroup anxiety has not yet been studied at a physiological level in Cyprus. Beyond the empirically demonstrated importance of intergroup anxiety in mediating the relationship between contact and prejudice, the question of the affective mechanisms driving this effect begs clarification.

Studies that has been conducted to date on contact in Cyprus show the importance of implementing interventions that emphasize positive contact between Turkish Cypriots and Greek Cypriots, and supportive contact norms. Thus, interventions that attend to emotionality seem to be central. Intergroup anxiety, a physiological affective state is therefore an important element of intergroup relations, in fact, it is a key mediator between contact and prejudice reduction, and therefore, warrants better understanding.

Current Study

This study focuses on the emotional experience of prejudice, in the form of intergroup anxiety. We probe the psychophysiological correlates of intergroup anxiety in the Cyprus context by exposing people to picture stimuli, after inducing social membership saliency. Particularly, we used an original paradigm in which all participants viewed the same set of faces, but were given different information about their ethnicities. Differences in psychophysiological reactivity, therefore, are unlikely to be indicative of cues given by the pictures themselves, but cues based on social conditioning. We chose this innovative paradigm to maximize the potential of capturing psychophysiological reactivity driven by context specific conditioning. Non-interactive exposure to outgroup faces from a standardized picture set (KDEF; Lundqvist, Flykt & Ohman, 1998) can be viewed as analogous to the kind of exposure found in diverse societies before people engage in willing and mutual contact, if they ever do so.

Furthermore, we examine the capacity of intergroup anxiety to mediate the effects of a range of social and personal variables, on the outcomes of prejudice towards outgroup and intergroup contact. Additionally, we considered the potential impact of gender[1] of participants and sex[2] of stimuli to the best of our abilities by examining associations at all levels.

Specifically, the project consisted of the following studies:

Chapter 2: Conscious face processing was examined, in order to ascertain whether judgments of ethnicity and social traits, attributed to the faces, converged to form some meaningful pattern. Specifically, judgements of social traits were compared by the ethnic categorization given to the pictures. Our goal was to examine whether ethnic categorization of faces intersected with more positive judgements of ingroup faces and more negative judgements of outgroup faces, as previously categorized by a blind sample. Normative ratings for ethnic categorization of face pictures were also obtained as a part of this study. Additionally, gender of participants and sex of stimuli were examined in association with both ethnic and face trait judgements.

Chapter 3. Normative ratings on subjective emotion were collected for pictorial stimuli to establish that the stimuli used in the following studies elicit a reliable response in participants. Participants rated their subjective emotional reactivity to face pictures, on a scale designated by each of the following linguistic descriptors: happy, fearful, sad, surprised, angry, disgusted and dimensional. We also examined how self-reported emotional reactivity to pictures, is differentiated based on respondents' gender and sex of stimuli.

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[1] The differentiation between gender of participants and sex of stimuli is a linguistic signifier used for ease of readability and comprehension of the text. Both terms refer to the same biological sex differentiation: gender of participants denotes whether participants are either male or female, and sex of stimuli denotes wether the picture stimuli depict males or females.

[2] ibid

Chapter 4. In this study we examine psychophysiological indices of emotional reactivity to the presentation of facial stimuli between groups using a novel paradigm. Specifically, we investigated how a group induction related to social identity effected defensive activation towards neutral pictures of male and female faces. Instead of manipulating the picture stimuli to portray the ingroup/outgroup distinction, we manipulated the contextual information given to participants, creating a situation in which different groups of subjects believed they were looking at either the ingroup, outgroup or a control group, when in fact, the pictures were kept the same in all groups. We measured psychophysiological reactivity of the autonomic defensive system, including heart rate and skin conductance measures. We measured psychophysiological reactivity of the fear reflex system and amygdala activation using the startle response as an index, and we measured the valence system using facial electromyography (EMGs), while pictorial stimuli were presented and processed. We also examined the variable of intergroup contact as a covariate to see if it alters the relationship of psychophysiological reactivity between groups.

Chapter 5. In this study we will look at how certain self-reported sociopsychological variables (such as group membership, empathy and personality) relate to intergroup anxiety and in turn intergroup contact and prejudice. Particularly, we examined whether (and to what extent) intergroup anxiety was effective in mediating the effect of both contextual and personality measures of individual differences on two different outcome variables: negative outgroup attitudes and intergroup contact. We also examined gender differences in relation to all the aforementioned variables.

The project's innovation and originality lie in methodological and theoretical areas. By integrating findings using multiple research indices of emotion – from self-report to psychophysiological, we contribute to the social neuroscientific literature on intergroup bias. We have also attempted to integrate the social and the individual theoretical perspectives on prejudice formation by including measures of both, and by conceptually approaching the subject from both points of view.

With this study we aim to overcome current deficiencies in our understanding of emotion and prejudice, in an actual setting of longstanding intergroup conflict and division. Such deficiencies arise from the 'single factor fallacy' in which a limited set of established psychological processes are examined while others are ignored, or critical variables in the prejudice literature are missing from the analysis, or mediators and moderators are not taken into account, to name but a few reasons the fallacy may occur (Pettigrew & Hewstone, 2017). Particularly, this study is important because it examines the role of intergroup contact in helping to explain the relationship between social group identity in the form of a group induction and intergroup anxiety in the form of

defensive psychophysiological reactivity. The significance and innovation includes 1) a maximal group induction intervention, 2) a comprehensive range of indicators of psychometrically sound measures in relation to prejudice and intergroup anxiety, while accounting for mediation and interaction relationships. Measures we have included index empathy, negative outgroup attitudes, physiological reactivity, self - reported affect and self-reported intergroup anxiety, socio-political attitudes, degree and quality of intergroup contact, personality, group membership saliency, social face trait judgements and ethnic categorization. To aid in increasing comparability and generalizability of our results we used internationally accessible and validated measures such as the Big-5 personality index, as suggested in the literature on prejudice. This helps provide a unified framework for furthering scientific research into individual and context causes of prejudice. We also included an analysis of gender in relation to prejudice, which is usually not considered in such studies.

By situating the study in context, ecological validity is increased, contributing to our understanding of actual, rather than abstracted, intergroup dynamics. This helps clarify how interventions may unfold on the ground, furthering the goal of prejudice research, which is, ultimately, the translation of key theoretical findings into policy and social change. Knowing what works under what conditions is important for prejudice reduction interventions, and situating research in context provides valuable information to this end.

General Methodology

Participants. Four independent samples were used in the current dissertation project. All samples consisted of Greek Cypriot students at the University of Cyprus.

The 1st sample consisted of seventy-seven students who participated in the Face Processing study (Chapter 2). Participants were aged 18 - 35yrs, (m = 20.68, SD = 2.87, 77% female). This sample categorized face picture stimuli as either Greek Cypriot or Turkish Cypriot.

The 2nd sample consisted of three hundred and fifty-five students, aged 18-27yrs, (m = 2.14, SD = 1.26, 78% female) who also participated in the Face Processing study (Chapter 2) and judged face picture stimuli on social face traits.

The 3rd sample consisted of two hundred students aged 18-27yrs, (m = 20.99, SD = 1.33, 73% female). This sample participated in the Normative Ratings study (Chapter 3). They rated their subjective affect on categorical and dimensional bases whilst viewing the face pictures.

The 4th sample consisted of ninety-three students (76.3% female), aged18 to 33 years (Mage = 20.22, S.D. = 2.75). This sample participated in the experimental study (Chapter 3) and the Individual Differences study (Chapter 4).

Specific methodological procedures, as well as stimuli and measures pertaining to each study separately, are presented within the specific chapter. In addition the specific hypotheses tested in each study and the results obtained are presented within each study.

Chapter 2. Face Processing: examining associations between face trait judgements, stimulus sex, participants' gender and ethnic categorization of pictorial face stimuli.

The survival advantage of belonging to groups is a basic driving force for human evolution, thus, quickly decoding social and interpersonal information is a crucial human function (Fiske, 2005; Fishbein, 2004; Allport, 1954). The most fundamental means to decode social information may be through the perceptual processing of human faces, as faces provide an incredible amount of non-verbal social interchange (Ekman & Friesen, 1969). The human face achieves instantaneous, complex, instrumental and communicative functions relative to survival (Van Boxtel, 2010). In almost all cultures around the globe, faces, unlike other body parts, are the most available tools for communication. Faces create widely recognized expressions (Ekman, 1977) with some susceptibility to cultural variation (Russell, 1995; Gendron, Roberson, van der Vyver, & Barrett, 2014) that are also unique to each person as expressions are impacted by personal motivation.

Findings suggest that the perceptual processing of human faces is unlike perception for objects, or anything else (Kanwisher, McDermott & Chun, 1997; Tanaka & Farah, 2003; Bartlett, Searcy & Abdi, 2003). Perhaps due to the social complexity of our habitat, face processing serves such a special function in humans. Scientists have proposed that a unique neural pathway, the fusiform face area (FFA), has evolved in the brain to mediate the process of understanding faces (Kanwisher et al., 1997). Others propose that this brain region processes objects of expertise given that we are all face experts, and that face processing is more diffuse throughout the brain (Slotnick, 2013). Evidence suggests face processing is supported by multiple brain regions of a distributed network, including regions for perception of visual features (core face network; CFN) and regions for perception of non-visual abstract information (the extended face network; EFN) (Haxby, Hoffman, & Gobbini, 2000; Ishai, 2008).

Currently, there is much we don't know, but, research has shown that central to face processing is appetitive and defensive autonomic motivation (Bradly & Lang, 2000; Lang, Bradley & Cuthbert, 1997; Ohman, Lunqvist & Esteves 2001; Davis, 2000). Thus, numerous areas of the brain are involved, especially the amygdala (Gobbini & Haxby, 2007; Haxby, Hoffman, & Gobbini, 2002) which is highly implicated in defensive reactivity. The amygdala provides efferent inputs to the facial muscle circuit and receives afferent signals to help process facial expressivity, so that it is involved in both acquisition of fear and expression of fear (Davis, 2000). Beyond affective salience, the amygdala may also provide computational power to the process of face identification (Adolphs,

2010), suggesting that its role is large enough for it to be considered a core face processing region (Elbich & Scherf, 2017).

Consequently, even though face processing has adapted to facilitate extremely complex social communication, it still likely reflects an underlying base motive of evolutionary self-protection.The unique function and quality of face perception for humans can be attributed to 'prepared learning' (Seligman, 1970; 1971), in that learning is selective of evolutionarily relevant stimuli. Learning is influenced by evolutionarily relevant motives so that some things are easier to learn than others. From this perspective, preferential attentional and emotional processing of evolutionary relevant stimuli (e.g., snakes) at an autonomic level reflects an evolved module of fear and fear learning (Ohman, Flykt, & Esteves, 2001). Findings provide support that the perceptual processing required for the human face is qualitatively quite different, and much more efficient, to the perceptual processing pathway and demands associated with non-evolutionary relevant stimuli (Ohman & Mineka, 2001; Seligman, 1970; LoBue & DeLoache, 2008). For example, pre-conscious perceptual processing of faces requires low orienting and metabolic resources relative to other stimuli (Bradley, Codispoti, Cuthbert & Lang, 2001; Bartlett et al., 2003; Bradley, Codispoti, Sabatinelli & Lang, 2001). Mallan, Lipp & Cochrane (2013) propose that acquiring evolutionarily relevant fear may be a dual process for humans, in that one category of fears is biologically threatening and more robust (i.e. snakes) whereas the other category of fears is socially threatening and less robust (i.e. angry faces), corresponding to different paths of acquisition and extinction. Potentially threatening social stimuli, such as faces, are not delineated as clearly as biologically threatening stimuli, and thus require different processing paths and demands to become salient. A bio-informational model of emotion (Lang, 1979) implicates previously stored associative networks that are activated in relation to the stimulus perception (including imaginal), so that affective experience of stimulus is coloured by pre-existing defensive reactivity.

In other words, the automatic perception of a human face as a human face and not anything else, either animate or inanimate, is only the beginning of perception. This information is paired with the extraction of crucial information about the face, like sex, race and threat appraisal before conscious deliberation begins (Bartholow et al., 2003; Bartholow et al., 2001). Humans classify faces on many motivational bases arising from complex social networks, such as familiars/strangers and in-groups/outgroups. Evidence consistently shows that merely categorizing another's face spontaneously activates schemas and affective states linked to racial category (Fiske & Neuberg, 1990), impacting reactivity at a neural, autonomic and behavioural level (Phelps & Thomas, 2003; Phelps et al, 2000). Moreover, this process is attenuated by motivational and attentional factors such

as the perceiver's desire to be unbiased, or to appear without bias (Wheeler & Fiske, 2005; Amodio et al., 2003).

Tajfel's (Tajfel & Turner; 1979) Social Identity Theory (SIT) emphasizes that belonging to groups is a central part of human identity, as his line of research showed that people tend to favour those categorized as in-group members and feel more positive towards those people. Numerous studies demonstrate that the activation of a minimal group membership (minimal group paradigm) in the absence of any precipitating event produces in-group favouritism on a number of levels (Brewer & Silver, 1978), including visual perception and processing biases towards in-group (Ratner & Amodio, 2013). Therefore, beyond an evaluative preference for in-group (a feeling of 'liking') there is also a perceptual bias for in-group that increases the likelihood we will visually see members of in-group as physically different from members of out-group.

The concept of Social Identity helps describe how people may experience shared emotions that promote belonging to the group, both through bias for the in-group and bias against the out-group. The more salient the group membership, the more congruous with the group will be the emotional response (Mackie & Smith, 2004). Faces are an important source of information with which to categorize people into in-groups and outgroups, whereby, also categorizing the self. The individual's self-esteem can be so intricately tied to the group's status, intergroup bias may act to maintain the self-esteem of group members by distorting perception (Wilder & Simon, 2003). Using the minimal group paradigm, Amodio (2009) illustrated that prejudice (particularly, intergroup anxiety) can lead to implicit perception of in-group faces as having more positive physical and psychological attributes. Theories drawing on social identity suggest that in-group members may appear more physically appealing in order to reflect valence onto the individual's self-esteem.

Studies show preferential processing to in-group vs. outgroup faces at many levels, such as memory (Meissner & Brigham, 2001), and configural face processing (Hugenberg & Corneille, 2009; Michel, Rossion, Han, Chung, & Caldara, 2006). Findings using Caucasian and African faces have shown that infants as young as 3 months exhibit a bias towards looking at own race faces, moreover, this bias is a function of exposure to own and other race faces (Bar-Haim, Ziv, Lamy, & Hodes, 2006). The bias towards looking at own race faces was not evident in 3 month old infants who had intense cross race exposure. Exposure to other race faces may be stored in associative networks as non-threatening stimuli or sources of support, and thus will not initiate defensive reactivity in relation to the stimulus perception. Furthermore, a host of bottom up and top down processes, including facial cues, interracial contact and outgroup attitudes, have been implicated in the own race bias in memory for and recognition of faces (Meissner & Brigham, 2001,

Kawakami, Amodio, & Hugenberg, 2017; Hugenberg, & Corneille, 2009), providing overwhelming support for the motivational basis of face processing.

As mentioned earlier, face processing provides humans with a wealth of information about other people, and this process is efficient and often pre-conscious. Social judgements from faces are judgements that predict others' social attributes or social behavior. They are formed after a minimal time exposure (Bar-Haim et al., 2006; Willis & Todorov, 2006) and can be automatic (Engell, Haxby & Todorov, 2007). Despite their automaticity and low processing threshold requirements, social judgements from faces predict a variety of lofty social outcomes, such as sentencing decisions (Blair, Judd & Chapleau, 2004; Eberhardt et al., 2006) and electoral success (Ballew & Todorov, 2007; Little, Burriss, Jones, & Roberts, 2007).

Oosterhov & Todorov (2008) explored the social bases by which people evaluate faces and found that, on average, social judgements of other faces adhere to the following descriptors, Attractive, Intelligent, Responsible, Confident, Trustworthy, Caring, Stable, Sociable, Mean, Dominant, Aggressive, Unhappy, Weird, which are, subsequently, reduced to two functional dimensions - trustworthiness and dominance. Trustworthiness signals intention to harm (i.e. expressions inviting approach/avoidance) and dominance signals capacity to harm (i.e. features of physical strength). Oosterhov and Todorov (2008) found that social approximations of trustworthiness and dominance constitute two orthogonal dimensions, valence and dominance, that are sufficient to describe face evaluation. All other social judgements can be represented as a function of trustworthiness or dominance.

According to this view, when we encounter an emotionally neutral face, we make an efficient evaluation based on previous functionally adaptive inferences of harmful intentions and ability to cause harm. Whereas valence evaluation is more sensitive to features resembling expressions signaling whether the person should be avoided or approached (intentions), dominance evaluation is more sensitive to features signaling physical strength/weakness (ability to cause harm). Self-protection motives extend to in-group protection motives. Inferences of valence and dominance relate to the social group as well, so that social judgments, such as threat to social group, are also reproduced as a function of the two orthogonal dimensions of valence and dominance. Oosterhov and Todorov (2008) conclude that face evaluation involves an overgeneralization of adaptive mechanisms for inferring harmful intentions and the ability to cause harm and can account for rapid, yet not necessarily accurate, judgments from faces. Structural features of the face that merely resemble cues that have adaptive significance (e.g., emotional expressions) give rise to trait inferences about the person's intentions, and the person's ability to implement these intentions, respectively.

Despite the overwhelming commonalities between males and females of the human species in all aspects of functioning, the genders have also had different adaptive paths in their common evolution. Thus, the importance of analyzing effects of facial appearance by gender (of subjects and stimuli) is stressed, as gender is associated with how people perceive and judge facial appearance (Chiao, Bowman, & Gill, 2008). Findings indicate that males and females may respond to faces differently, and to faces of male and females differently, for a number of reasons (Chiao et al., 2008; Poutvaara, Jordahl, Berggren, 2009) biological and social. There is evidence that during judgements of trustworthiness male observers can be less influenced by visual information from the face than female observers (Stirrat & Perrett, 2010) and female observers seem to be faster and more accurate in the perception of facial trustworthiness than male observers (Dzhelyova, Perrett, & Jentzsch, 2012). This has been attributed to relative social impunity afforded to men, who may disregard cues of trustworthiness without the same kinds of repercussions as females (Stirrat & Perrett, 2010). In addition, findings indicate that for both female and male observers, male stimuli are judged as more untrustworthy than female stimuli (Wincenciak, Dzhelyova, Perrett & Barraclough, 2013).

Other findings relate judgements of facial appearance by gender to social outcomes, showing, for example that both gender of voter and gender of candidate affect the kinds of facial impressions that predict voting behavior. In particular, men are more likely to vote for attractive female candidates whereas women are more likely to vote for approachable male candidates (Poutvaara et al., 2009). These and other such findings underscore the impact of gender of both subject and object on evaluations of physical attributes that infer social outcomes.

The current study

The purpose of this study is twofold. Firstly, our descriptive goal is to gather normative data of the face picture stimuli on ethnic categorization and social face trait judgements so they can be reliably used in the next studies. Secondly, our theoretical goal is to examine whether face pictures fall into meaningful subtypes when facial characteristics, gender differences (of participants and stimuli), and ethnic categorization are taken into account. Specifically, judgements of social traits of the six face pictures have been collected from one separate sample and ethnic categorization of the six face pictures have been collected from another separate sample. Both samples are comparable on age and other demographic characteristics. In order to examine convergence of ethnic and face trait judgements, we compare the face trait judgements between pictures that have been previously categorized on the basis of ethnicity by one of the two independent samples. Our goals was to examine whether ethnic categorization of faces intersects with in-group favoritism to produce more positive and less negative judgements (Brewer & Silver, 1978; Mackie & Smith, 2004; Amodio,

2009). The samples were kept blind to avoid contamination of responding by, for example, use of the mechanism of social attribution for cognitive consistency or for social desirability purposes. In sum, this study was designed so that an independent sample first rated the pictures on ethnicity, and then, a second independent sample without knowledge of the ethnic categorization given to the pictures, rated them on face trait judgements. Scores on face trait judgements and dimensions were then compared between groups of pictures, based on the ethnic categorization given to them.

Hypotheses:

1. More positive face trait judgements/dimensions will converge with in-group ethnic categorization (Wilder & Simon, 2003; Amodio, 2009).
2. Sex of stimulus and gender of participants will be associated with face trait judgements and face trait dimensions (Chiao et al., 2008). Particularly, female pictures will be rated with more positive valence than males. Males will be rated with more dominance than females (Wincenciak et al., 2013). Females will rate all the pictures with more extreme scores on both valence and dominance than males (Dzhelyova et al., 2012).

Study 1. Ethnic Categorization of Face Picture Stimuli.

Method

Participants. 77 Greek Cypriot students at the University of Cyprus, aged 18 - 35yrs, (m = 20.68, SD = 2.87) who participated in the study for extra credit in their university courses. Of the entire sample, 61 students were female (77%). This sample was independent from those used in the next studies described in this chapter and in chapters 3-5. The study was approved by the Cyprus Bioethics Committee.

Measures and Materials

Stimuli: A set of six faces with neutral expression, from the Karolinska Directed Emotional Faces database (KDEF; Lundqvist et al., 1998), three male (KDEF codes BM03, BM12, BM24) and three female (KDEF codes AF03 AF17 AF20). Stimuli are presented in Figure 3.

Figure 3. Neutral face picture stimuli used in the study, chosen from the Karolinska Directed Emotional Database with original codes (KDEF; Lundqvist, Flykt & Ohmann, 1998)

The original KDEF database consists of a total of 490 JPEG pictures in color (72 X 72 dots per inch) showing 70 individuals (35 women and 35 men) displaying 7 different emotional expressions (Angry, Fearful, Disgusted, Sad, Happy, Surprised, and Neutral). All the individuals were trained amateur actors between 20 and 30 years of age, wearing no beards, moustaches, earrings, eyeglasses, and visible make-up. The material was developed in 1998 at the Karolinska Institute, Sweden. The KDEF facial picture database offers a valid set of affective stimuli, with idiosyncratic hit rates comparable to other validation studies (mean biased hit rate of 72%; the mean unbiased hit rate of .56 is comparable to or even better than that of other studies; good test retest results; Goeleven, Raedt, Leyman & Verschuere, 2008). However, cultural diversity was not included as a parameter and only Caucasian subjects were portrayed. Therefore, application in different cultural contexts and to cultural comparison studies is restricted. Due to the nature of this study explicitly situated in the context of Cyprus, we required faces that resembled Southern Europeans

convincingly enough so that participants believed them to be in-group/outgroup members (Greek Cypriot/Turkish Cypriot). Consequently, we selected the pictures that seemed to most closely resemble people from the Southern European region, aiming for an equal number of males and females. After reviewing the entire database we concluded that only three males and three females were similar enough to be categorized as Southern Europeans, and this decision was based on the researcher's personal judgement. Even though we would have liked to have used a larger number of picture stimuli, this was not possible, given the aforementioned restrictions.

Self-report measures. Participants were asked to categorize each face picture as either Greek Cypriot or Turkish Cypriot, using a forced choice method.

Apparatus. The task was presented over LimeWire survey software. Participants were given an on-line link to follow and were taken to the appropriate website for completion of task. Pictures were presented in counterbalanced randomized order.

Procedure. Participants completed the task remotely, through an online platform. No time limits were given. Relevant instructions were provided in written form. Particularly, subjects were instructed that they would see a set of six face pictures, three which depict Greek Cypriots and three which depict Turkish Cypriots. Participants viewed all pictures once, and viewed pictures a second time to categorize them. Participants categorized each stimulus (6) as either Turkish Cypriot or Greek Cypriot (2).

Design. Chi square goodness of fit tests were run to examine if the ethnic categorization given to each picture was random. Each face picture was treated as a categorical variable, in order to examine whether the ethnic categorization given to the picture (Greek Cypriot or Turkish Cypriot) was by chance (50/50).

In addition, a chi square test for independence (2 X 2) was conducted between subjects' sex (male/female) and PicEthnicity (GC/TC) to examine whether the sex of the respondent was associated with the ethnic categorization given to the picture. Again, each face picture was treated as a categorical variable, in order to examine whether the ethnic categorization given to each picture (Greek Cypriot or Turkish Cypriot) by males and females differed.

Finally, a non-parametric Mcnemar test for related samples was conducted between Stimuli Sex (male/female) and PicEthnicity (GC/TC) across all six pictures to examine whether the sex of the pictures was associated with the ethnic categorization given to the picture.

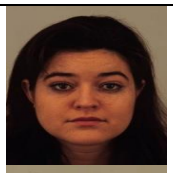
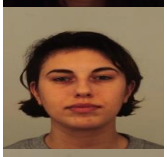
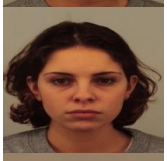
Data reduction. Frequencies and percentage rates for Ethnicity (Greek Cypriot or Turkish Cypriot) for each face picture were calculated (see Table 1). Chi square goodness of fit test statistics for each picture are reported (Table 2). Chi square test of independence statistics are reported for the ethnic

categorization for each picture and the sex of respondents (2 X 2). Assumption of expected frequencies greater than 5 were not violated. Mcnemar test statistics reported.

Results

Frequencies and percentage rates for Ethnicity (Greek Cypriot or Turkish Cypriot) for each face picture, and in total, are provided (see Table 1). In order of highest to lowest percentage assigned to the Greek Cypriot categorization, AF20 received 88%, BM03 received 68%, BM24 received 56%, BM12 received 45%, AF03 received 25% and finally, AF17 received 21%.

Table 1. Frequencies and Percentage Rates on Ethnic Categorization for Face Picture Stimuli (KDEF; Lundqvist, Flykt & Ohmann, 1998)

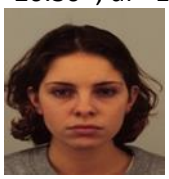
1	AF03		Percent	27%	73%	100%
			Frequency	21	56	77
2	AF17		Percent	21%	79%	100%
			Frequency	16	61	77
3	AF20		Percent	87%	13%	100%
			Frequency	67	10	77
4	BM03		Percent	66%	34%	100%
			Frequency	51	26	77
5	BM12		Percent	47%	53%	100%
			Frequency	36	41	77
6	BM24		Percent	56%	44%	100%
			Frequency	43	34	77
		Total	Percent	50.5/100%	49.5/100%	
			Frequency	234 (462)	228 (462)	

Chi square test goodness of fit results for each face picture.

BM03 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = 8.12, p < .05, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are not equally distributed between the sample for this picture; frequencies are statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n = 51) is disproportionately over-represented and the Turkish Cypriot categorization (n = 26) is disproportionately under-represented.
AF03 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = 15.91, p < .01, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are not equally distributed between the sample for this picture; frequencies are statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n = 21) is disproportionately under-represented and the Turkish Cypriot categorization (n = 56) is disproportionately over-represented.
AF17 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = 26.30, p < .01, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are not equally distributed between the sample for this picture; frequencies are statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n = 16) is disproportionately under-represented and the Turkish Cypriot categorization (n = 61) is disproportionately over-represented.
BM12 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = .33, p > .05, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are equally distributed between the sample for this picture; frequencies are not statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n =36) is proportionate to the Turkish Cypriot categorization (n = 41).
BM24 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = 1.05, p > .05, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are equally distributed between the sample for this picture; frequencies are not statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n =43) is proportionate to the Turkish Cypriot categorization (n = 34).
AF20 Ethnic Categorization: the statistical results, χ^2 (1, n = 77) = 42.20, p < .01, indicate that the frequencies of Greek Cypriot and Turkish Cypriot ratings are not equally distributed between the sample for this picture; frequencies are statistically different from what would be expected by chance. It appears that the Greek Cypriot categorization (n = 67) is disproportionately over-represented and the Turkish Cypriot categorization (n = 10) is disproportionately under-represented.
The goodness-of-fit results indicate ethnic categorization for all three of the pictures that depicted females, and only for one of the males, were not given by chance. It appears that AF20 and BM03 were significantly disproportionately categorized as Greek Cypriot, whereas AF17 and AF03 were significantly disproportionately categorized as Turkish Cypriot. Finally, BM24 and BM12 were

almost equally categorized as both, so that it appears ratings for these two pictures were given by chance (see Table 2).

Table 2. Results of goodness-of-fit tests for ethnic categorization of each face picture stimulus (KDEF; Lundqvist, Flykt & Ohmann, 1998)

KFED picture #			Ethnic Categorization	
			Greek Cypriot	Turkish Cypriot
AF03		Observed Freq.	21	56
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = 15.92^*$, df =1 (n = 77)				
AF17		Observed Freq.	16	61
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = 26.30^*$, df =1 (n = 77)				
AF20		Observed Freq.	67	10
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = 42.20^*$, df =1 (n = 77)				
BMO3		Observed Freq.	51	26
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = 8.12^*$, df =1 (n = 77)				
BM12		Observed Freq.	21	56
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = .33$, df =1 (n = 77)				
BM24		Observed Freq.	6	16
		Expected Freq. (prop.)	38.5(.5)	38.5(.5)
Note. $\chi 2 = 1.05$, df =1 (n = 77)				

Chi square test of independence results for each face picture (Subjects' sex X Picture Ethnic Categorization).

Subjects' Sex X BM12 Ethnic Categorization. There was a significant association between the ethnic categorization given to the picture and the sex of respondents, χ^2 (1, n = 77) = 9.52, p <.01. This seems to represent the fact that, based on the odds ratio, the odds of this picture being categorized as Greek Cypriot were 0.11 times higher by females than males.

Subjects' Sex X BM24 Ethnic Categorization. There was no significant association between the ethnic categorization given to picture and the sex of respondents, χ^2 (1, n = 77) = 0.52, p >.05. Subjects' Sex X AF03 Ethnic Categorization. There was no significant association between the ethnic categorization given to picture and the sex of respondents, χ^2 (1, n = 77) = 1.07, p >.05. Subjects' Sex X AF17 Ethnic Categorization. There was no significant association between the ethnic categorization given to picture and the sex of respondents, χ^2 (1, n = 77) = 1.35, p >.05. Subjects' Sex X AF20 Ethnic Categorization. There was no significant association between the ethnic categorization given to picture and the sex of respondents, χ^2 (1, n = 77) = 0.52, p >.05. Subjects' Sex X BM03 Ethnic Categorization. There was no significant association between the ethnic categorization given to picture and the sex of respondents, χ^2 (1, n = 77) = 0.69, p >.05.

Mcnemar test results for Stimuli Sex X Picture Ethnicity (2X2) across all pictures.

There was no significant association between the ethnic categorization given to pictures and the sex of the pictures in general, χ^2 (1, n = 462) = 0.20, p >.05.

Discussion

Results indicate that there are statistically significant groupings of pictures according to the ethnic categorization given to them. In order of highest to lowest percentage assigned to the Greek Cypriot categorization, AF20 received 88% and BM03 received 68%, and were significantly rated as Greek Cypriot. Somewhere in the middle, BM24 received 56% and BM12 received 45% and were significantly rated randomly by chance, that is, neither Greek Cypriot nor Turkish Cypriot. Finally, AF03 received 25% and AF17 received 21% and were significantly rated as Turkish Cypriot.

Regarding whether gender differences of respondents associated with ethnic categorization given to the pictures, results indicate that this occurred for only one picture, BM12, for which females tended to categorize as Greek Cypriot but males as Turkish Cypriot. Regarding whether sex differences of pictures (in general, that is, across the pictures) associated with ethnic categorization given to the pictures, results indicate no such relationship. Based on the results of the analyses of the ethnic categorization given to the pictures, and the ethnic categorization given to pictures in association with sex of stimuli and participants' gender differences, it seems as if four of the six pictures elicit differential categorization into either ethnic group, and this does not have to do with the sex of the pictures, nor with the gender of the respondents. In the case of the remaining two pictures, it seems as if they were randomly assigned to either ethnic category, so that they were predominantly rated in the middle of both categories – they could be both or neither. And, it is in the instance of one of these two pictures (BM12) where the sex of the respondents was significantly associated with the ethnic categorization given to the picture, as females tended to rate BM12 as an in-group member but males tended to rate him as an outgroup member.

Study 2. Face Trait Dimensions in Association with Ethnic Categorization, Sex of Stimuli and Gender of Participants.

Method

Participants. 355 Greek Cypriot students at the University of Cyprus, aged 18-27yrs, (m = 2.14, SD = 1.26) who participated in the study for extra credit in their university courses. 276 students were female (78%). This sample was independent from those used in the next studies described in this chapter and chapters 3-5. The study was approved by the Cyprus Bioethics Committee.

Measures and Materials

Stimuli: A set of six faces with neutral expression, from the Karolinska Directed Emotional Faces database (KDEF; Lundqvist et al., 1998), three male (KDEF codes BM03, BM12, BM24) and three female (KDEF codes AF03 AF17 AF20). Details on the selection process of the picture stimuli are described above in Study 1.

Self-report measures. Thirteen Social Face Trait Judgements. Measured on a scale of 1 (not at all) to 7 (extremely), face pictures were rated on how Attractive, Intelligent, Responsible, Confident, Trustworthy, Caring, Stable, Sociable, Mean, Dominant, Aggressive, Unhappy and Weird they appear to be (Oosterhof, & Todorov, 2008). When broken down, the thirteen face traits should adhere to two Face Trait Dimensions – Valence and Dominance. We conducted a Factor Analysis to confirm the 2-factor structure of the thirteen face trait dimensions. Comparison between our findings and original factor loadings are reported in Table 3. Results of principal components factor analysis on the thirteen social face traits and communalities are reported in Table 4.

Table 3.Results of principal components factor analysis on the thirteen social face traits and comparison with loadings from original study (Oosterhov & Todorov, 2008).

Trait dimension	Our study		Original study	
	Valence	Dominance	Valence	Dominance
Trustworthy	.90	.11	.94	-.06
Em.Stable	.90	.15	.93	.19
Responsible	.91	.14	.91	.11
Sociable	.86	.13	.91	.20
Caring	.87	.14	.90	-.29
Weird	-.35	.73	-.87	-.22
Attractve	.66	.10	.81	.32
Mean	-.23	.88	-.76	.55
Intelligent	.85	.16	.72	.13
Aggressive	-.27	.91	-.71	.66
Unhappy	-.29	.72	-.71	.01
Confident	.83	.20	.68	.65
Dominant	-.06	.87	-.24	.93
Explained Variance	47.4%	27.3%	63%	18.3%

The loadings represent the correlations of the trait judgements with the principal components

Table 4. Our results of principal components factor analysis on the thirteen social face traits and communalities

	Component		
	Valence	Dominance	Communalities
Trustworthy	.90	.11	.83
Em.Stable	.90	.15	.84
Responsible	.91	.14	.85
Sociable	.86	.13	.75
Caring	.87	.14	.81
Weird	-.35	.73	.65
Attractve	.66	.10	.45
Mean	-.23	.88	.82
Intelligent	.85	.16	.76
Aggressive	-.27	.91	.90
Unhappy	-.29	.72	.60
Confident	.83	.20	.72
Dominant	-.06	.87	.75
Explained Variance	47.35%	27.32%	

The loadings represent the correlations of the trait judgements with the principal components

On the valence dimension, the loadings and direction of values were as expected, that is, positive and negative loadings replicate the original entirely. This means that for valence, all the positive

face traits were judged as positive (pleasant) and all negative (unpleasant) face traits were indeed judged as negative by our sample, in line with the original. On the dimension of dominance, however, the picture is a little different. The face traits of 'weird, caring, trustworthy', which loaded onto dominance inversely in the original study, did not in our study. Despite this, caring and trustworthy received low factor loadings, even if they weren't inverse, and so will not be discussed further. The face traits that unexpectedly loaded onto dominance and thus should be noted are 'weird' and 'unhappy'. This is in stark contrast to the original findings, in which unhappiness was not associated with dominance but a moderate lack of weirdness was.

Overall, results of the factor analysis confirm that two distinct factors were underlying the face trait judgements and that these factors were highly internally consistent. Internal consistency for each of the factors, was examined using Cronbach's alpha. The alphas were high: .94 for Valence (8 items) and .91 for Dominance (5 items). Despite minor differences in factor loadings, the original factor structure proposed by Oosterhov and Todorov (2008) was retained. Composite scores were created for each of the two factors, based on the mean of the items which had their primary loadings on each factor. Descriptive statistics are presented in Table 5 in Results section.

Apparatus. The task was presented over LimeWire survey software. Participants were given an on-line link to follow and were taken to the appropriate website for completion of task. Faces were presented in a randomized order.

Procedure. Participants completed the task remotely via an online platform. No time limits were given. Relevant instructions were provided in written form. Participants rated each of the six face pictures (6° x 13°) on thirteen single item face traits of – (1)Attractive, (2)Intelligent, (3)Responsible, (4)Confident, (5)Trustworthy, (6)Caring, (7)Stable, (8)Sociable, (9)Mean, (10)Dominant, (11)Aggressive, (12)Unhappy and (13)Weird on a scale of 1 (not at all) to 7 (extremely).

Design.

Effect of picture on face trait judgements: to check if different pictures had an effect on face trait category ratings (within subjects), we conducted thirteen GLM repeated measures one - way ANOVAs, one for each face trait. Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean face trait judgment for each picture as the dependent variable (1 face trait dimension X 6 pictures). We also analysed differences between pictures on face trait dimensions.

Effect of participant's gender on face trait judgements: To check differences in face trait judgements by subjects' gender across pictures, we conducted a GLM two-way multivariate analysis of variance (MANOVA) in which we entered subjects' gender as an independent variable

and total scores of the thirteen face traits across pictures (2 X 13) as dependent variables. Subsequently, we conducted post hoc GLM two-way multivariate analysis of variance (MANOVA) for each face picture separately. We entered subjects' gender as an independent variable and all the face trait dimensions (13) as dependent variables (2 X13) for each of the face pictures. We conducted six two way MANOVA's, one for each face picture.

Effect of stimulus sex and participant's gender on face trait dimensions: to check if the sex of the stimulus (male/female) itself as well as participants' gender had an effect on face trait dimensions, we conducted a GLM repeated measures 2-way mixed ANOVA, with 1 within group factor (stimulus sex) and one between group factor (participants sex). For the within subjects factor we used a composite variable for valence and a composite variable created for dominance (face trait dimensions) by combining scores of the three same sex pictures and computing their mean, whereby creating four new variables – one that indexes valence for male pictures and one that indexes valence for female pictures, one that indexes dominance for male pictures and one that indexes dominance for female pictures. We ran two analyses, one for each face trait dimension examined (valence and dominance). Beyond checking for a main effect of stimulus sex and participants gender, we were also interested in examining interactions between the two on the dependent variables.

To check the differences on face trait dimensions between the three ethnic categories of pictures (ascertained in Study 1, as described previously) we created three composite variables indexing each ethnic categorization. Data ascertained from the previous study (described above) indicated that two face pictures (AF20 & BM03) were categorized as Greek Cypriot, two (AF03 & AF17) as Turkish Cypriot and two (BM12 & BM24) as Random/Control. We created a mean score indexing each category and conducted GLM two –way multivariate analyses of variance (MANOVA) to check for differences on each of the face traits (13) and each of the two face trait dimensions (valence & dominance) between ethnic categorizations (3 groups) given to pictures.

Data reduction. Means for each face trait were calculated. Attractive, Intelligent, Responsible, Confident, Trustworthy, Caring, Stable, Sociable, Mean, Dominant, Aggressive, Unhappy and Weird. Participant responses to each face were examined for outliers within each face trait category. Ratings lower or higher than 2.5 standard deviations below or above the mean were considered outliers. No outlier ratings were found for any stimulus category. Where sphericity was violated, the Greenhouse-Geisser correction was applied.

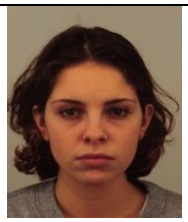
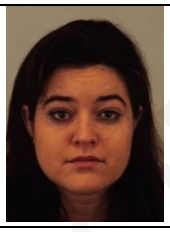
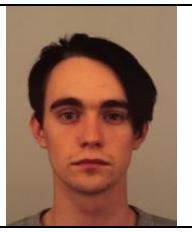
Results

GLM one-way repeated measures ANOVAs of face trait ratings for pictures.

To check if participants rated pictures differently on each face trait category (within subjects), repeated measures ANOVAs were conducted. Results indicate differences between pictures on all face trait ratings ($p < .05$). In Table 5 mean ratings (and SD's) for each face trait judgement are presented.

Table 5.Social Face Trait Judgements and Social Face Trait Dimension Ratings (means and standard deviations) of neutral face picture stimuli (KDEF; Lundqvist, Flykt & Ohmann, 1998).

Note. Face Traits (Oosterhov & Todorov, 2008) rated on Likert Scale of 1 (not at all) to 7 (extremely).

												
	AF17		AF20		AF03		BM03		BM12		BM24	
Face Traits	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
1. Attractive	2.08	1.07	3.36	1.37	2.31	1.10	1.68	.97	2.71	1.31	2.26	1.21
2. Intelligent	3.26	1.25	3.71	1.10	3.51	1.10	3.19	1.30	3.38	1.16	3.63	1.34
3. Responsible	3.19	1.21	3.53	1.15	3.93	1.26	2.80	1.22	3.17	1.16	3.43	1.25
4. Confident	3.23	1.39	3.64	1.25	2.70	1.26	2.96	1.34	3.62	1.34	3.15	1.27
5.Trustworthy	3.07	1.25	3.26	1.19	3.72	1.39	2.72	1.22	3.13	1.14	3.25	1.18
6. Caring	3.27	1.21	3.32	1.24	4.12	1.43	2.95	1.25	3.17	1.11	3.32	1.18
7. Stable	3.23	1.22	3.44	1.20	3.81	1.35	3.00	1.25	3.21	1.18	3.30	1.22
8. Sociable	3.28	1.34	3.39	1.28	3.18	1.30	2.91	1.24	3.61	1.36	3.37	1.32
9. Mean	2.39	1.28	2.58	1.48	1.98	1.18	2.52	1.39	2.18	1.12	1.93	1.12
10. Dominant	2.75	1.50	2.95	1.61	2.26	1.37	2.88	1.49	2.45	1.22	2.15	1.25
11. Aggressive	2.67	1.43	2.89	1.68	2.09	1.31	2.97	1.57	2.25	1.18	1.97	1.17
12. Unhappy	3.10	1.43	3.01	1.53	3.81	1.57	3.12	1.50	2.61	1.39	2.85	1.46
13. Weird	3.23	1.66	2.82	1.66	3.07	1.67	3.40	1.68	2.76	1.58	2.78	1.58
	AF17		AF20		AF03		BM03		BM12		BM24	
Face Trait Dimensions	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Valence	3.07	.93	3.45	.95	3.40	.91	2.77	.93	3.24	.94	3.21	.96
Dominance	2.83	1.10	2.86	1.29	2.65	1.00	2.98	1.24	2.45	.99	2.34	1.05

Attractiveness

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean attractiveness as the dependent variable. Picture showed a significant main effect on ratings

Attractiveness

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean attractiveness as the dependent variable. Picture showed a significant main effect on ratings of attractiveness, $F (4.30, 1377.37) = 152.14$, $p<.001$, $\eta^2=.30$.

Post hoc pairwise comparisons showed significant differences on attractiveness between all pictures, except Pictures AF03 and BM24. Particularly, Picture BMO3 was rated the least attractive ($m = 1.68$, $SD = 97$) in comparison to all other pictures ($p>.001$), and Picture AF20 ($m = 3.36$, $SD = 1.37$) was rated the most attractive to all other pictures ($p>.001$). Picture AF17 was rated second least attractive ($m = 2.08$, $SD = 1.07$) in comparison to all other pictures ($p<.001$). Picture BM12 was rated second most attractive ($m = 2.71$, $SD = 1.31$) in comparison to all other pictures ($p<.001$). And finally, in the middle of the pack are Pictures AF03 ($m = 2.31$, $SD = 1.10$) and BM24 ($m = 2.26$, $SD= 1.21$), which differed to the rest but not each other

Intelligence

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean intelligence as the dependent variable. Picture showed a significant main effect on ratings of intelligence, $F (4.77, 1686.97) = 16.27$, $p<.001$, $\eta^2=.04$.

Post hoc pairwise comparisons showed picture AF20 was rated the most intelligent, significantly more intelligent ($m=3.71$, $SD = 1.10$) than the rest of the pictures except picture BM24 ($m = 3.63$, $SD = 1.34$). The lowest rating on intelligence was given to picture BM03 ($m = 3.18$, $SD = 1.30$), significantly lower than the rest, except picture AF17 ($m = 3.26$, $SD = 1.25$). BM24 was rated second most intelligent ($m = 3.63$, $SD = 1.34$), and did not differ from AF20 or AF03 ($m = 3.51$, $SD = 1.10$), which was rated the third most intelligent. Closer to the bottom, AF17 was rated second least intelligent, and did not differ from BM03 or BM12 ($m = 3.38$, $SD = 1.16$).

Responsible

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean responsible as the dependent variable. Picture showed a significant main effect on ratings of responsibility, $F (4.81, 1703.11) = 51.62$, $p<.001$, $\eta^2=.13$.

AF03 was rated most responsible ($m = 3.93$, $SD = 1.26$) in comparison to all other pictures, whereas BM03 was rated least responsible ($m = 2.79$, $SD = 1.22$) in comparison to all other pictures. AF20 was rated the second most responsible ($m = 3.53$, $SD = 1.15$) and differed to all except BM24, which was rated the third most responsible ($m = 3.43$, $SD = 1.25$). AF17 ($m = 3.19$, $SD = 1.21$) and

BM12 (m = 3.16, SD = 1.16) were rated amongst the least responsible, and differed to all the pictures except each other.

Confident

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean confident as the dependent variable.

Picture showed a significant main effect on ratings of confidence, F (4.77, 1770) = 38.42, p<.001, η^2=.10. AF03 was rated least confident (m = 2.70, SD = 1.26) in comparison to all other pictures. AF20 (m = 3.64, SD = 1.25) and BM12 (m = 3.62, SD = 1.34) were rated most confident in comparison to all other pictures, but not each other. BM03 (m = 2.96, SD = 1.34) and BM24 (m = 3.16, SD = 1.27) were rated amongst the least confident and differed to all the pictures except each other. Finally, AF17 was in the middle, (m = 3.23, SD = 1.39) and differed to all except BM24.

Trustworthy

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean trustworthiness as the dependent variable.

Picture showed a significant main effect on ratings of trustworthiness F (4.70, 1770) = 36.58, p<.001, η^2=.09. AF03 was rated most trustworthy (m = 3.72, SD = 1.39) in comparison to all other pictures, and BM03 (m = 2.72, SD = 1.22) the least trustworthy compared to all other pictures. All other pairwise comparisons were insignificant.

Caring

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean caring as the dependent variable.

Picture showed a significant main effect on ratings of caring F (4.76, 1683) = 54.91, p<.001, η^2=.13. AF03 was rated the most caring (m = 4.12, SD = 1.43) in comparison to all other pictures, and BM03 was rated the least caring (m = 2.95, SD = 1.25) in comparison to all other pictures. All other pairwise comparisons were insignificant.

Stable

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean stable as the dependent variable.

Picture showed a significant main effect on ratings of stability, F (4.76, 1684.96) = 25.17, p<.001, η^2=.06. AF03 was rated the most stable (m = 3.81, SD = 1.35) in comparison to all other pictures (p<.001), and BM03 was rated the least stable (m = 3.00, SD = 1.25) in comparison to all other pictures (p<.001). All other pairwise comparisons were insignificant, except between AF20 (m = 3.44, SD = 1.20) and BM12 (m = 3.21, SD = 1.18), AF20 being the second most stable and BM12 the second least stable (p<.001).

Sociable

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean sociable as the dependent variable.

Picture showed a significant main effect on ratings of sociability F (4.84, 1713.04) = 17.09, p<.001, η^2=.05. BM12 was rated the most sociable (m = 3.61, SD = 1.36) in comparison to all other pictures (p<.001). BM03 was rated the least sociable (m = 2.91, SD = 1.24) in comparison to all other pictures (p<.001). All other pairwise comparisons were insignificant.

Mean

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and the mean of mean as the dependent variable.

Picture showed a significant main effect on ratings of meanness F (4.58, 1623.18) = 25.32, p<.001, η^2=.07. AF20 was rated the most mean (m = 2.57, SD = 1.48) along with BM03 in second (m = 2.52, SD = 1.39), and AF17 in third place (m = 2.39, SD = 1.28) in comparison to all other pictures but not each other (p<.001). BM24 was rated the least mean (m = 1.93, SD = 1.12), with AF03 rated as second least mean (m = 1.98, SD = 1.18) in comparison to all other pictures but not each other. BM12 was third least mean (m = 2.18, SD = 1.12) and differed significantly from all the rest of the pictures except AF03.

Dominant

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean dominant as the dependent variable.

Picture showed a significant main effect on ratings of dominance F (4.66, 1649.47) = 27.80, p<.001, η^2=.07. AF20 was the highest (m = 2.96, SD = 1.61) followed by BM03 (m = 2.87, SD = 1.49) and then AF17 (m = 2.75, SD = 1.50), these pictures were highest in dominance than the other pictures (p>.001) but did not differ to each other. At the lowest end in dominance rating are BM24 (m = 2.15, SD = 1.25), then AF03 (m = 2.26, SD = 1.37), these pictures were lowest in dominance than the other pictures (p>.001) but did not differ to each other. Finally BM12 was in the middle (m = 2.45, SD = 1.22), and differed significantly from all pictures except AF03.

Aggressive

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean aggressive as the dependent variable.

Picture showed a significant main effect on ratings of aggression F (4.55, 1610.52) = 45.86, p<.001, η^2=.12. BM03 was the highest (m = 2.97, SD = 1.57) followed by AF20 (m = 2.89, SD = 1.68), these pictures were rated highest in aggression than the other pictures (p>.001) but did not differ to each other. At the lowest end in aggression rating are BM24 (m = 1.96, SD = 1.17), then AF03 (m =

2.09, SD = 1.31), these pictures were lowest in aggression than the other pictures (p>.001) but did not differ to each other. Finally, AF17 was rated third most aggressive (m = 2.67, SD = 1.43), and differed significantly from all pictures except AF20. And BM12 was rated third least aggressive (m = 2.25, SD = 1.18), and differed to all except AF03 (p<.001).

Unhappy

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean unhappy as the dependent variable.

Picture showed a significant main effect on ratings of unhappiness F (4.55, 1610.52) = 45.86, p<.001, η^2=.12. AF03 was rated the most unhappy (m = 3.81, SD = 1.57) in comparison to all other pictures (p<.001), and BM12 was rated the least unhappy (m = 2.61, SD = 1.39) in comparison to all pictures except BM24. BM24 was second least unhappy (m = 2.85, SD = 1.46) along with AF20 (m = 3.01, SD = 1.53) and AF17 (m = 3.10, SD = 1.43) in comparison to rest of the pictures (p>.001) but did not differ to each other. Finally, BM03 is in the middle (m = 3.12, SD = 1.50), and differed significantly from all pictures except Pictures 2 and 3 (p<.001).

Weird

Face pictures were entered (six in total) as levels of the independent variable (face pictures) and mean weird as the dependent variable.

Picture showed a significant main effect on ratings of weirdness F (4.55, 1610.52) = 45.86, p<.001, η^2=.12. BM03 was rated the most weird (m = 3.40, SD = 1.68) in comparison to all other pictures (p<.001) except AF17. AF17 was rated the second most weird (m = 3.23, SD = 1.66) followed by AF03 (m = 3.10, SD = 1.67), with no significant difference between each other. AF03, rated third most weird, differed to all the pictures except AF17 and AF20 (p<.001). On the other end, BM12 (m = 2.76, SD = 1.58), BM24 (m = 2.77, SD = 1.58) and AF20 (m = 2.82, SD = 1.66) rated lowest in weirdness in comparison to the rest but did not differ to each other. (p<.001).

Participants' gender X face traits: We conducted a GLM two-way multivariate analysis of variance (MANOVA) in which we entered participants' gender as an independent variable and all the face trait (13) scores totaled across the six face pictures as dependent variables (2 X13).

A significant Box's *M* test (p = .01) indicates lack of homogeneity of covariance matrices of the dependent variable across the sexes. Levene's test for each dependent variable separately, however, indicates homogeneity of variance (p>.05) for most of the face traits. There were three exceptions, with Levene's test indicating violations of homogeneity of variance in the ratings of 'mean' (p = .01), 'dominant' (p = .01) and 'aggressive' (p = .05). With these three face traits we used an alpha level stricter than .05 (.001) when evaluating univariate ANOVAs (Allen & Bennett, 2008). Pillai's Trace is reported.

The multivariate effect was significant by participants' gender, F (13,340) = 2.59, p <.01, η^2 = .09. Univariate tests showed that there were significant differences between males and females on two out of the thirteen face trait judgements. Males and females differed on the face trait judgement of 'mean', F (1, 352) = 8.60, p = .004, η^2 = .02, and the face trait judgement of 'dominant', F (1, 352) = 7.43, p = .007, η^2 = .02, across pictures. Given that the unequal sample sizes between males and females inhibits assumptions of homogeneity of variance across samples, these results should be interpreted with caution, as the stricter alpha criterion of .001 has not been met. Females generally rated the pictures as less 'mean' (m = 13.18, SD = 4.76, p<.01) than males (m = 15.06, SD = 6.00, p <.01), and as less 'dominant' (m = 15.05, SD = 5.06, p <.01) than males.

In order to examine whether this effect carried over to all six of the face pictures, we conducted post hoc GLM two-way multivariate analysis of variance (MANOVA) for each face picture. We entered subjects' gender as an independent variable and all the face trait dimensions (13) as dependent variables (2 X13) for each of the face pictures. We conducted six two way MANOVA's, one for each face picture.

Participants' gender X Picture AF03. The multivariate effect was significant by sex, F (13,340) = 2.23, p <.01, η^2 = .08. Univariate tests showed that there were significant differences between males and females on only two out of the thirteen face trait judgements. Males and females differed on the face trait judgement of 'attractiveness', F (1, 352) = 8.69, p = <.01, η^2 = .02, and the face trait judgement of 'mean', F (1, 352) = 5.24, p = <.05, η^2 = .02 for this picture. Females generally rated the picture as less 'mean' (m = 1.91, SD = 1.31 than males (m = 2.25, SD = 1.33), and more 'attractive' (m = 2.39, SD = 1.10) than males (m = 1.99, SD = .99).

Participants' gender X Picture AF17.The multivariate effect was not significant by sex, F (13,340) = .97, p >.05, η^2 = .04.

Participants' gender X Picture AF20.The multivariate effect was not significant by sex, F (13,340) = 1.59, p >.05, η^2 = .06.

Participants' gender X Picture BM03. The multivariate effect was not significant by sex, F (13,340) = 1.39, p >.05, η^2 = .05.

Participants' gender X Picture BM12. The multivariate effect was significant by sex, F (13,340) = 2.53, p <.01, η^2 = .08. Univariate tests showed that there were significant differences between males and females on five out of the thirteen face trait judgements. Males and females differed on the face trait judgement of 'attractiveness', F (1, 352) = 5.180, p = <.05, η^2 = .02. Females generally rated the picture as more 'attractive' (m = 2.78, SD = 1.29) than males (m = 2.41, SD = 1.31). Males and females differed on the face trait judgement of 'mean', F (1, 352) = 18.22, p = <.001, η^2 = .05 for this picture. Females generally rated the picture as less 'mean' (m = 2.05, SD = 1.01 than males (m

= 265, SD = 1.35). Males and females differed on the face trait judgement of 'dominant', F (1, 352) = 8.67, p = <.01, η^2 = .02 for this picture. Females generally rated the picture as less 'dominant' (m = 2.36, SD = 1.16 than males (m = 2.81, SD = 1.36). Males and females differed on the face trait judgement of 'aggressive', F (1, 352) = 7.03, p = <.01, η^2 = .02 for this picture. Females generally rated the picture as less 'aggressive' (m = 2.16, SD = 1.13) than males (m = 2.56, SD = 1.32). And finally, males and females differed on the face trait judgement of 'weird', F (1, 352) = 5.39, p = <.05, η^2 = .02 for this picture. Females generally rated the picture as less 'weird' (m = 2.66, SD = 1.52) than males (m = 3.13, SD = 1.73).

Participants' gender X Picture BM24. The multivariate effect was significant by sex, F (13,340) = 1.90, p <.05, η^2 = .07. Univariate tests showed that there were significant differences between males and females on three out of the thirteen face trait judgements. Males and females differed on the face trait judgement of 'mean', F (1, 352) = 4.93, p = <.05, η^2 = .01 for this picture. Females generally rated the picture as less 'mean' (m = 1.86, SD = 1.01) than males (m = 2.18, SD = 1.40). Males and females differed on the face trait judgement of 'dominant', F (1, 352) = 8.85, p = <.01, η^2 = .02 for this picture. Females generally rated the picture as less 'dominant' (m = 2.05, SD = 1.16) than males (m = 2.52, SD = 1.45). Males and females differed on the face trait judgement of 'aggressive', F (1, 352) = 5.76, p = <.05, η^2 = .02 for this picture. Females generally rated the picture as less 'aggressive' (m = 1.90, SD = 1.07) than males (m = 2.25, SD = 1.42).

Participants' gender X Stimulus Sex: A mixed model factorial design 2 X 2 with picture sex (male/female) as within variables, and participants' sex as a between subject variable. We summed up responses on valence to the female pictures and computed a mean variable, and did the same for the male pictures. We entered these variables as two levels of the within group independent factor (stimulus sex) and entered participants' sex as the between group factor. We conducted two separate analyses, one for the dependent variable of valence and one for the dependent variable of dominance.

Valence

Between subjects effect: No significant effect of participants' gender was found, F (1, 352) =.00, p =.97.

Effects of stimuli sex: Sex of stimulus showed a significant effect, F (1, 352) = 50.11, p= <.01, η^2 =.13. Post hoc tests revealed that both male and female participants judged female faces as having more positive traits (m = 3.31, SD = .74) than male faces (m = 3.07, SD = .78)

Interaction stimuli sex X participants' gender: no significant interaction between sex of stimuli and participants' gender was found, F (1, 352) = 3.67, p=.06, η^2 =.01.

Dominance

Between subjects effect: No significant effect of participants' gender was found, F (1, 352) = 3.25, p =.07.

Effects of stimuli sex: Sex of stimulus showed a significant effect, F (1, 352) = 6.75, p= <.01, η^2 =.02. Post hoc tests revealed female faces were judged as more dominant (m = 2.78, SD = .87) than male faces (m = 2.59, SD = .92) regardless of respondent's gender. Furthermore, a significant interaction between stimulus sex and participants' gender was found, F (1, 352) = 8.20, p <.01, η^2 =.02. However, a closer inspection shows that this result is inflated by the large differential in responding by females, who judged male and female faces quite differently, whereas men did not judge dominance of male and female faces differently. In fact, men actually judged the male faces with more dominance (m = 2.84, SD 1.08) than female faces (m = 2.83, SD = .95) but this difference was not statistically significant (t = .41, df= 78, p = .89), and was confounded by the fact that women judged male faces with far less dominance than men (m = 2.52, SD = .85) but judged female faces similarly to men (m = 2.77, SD = .86).

GLM one-way multivariate analyses of variance (MANOVA) to check for differences on each of the face traits (13) and each of the two face trait dimensions (valence & dominance) between ethnic categorizations (3) given to pictures.

Findings show differences between ethnic categorizations on all face trait judgements and all face trait dimensions. In Figure 4 face trait dimensions by ethnicity categorization are presented.

Ethnic Categorization X Attractiveness. The multivariate effect was significant by ethnic categorization, F (3,351) = 980.31, p <.001, η^2 = .89. Univariate tests showed that there were significant differences between the three ethnic categorizations on attractiveness.

Ethnic Categorization X Intelligence. The multivariate effect was significant by ethnic categorization, F (3,351) = 2075.75, p <.001, η^2 = .95. Univariate tests showed that there were significant differences between the three ethnic categorizations on intelligence.

Ethnic Categorization X Responsible. The multivariate effect was significant by ethnic categorization, F (3,351) = 2188.38, p <.001, η^2 = .95. Univariate tests showed that there were significant differences between the three ethnic categorizations on responsibility.

Ethnic Categorization X Confident. The multivariate effect was significant by ethnic categorization, F (3,351) = 1822.21, p <.001, η^2 = .94. Univariate tests showed that there were significant differences between the three ethnic categorizations on confidence.

Ethnic Categorization X Trustworthy. The multivariate effect was significant by ethnic categorization, F (3,351) = 1871.81, p <.001, η^2 = .94. Univariate tests showed that there were significant differences between the three ethnic categorizations on trustworthiness

Ethnic Categorization X Caring. The multivariate effect was significant by ethnic categorization, $F(3,351) = 2015.24$, $p < .001$, $\eta^2 = .95$. Univariate tests showed that there were significant differences between the three ethnic categorizations on caring.

Ethnic Categorization X Stable. The multivariate effect was significant by ethnic categorization, $F(3,351) = 2048.92$, $p < .001$, $\eta^2 = .95$. Univariate tests showed that there were significant differences between the three ethnic categorizations on stability.

Ethnic Categorization X Sociable. The multivariate effect was significant by ethnic categorization, $F(3,351) = 1728.72$, $p < .001$, $\eta^2 = .94$. Univariate tests showed that there were significant differences between the three ethnic categorizations on sociability.

Ethnic Categorization X Mean. The multivariate effect was significant by ethnic categorization, $F(3,351) = 839.69$, $p < .001$, $\eta^2 = .88$. Univariate tests showed that there were significant differences between the three ethnic categorizations on meanness.

Ethnic Categorization X Dominant. The multivariate effect was significant by ethnic categorization, $F(3,351) = 969.78$, $p < .001$, $\eta^2 = .89$. Univariate tests showed that there were significant differences between the three ethnic categorizations on dominance.

Ethnic Categorization X Aggressive. The multivariate effect was significant by ethnic categorization, $F(3,351) = 934.64$, $p < .001$, $\eta^2 = .89$. Univariate tests showed that there were significant differences between the three ethnic categorizations on aggression.

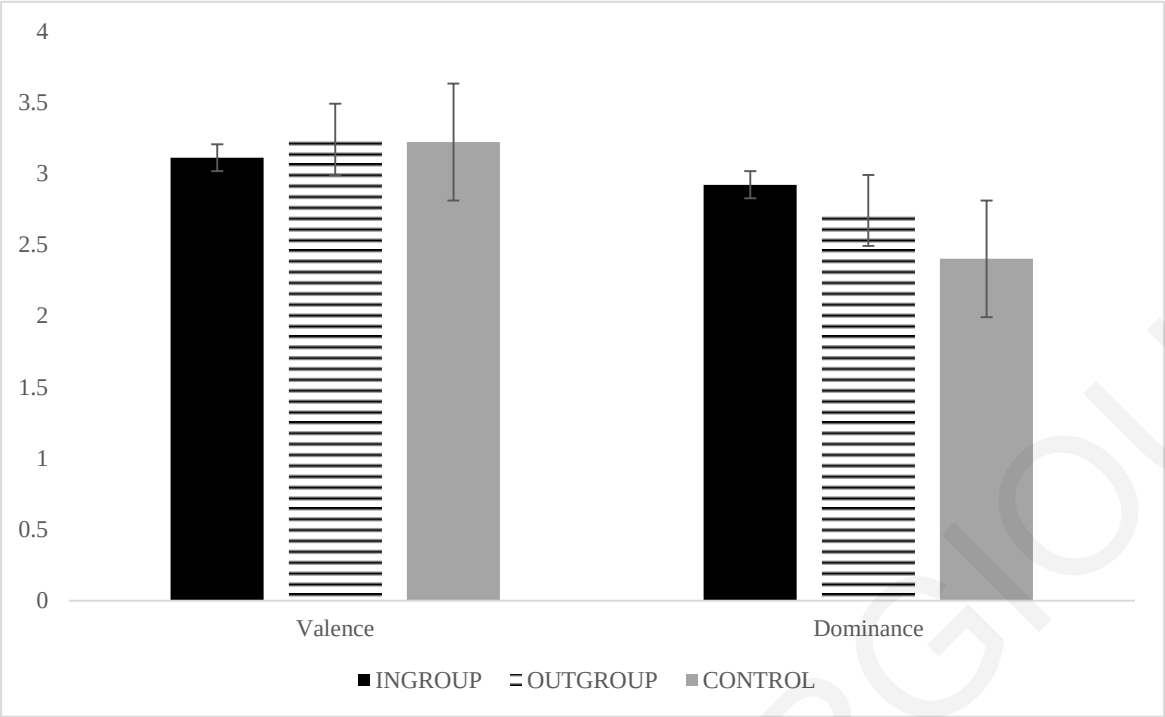
Ethnic Categorization X Unhappy. The multivariate effect was significant by ethnic categorization, $F(3,351) = 1102.65$, $p < .001$, $\eta^2 = .90$. Univariate tests showed that there were significant differences between the three ethnic categorizations on unhappiness.

Ethnic Categorization X Weird. The multivariate effect was significant by ethnic categorization, $F(3,351) = 736.68$, $p < .001$, $\eta^2 = .86$. Univariate tests showed that there were significant differences between the three ethnic categorizations on weirdness.

Ethnic Categorization X Valence Dimension. The multivariate effect was significant by ethnic categorization, $F(3,351) = 2475.25$, $p < .001$, $\eta^2 = .96$. Univariate tests showed that there were significant differences between the three ethnic categorizations on valence.

Ethnic Categorization X Dominance Dimension. The multivariate effect was significant by ethnic categorization, $F(3,351) = 1311.14$, $p < .001$, $\eta^2 = .92$. Univariate tests showed that there were significant differences between the three ethnic categorizations on dominance.

Figure 4. Means of face trait dimensions for each ethnic categorization of pictures.



General Discussion

In regards the ethnic categorization (Study 1) results indicate that the face pictures categorized into in-group or outgroup did not receive this designation randomly, rather, something about the otherwise emotionally neutral faces cued information to the respondents about their ethnicity, and this impacted their decisions. Most of the pictures (four of six) elicited differential categorization into either ethnic group, rather than random categorization. Moreover, this did not have to do with the sex of the pictures, nor with the gender of the respondents. These pictures were clearly classified into either in-group or outgroup, regardless of stimulus' sex or participants' gender. These findings support that mere categorization of faces may activate schemas related to ethnic category (Phelps & Thomas, 2003).

In the case of the remaining two pictures, it seems as if they were randomly assigned to either ethnic category, so that they were predominantly rated in the middle of both categories – they could be both or neither. And, it is in the instance of one of these two pictures where the sex of the respondents was significantly associated with the ethnic categorization given to the picture, as females tended to rate this picture (BM12) as an in-group member but males tended to rate him as an outgroup member. This, however, was not dependent on the picture depicting a male but on the respondents' gender. Perhaps in the case of uncertainty, females were relying on other kinds of information to make the classification – information to do with their experiences as females. And the same may be true of males. Reminiscent of previous findings wherein both gender of voter and

gender of candidate affected facial impressions (Poutvaara et al., 2009) BM12 was rated as more attractive and less aggressive by women than men.

In terms of face trait judgements, initially, our analyses showed that participants generally judged the six face pictures differently on all of the face traits. However, the gender of participants was only associated with the face trait ratings of 'mean', 'dominant' and 'aggressive', with women giving less negative evaluations than men on all the aforementioned traits across pictures. There were no differences between the genders on the rest of the face trait judgements across pictures.

When comparing responses to individual pictures, participants' gender differences were significant for three of the six pictures, particularly AF03, BM12, and BM24. Men and women rated all three of these pictures differently on 'meanness', with women consistently rating them as less mean. The other most common difference between males and females were for 'attractiveness', with women rating AF03 and BM12 as more attractive than men, and for both 'aggression' and 'dominance', with women rating BM12 and BM24 less negatively on both traits. The pattern that emerged from these analyses is that the different face pictures elicit differential judgements on social face traits, and that some judgements for some pictures were related to gender differences of participants, but the majority of face trait judgements were not associated with gender of participants. These findings support evidence that gender of participants may impact responding (Chiao et al., 2008).

When gender of participants was associated with different face trait judgements, the consistent pattern of females rating (male and female) pictures as more attractive and less mean, dominant, aggressive and weird was apparent. It seemed that where gender differences applied, women were rating the pictures with more valence and less dominance, regardless of whether they were depicting males or females. Therefore, we further checked whether the gender of participants' interacts with the sex of the stimulus to produce different ratings on just the two face trait dimensions (valence and dominance), but this was not the case.

Since we found no interaction between the sex of the stimulus and gender of participants on judgements of valence, the idea that both male and female participants judged female faces with more positive valence was confirmed. This indicates that all respondents attributed female faces with more positive social face traits, providing support for the idea that the sex of stimulus alone seemed to exercise effects in the direction we predicted. These results support previous findings wherein male stimuli were judged as more untrustworthy than female stimuli (Wincenciak et al., 2013).

In terms of dominance, we did find an interaction effect. Our results indicated that men judged female and male pictures as being the same on dominance, whereas women judged female

and male pictures as being different on dominance. In fact, women judged the female faces significantly more dominant than the male faces. Moreover, women judged male faces with far less dominance than men did. Therefore, the sex of the stimulus seemed to impact face trait dimension ratings for women, not for men, partially supporting our predictions. These findings echo previous data supporting the idea that men may not use visual information from the face for social judgements as much or as efficiently as women (Stirrat & Perrett, 2010; Dzhelyova et al., 2012).

Regarding the juxtaposition of ethnic categorization and face trait judgements, our findings show differences between the three ethnic categorizations of pictures (ingroup vs. outgroup vs. neither/both; Greek Cypriot vs. Turkish Cypriot vs. neither/both) on all face traits judgements and all face trait dimensions. However, the differences were in the opposite direction that we predicted. Regarding social face trait dimensions, the in-group was judged with significantly less positive valence than the other groups, which did not differ between them on valence. In addition, the in-group was judged significantly higher on dominance, followed by outgroup, followed by the control group. These findings seem contrary to our hypothesis, as they do not support the idea that more positive face trait dimensions would be associated with faces previously categorized as in-group, although dominance itself can potentially be a positive attribute. Dominance may reference power, leadership and physical ability, however, in the context of face trait dimensions, valence must also be accounted for (Oosterhov & Todorov, 2008). It is imperative to interpret both together as all social judgments can be represented on these two orthogonal dimensions - valence signaling intentions and dominance signaling ability to cause harm. Thus, our finding of negative valence and high dominance to ingroup pictures likely signals avoidance, suggesting that ingroup members were perceived more negatively than the other pictures.

Above we have discussed our findings in relation to the two dimensions of valence and dominance, which, according to Oosterhov & Todorov, adequately represent all other possible face trait judgements. However, to ascertain a clearer idea of what was going on in light of our puzzling findings, we took a closer look at social face trait judgements, over and above the dimensions, which provided a more complicated picture. Our results indicate that the ingroup was rated as the most attractive group of the three, as well as, more intelligent and confident than the outgroup, while at the same time, the ingroup was rated less unhappy and weird than the outgroup. Therefore, certain face trait judgements in association with ethnicity were actually in the predicted direction, but on average over the thirteen face trait judgements, this was not overwhelmingly the case. The pattern of findings we obtained give a mixed picture, with positive and negative social attributes spread out over all three ethnic category groupings on the one hand, but on the other hand, social trait dimensions were negatively associated with one group – those categorized as ingroup.

However it is important to note that our findings on the association between the categorization given to the pictures on ethnicity and the judgements given to the face pictures on social face traits should be interpreted with caution due to the gender disparity in groupings of pictures. Despite being discussed earlier, we reiterate that female faces were judged with more valence, and given that two pictures of female faces were categorized as Turkish Cypriot (outgroup), unlike the other ethnic categorizations, this group resulted in higher ratings of valence. As far as the other categorizations are concerned, two pictures of male faces were categorized as the control group (Spanish) and one female and one male face picture were categorized as Greek Cypriot (in-group). The fact that these grouping are not gender balanced, and we know from our previous analyses that both sex of stimulus and gender of participant interacted to produce effects on the dominance rating, hinders us from being able to clearly delineate differences and similarities between ethnic categorizations of pictures on the face traits and face trait dimensions.

Chapter 3: Examining subjective responses towards neutral face pictures. Normative ratings and the role of participants' gender and stimulus sex.

Subjective affect refers to what we think we are feeling by applying cognitive meaning, through language, to our own emotional experience (Schachter & Singer, 1962). Subjective affect is commonly conceptualized and measured both on a categorical basis (Ekman, 1973) and on a dimensional point of view (James-Lange, 1922; Bradley, 2000; Lang, 1990). From the categorical point of view, the human conscious subjective experience of emotion occurs on a discrete basis; emotions are recognized as distinct from each other and are experienced as separate states. From a dimensional point of view, the human conscious subjective experience of emotion occurs as a function of three dimensions – valence (pleasantness) and arousal (intensity) and dominance (Osgood, Suci, & Tanenbaum, 1957; Wundt, 1898; Mehrabian and Russell, 1974; Tellegen, 1985; Lang et al., 1997). These give direction as to activation or inhibition based on feelings of approach or avoidance.

In terms of discrete emotions, Ekman (1973; 1992) argued that six basic emotions have developed in the human organism as a result of evolutionary forces. 'Basic emotions' developed because they were functional and necessary, so they became rooted into the human repertoire of behaviors, and as a result of their unique function, they are different to each other in important ways. These basic emotions are fear, anger, disgust, happiness, sadness and surprise. Ekman argued that the phylogeny of these six specific basic emotions is a major contributor to their distinctness, albeit, recognizing but undermining the potential role of social constructivism in the form of species-specific learning. Ekman insisted that evolution was the force behind how the six basic emotions became concretized as part of human behavior. The fact that emotional expressions of these basic emotions transcended cultural, linguistic, geographical, racial, religious and other divides, indicated to Ekman' that they have a biological basis in evolution (Ekman, 1973). Ekman recognized that there is also a degree of cultural variability in emotional expression beyond the six basic emotions, reflecting this position in the title to his approach – 'the neuro-cultural theory of emotional expression' – in that the neural level influences the universality of emotional expression whereas the cultural level influences differentiation of emotional expression (Ekman, 1994).

Unlike the unique and separate entities which comprise basic categorical emotions, emotional dimensions are considered to describe the aspect of subjective emotions that corresponds to motivational states controlled by the autonomic nervous system for action preparation. In terms of valence, pleasant emotions are associated with the appetitive system (approach responses) and unpleasant emotions such as fear and anxiety are associated with the inhibition system (defense

responses including withdrawal, escape and aggression) (Vaidyanathan et al., 2009). In terms of arousal, this dimension gives input on the proximity of stimulus, and in combination with valence, indicates to the organism to prepare for action.

Emotion is an abstract and subjective state of being, constantly moving, so that it is difficult to pin point, operationalize and measure. A preponderance of perspectives on the etiology of emotion abound from many disciplines and throughout human scholarly history. In trying to narrow it down for scientific examination, Ekman created and validated a database of faces exhibiting facial actions which create facial expressions (Facial Action Coding System, FACS; Ekman & Friesen, 1976) to elicit the six basic emotional responses for the purposes of research. By trying to procure normative data, he was attempting to provide both valid tools for research and a theoretical framework that could be used together. Normative ratings provide complementary data as a manipulation check to validate that stimuli are perceived emotionally in a way they were intended according to the research hypothesis.

In the last couple of decades, interest in emotional face databases has increased, with new databases being created that index different ages (Minear & Park, 2004, cultures and races (Milborrow, Morkel & Nicolls, 2010) and races , and use new technology like 3D imaging (Riegel et al., 2016). Reliable and widely used face picture databases for emotion research include the Karolinska Directed Emotional Faces database (KDEF; Lundqvist et al., 1998) and the International Affective Picture System (IAPS; Lang et al., 1997). The KDEF face pictures were validated on categorical emotions, depicting angry, fearful, disgusted, sad, happy, surprised, and neutral expressions (Lundqvist et al., 1998). The IAPS were validated on primary emotional dimensions of valence and arousal, and the secondary dimension of dominance, IAPS (Lang et al., 1997) so that all emotional reactivity (and discrete emotions) can be mapped on a circumplex of affective space (Russell, 1980).

The present research was designed to collect normative ratings of subjective affect for four neutral faces from the KDEF database (two males and two females), to establish that the stimuli elicit a reliable response to participants and can be used in the following study. Furthermore, we examined how self-reported emotional reactivity to pictures is differentiated based on sex of stimulus and participants' gender. Both theories of emotion – basic emotions and dimensional emotions – contribute to our understanding of emotion in important ways as they have provided complementary, rather than opposing, insights. In addition, both theories provide a theoretical basis for looking at gender differences in subjective emotional responding - whether evolutionary adaptation or species specific social learning are implicated in emotional reactivity, the genders have had both common and different paths, inevitably marking their (phylogenic and ontogenic)

affective reactivity. Throughout evolution, history and development, biological constraints, formulations of different gender roles and social representations of gender, in addition to socialization into different rules for communication and expression, likely impact how males and females experience and express emotion.

Researchers who have examined sexual dimorphism in emotional experience and expression have found numerous associations between gender and subjective affect. Three conceptualizations of this association seem to prevail. One, is that gender differences are stronger for the expression but not experience of emotion due to social roles for different display rules (Shields, 1991). Findings show women seem to be more emotionally expressive, whereas men conceal or control their emotional displays (Buck, Miller & Caul, 1974) and that women describe their affect as more intense on global memory-based self descriptors but not on ratings of moment to moment emotional experience (Barrett, Robin, Pietromonaco & Eyssell, 1998). This suggests that, when drawing on schemas of the self, women may see themselves as more emotional than men and may follow rules of expressing emotion that are more liberal to men.

A second conceptualization of the relationship between gender and subjective affect is that women are actually more emotional than men. Numerous studies suggest that women cite more intense and more frequent emotional experiences (Fujita, Diener, & Sandvik, 1991; Grossman & Wood, 1993; Sprecher & Sedikides, 1993). And finally, on a related note, a third conceptualization is that women experience selected emotions more intensely (Brody & Hall, 1993), that is, they are more reactive to selective (i.e. aversive) stimuli than men (Kring & Gordon, 1998).

Research lending support to the position that women may experience particular emotions, especially negative ones, can be found in studies of emotion disorders, which show that women have double the rate of clinical depression than men (Hankin et al., 1998; Kessler et al., 1993; Kuehner, 2003), and engage in more self-focused rumination than men (Panayiotou & Papageorgiou, 2007). Additionally, some findings provide results showing that women were found to experience more positive affect, like happiness and joy, than men (Alexander & Wood, 2000; Brody, 1996). Taken together, these findings support both the second and third positions described in the theories above, in that women may generally experience and or express more general positive and negative affect, or more intense specific affect – both positive and negative kinds - than men.

Findings using a picture viewing paradigm indicate that women report more intense affective experience (Bradley et al., 2001) and are more facially expressive than men (for contexts other than erotica). Women's emotional reactivity adheres to the same overall pattern as men's, but differences were noted mainly in degree of responding. That is, both men and women were similarly most reactive to cues that strongly activated the defensive and appetitive motivational

systems underlying emotional experience, but women were more defensively reactive whereas men were more appetitively reactive.

Research with the purpose of procuring normative data on facial picture stimuli provide mixed results as to the impact of participants' gender and stimulus sex on emotional reactivity. In a normative ratings procedure for the KDEF, Calvo & Lundqvist (2008) found no differences as a function of gender of participant on emotional face identification; also, the effect of stimulus' sex was weak, with only a tendency for anger to be more likely misperceived as disgust in female face pictures than in male faces, and for disgust to be more likely misperceived as anger in male face pictures than in female faces. The lack of gender differences in emotional responding across the board led researchers to discard the variable of participants' gender. The minute effect of stimulus sex, however, is still indicative of the impact of gender dynamics, in that expressions of anger seem to be more recognizable on male faces and expressions of disgust are more recognizable on women. Indeed, the expression of anger by males may be more socially sanctioned and provide social status rewards that are not afforded to women, and vice versa for feelings of disgust (Lafrance & Hecht, 1999).

The current study

Even though we have used internationally-accessible standardized stimuli, we consider it still important to conduct a normative ratings procedure in order to replicate the affective properties of stimuli in a specific cultural context as a manipulation check. Therefore, we aim to procure normative data on subjective affective ratings, for four of the six KDEF face pictures first introduced in Chapter 2, so these four face pictures can be reliably used in the next studies. In addition, we examine associations between participants' gender and the sex of the stimuli to see if they effect subjective emotion ratings on dimensions.

Hypotheses:

3. Picture stimuli will differ on ratings of affective dimensions according to sex of stimulus and gender of participants. In terms of participants' gender, females will rate their subjective affect more intensely on arousal, but with less positive valence than men. In terms of the sex of stimuli, female face pictures will be rated with greater valence than male faces, and male faces will be rated as more dominant than female faces. We also expect to find an interaction between picture sex and participant sex, but we have no prediction as to the direction of this relationship, and rather treat it as exploratory.
4. The manipulation check will show that all four face pictures are most highly rated as neutral in comparison to all other categorical emotions.

Method

Participants

200 Greek Cypriot students at the University of Cyprus, aged 18-27yrs, (m = 20.99, SD = 1.33) who participated in the study for extra credit in their university courses. 146 students were female (73%). This sample was independent from those used in the next studies described in chapters 3-5. The study was approved by the Cyprus Bioethics Committee.

Measures and Material

Stimuli: A set of four faces with neutral expression, from the validated Karolinska Directed Emotional Faces database (KDEF; Lundqvist et al., 1998; Goeleven et al., 2008). These faces were chosen from a set of six, because, based on previous findings described in Chapter 2, these four most closely represent the majority ethnic populations living in the nation of Cyprus, that of Greek Cypriots and Turkish Cypriots. In addition, gender balance was necessary. These considerations resulted in the final four face stimuli used in this study.

Self-report measures. A subjective emotions rating questionnaire was used to measure dimensional affect (valence, arousal) and discrete emotion (joy, sad, fear, disgust, pleasant relaxation, anger, surprise and neutral) during picture viewing rated. Discrete emotions were rated on a scale of 1 (none) to 7(very much). Valence was measured on a scale of (1 = very unpleasant, 7 = very pleasant), arousal (1 = very relaxed, 7 = very tense) and dominance (1 = no control over the situation, 7 = fully in control of the situation), based on their own affective experience (how pleasant, aroused they felt etc.).

Apparatus. The task was presented over LimeWire survey software. Participants were given an on-line link to follow and were taken to the appropriate website for completion of task.

Procedure. Participants completed task remotely in their own settings on their own time. No time limits were given. Relevant instructions were provided in written form. Participants rated each stimulus (4 x 3) on emotional dimension scales, in terms of valence (1 = very unpleasant, 7 = very pleasant), arousal (1 = very relaxed, 7 = very tense) and dominance (1 = no control over the situation, 7 = fully in control of the situation), based on their own affective experience (how pleasant, aroused they felt etc.). Finally, participants were instructed to rate their personal emotional response on each discrete emotion category (joy, sad, fear, disgust, pleasant relaxation, anger, surprise and neutral) to each stimulus (4 X 8). Participants rated the amount of subjective affect they experienced for each discrete emotion, on a scale of 1 (none) to 7 (very much). The order of stimuli was presented in a counterbalanced way across participants.

Design.

Discrete Emotional Categorization.

A mixed model factorial design ANOVA (8 x 2) with Emotion (8 emotional types; joy, sad, fear, disgust, pleasant relaxation, anger, surprise and neutral), as within-subjects variable and participants' sex as between subjects variable. The dependent variable was the amount of self-reported emotion. Where univariate analyses indicated differences between sexes in amount of emotion for particular emotion types, we followed up with a mixed model factorial design 4 X 2, with face picture (four in total) as within-subjects variable and participants' sex as between subjects variable. The dependent variable was the amount of emotion on each category for each picture.

Dimensional approach.

A mixed model factorial design ANOVA (4 X 2) with face picture (four in total) as within-subjects variable and participants' sex as between subjects' variable. Three separate analyses were run. The dependent variable for each analysis was the mean subjective emotion dimension (valence, arousal and dominance) rating for each picture.

Participants' gender X Stimulus Sex: A mixed model factorial design ANOVA (2 X 2) with picture sex (male/female) as within variables, and participants' sex as a between subject variable. Three separate analyses were run. The dependent variable for each analysis was the mean subjective emotion dimension (valence, arousal and dominance) across pictures.

Data reduction.

Emotional categorization: we calculated the mean subjective emotion category rating for each picture, then summed ratings across the four pictures and finally calculated means for each emotion category across the four pictures.

Dimensional approach: we calculated the mean subjective emotion dimension (valence, arousal and dominance) rating for each picture. We also created two dummy variables to indicate stimulus sex by summing up responses on valence to the female pictures and computed a mean variable, and doing the same for the male pictures.

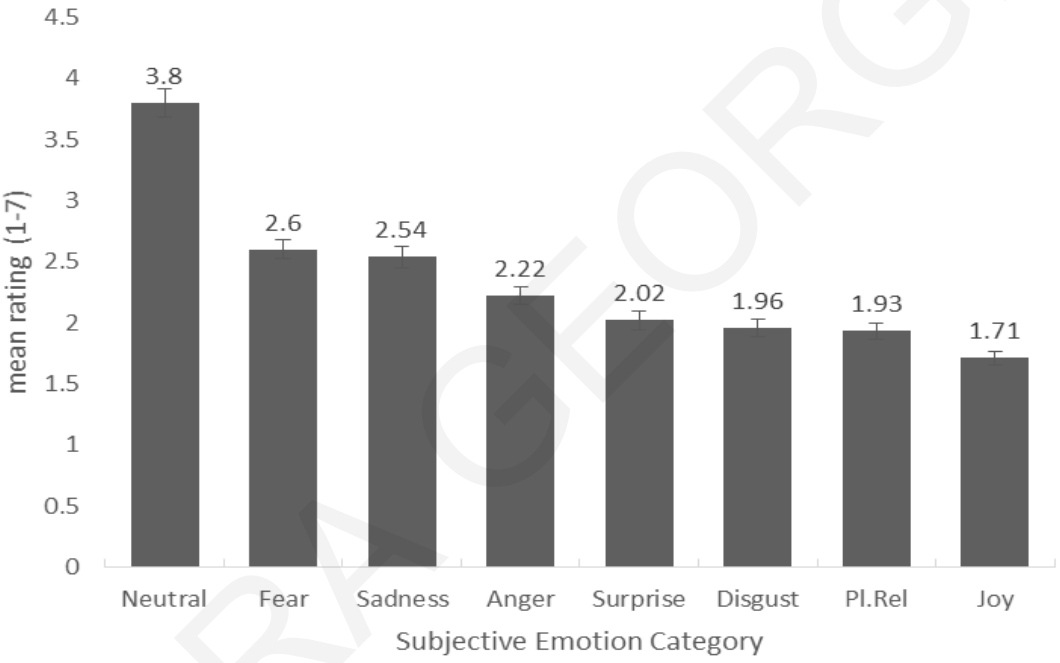
Participant responses to each face were examined for outliers in the dimensions of valence and arousal (face and participant) within their predetermined emotion category. Ratings lower or higher than 2.5 standard deviations below or above the mean were considered outliers.

Results

Figure 5 below shows mean ratings for each stimulus' category. All post-hoc comparisons were carried out using Bonferroni correction. Where assumptions of sphericity have been violated, a Greenhouse-Geisser correction was applied.

Discrete emotional categorization of face pictures. Participants rated how each picture made them feel on eight emotional categories; joy, sadness, fear, disgust, pleasant relaxation, anger, surprise and neutral. Each category was summed across the four face pictures and a mean score for each emotion category for all the pictures was created, and entered as within group levels of the independent variable (subjective discrete affect). Participants' gender was entered as a between groups variable. No significant between groups effect of participants' gender was found, F (1, 198) = 1891.63, p =.69. A significant effect of emotional category was found, F (7,192) = 48.77, p<.01, η^2 = .64 indicating that participants rated their degree of subjective affect differently on each category. Post-hoc comparisons, indicated significantly higher ratings corresponding to neutral subjective emotion categorization compared to all other emotion categories (p<.05; Figure 5).

Figure 5.Mean subjective emotion category rating for all pictures



Participants' gender was found to interact with ratings on emotion categories, F (7,192) = 3.36, p = <.01. Post hoc comparisons show significant differences between males and females in their subjective ratings of Fear and Neutral, with women rating higher subjective affect of fear to the pics than men, and lower neutral than men

We conducted the same type of manipulation check on each picture, and results corroborate the pattern found across the pictures, with neutral being the highest rated subjective emotion to each picture than all other emotion cats.

Specifically, results for each picture are as follows:

AF17

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.17, p =.68.

Within subjects effects of emotion category: A significant effect of emotional category was found, F (7,192) = 37.57, p<.01, η^2 = .58 indicating that participants rated their degree of subjective affect differently on each category, with neutral being the highest rated subjective emotion.

Interaction: A significant interaction between emotion category and participants' gender was found, F (7,192) = 2.59, p <.05, η^2 =.01. Post hoc comparisons show significant differences between males and females in their subjective ratings of Neutral, with women rating lower subjective affect of neutral in response to this picture than men.

AF20

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.01, p =.91.

Within subjects effects of emotion category: A significant effect of emotional category was found, F (7,192) = 38.25, p<.01, η^2 = .58, indicating that participants rated their degree of subjective affect differently on each category, with neutral being the highest rated subjective emotion.

Interaction: No significant interaction between emotion category and participants' gender was found, F (7,192) = 1.96, p =.06, η^2 =.07.

BM03

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =2.25, p =.14.

Within subjects effects of emotion category: A significant effect of emotional category was found, F (7,192) = 55.74, p<.01, η^2 = .67 indicating that participants rated their degree of subjective affect differently on each category, with neutral being the highest rated subjective emotion.

Interaction: A significant interaction between emotion category and participants' gender was found, F (7,192) = 5.07, p <.01, η^2 =.16. Post hoc comparisons show significant differences between males and females in their subjective ratings of Neutral, Fear and Sadness, with women rating lower subjective affect of neutral and higher fear and sadness in response to this picture than men

BM12

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.037, p =.85.

Within subjects effects of emotion category: A significant effect of emotional category was found, F (7,192) = 28.43, p<.01, η^2 = .51 indicating that participants rated their degree of subjective affect differently on each category, with neutral being the highest rated subjective emotion.

Interaction: No significant interaction between emotion category and participants' gender was found, F (7,192) = .66, p =.71.

Subjective Emotional Dimension ratings in response to pictures. Participants rated how each picture made them feel based on three dimensions (valence, arousal, dominance). Face picture (four in total) was entered levels of as within-subjects levels of independent variable (emotion dimension) and participants' sex as between group variable. The dependent variable was the mean subjective emotion dimension rating for each picture. Mean subjective emotion dimensions to each picture are portrayed in Figure 6 below.

Valence

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.47, p=.49.

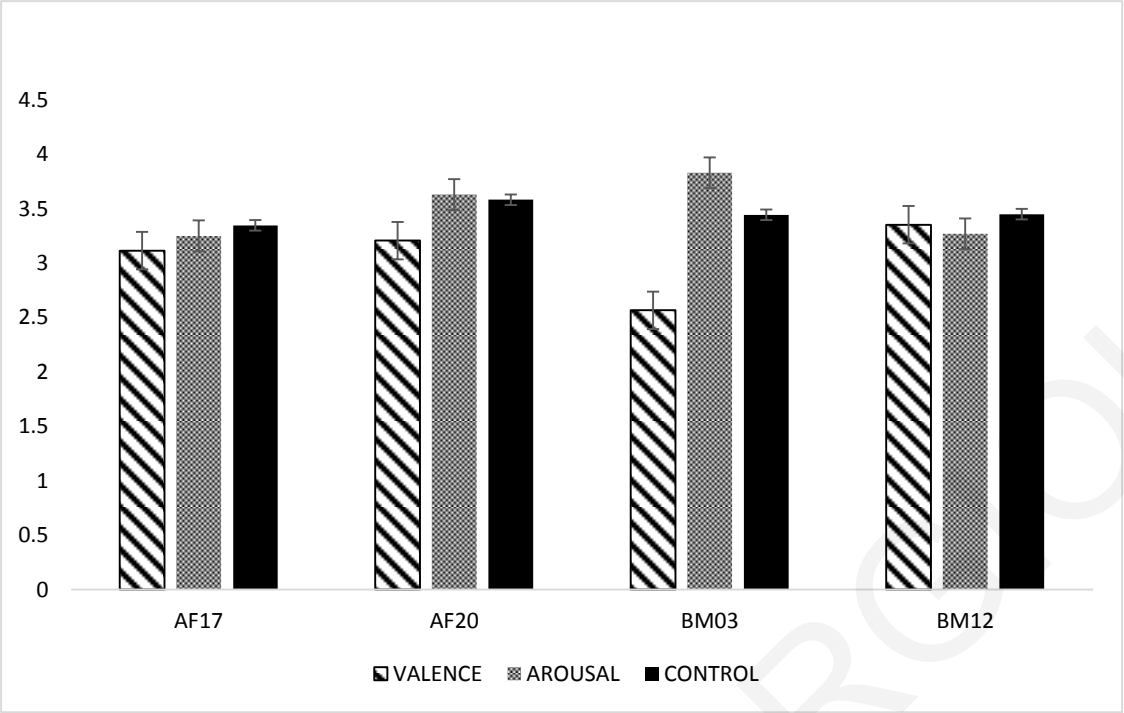
Effects of picture: Specific picture showed a significant effect, F (3, 196) =15.92, p= <.01, η^2 =.20. Participants reported significantly less valence to BM03 than all other pictures

No significant interaction between valence and participants' sex was found, F (3, 196) = .95, p=.42, η^2 =.01.

Arousal

Between subjects effect: A significant effect of participants' gender was found, F (1, 198) = 12.23, p = <.01, η^2= .06. Women rated the pictures with significantly higher subjective arousal (m = 3.67, SD = 1.16) than men (m = 3.03, SD = 1.08).

Figure 6. Mean subjective emotion dimension ratings for each picture stimulus.



Effects of specific picture: Specific picture showed a significant effect on arousal, F (1, 196) = 5.84, p <.01, η^2=.08. Post hoc tests revealed that participants reported more arousal to BM03, and this difference was significant in comparison to AF17 and BM12.

Finally, a significant interaction between arousal and participants' gender was found F (3, 196) = 2.75, p<.05, η^2=.04. Post-hoc comparisons indicated that men and women differed in their rating of arousal, with women rating their subjective arousal as higher than men, for all pics except AF17.

Dominance

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.46, p =.50.

Effects of picture: Specific picture did not have a significant effect, F (3, 196) = .28, p = .84, η^2 =.00.

No significant interaction between dominance and participants' gender was found, F (3, 196) = 2.36, p =.07, η^2 =.04.

Participants' gender X Stimulus Sex: A mixed model factorial design 2 X 2 with picture sex (male/female) as within variables, and participants' sex as a between subject variable. We summed up responses on valence to the female pictures and computed a mean variable, and did the same for the male pictures. We entered these variables as two levels of the within group independent factor (stimulus sex) and entered participants' sex as the between group factor. The same procedure was used for the other two dimensions of arousal and dominance. We conducted three separate analyses,

one for each of the following dependent variables, levels of self-reported valence, arousal and dominance.

Valence

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.47, p=.49.

Effects of stimulus' sex: Sex of stimulus showed a significant effect, F (1, 198) =15.92, p= <.05, η^2 =.05. Post hoc tests revealed that both male and female participants reported more valence in response to female face pictures (m = 3.16, SD = .89) than male face pictures (m = 2.96, SD = 1.04).

Interaction stimuli sex X participants' gender: no significant interaction between sex of stimuli and participants' gender was found, F (1, 198) = 1.28, p=.26, η^2 =.01.

Arousal

Between subjects effect: A significant effect of stimulus' sex was found, F (1, 198) = 12.23, p = <.01, η^2= .06. Women rated the pictures with significantly higher subjective arousal (m = 3.67, SD = 1.16) than men (m = 3.03, SD = 1.08).

Effects of stimuli sex: no significant effect of stimuli sex was found, F (1, 198) =.67 p=.41.

Interaction stimuli sex X participants' gender: no significant interaction between sex of stimuli and participants' gender was found, F (1, 198) = .80, p=.37.

Dominance

Between subjects effect: No significant effect of participants' gender was found, F (1, 198) =.46, p =.50.

Effects of stimuli sex: no significant effect of stimuli sex was found, F (1, 198) = .00, p = .99, η^2 =.00.

Interaction stimuli sex X participants' gender: no significant interaction between sex of stimuli and participants' gender was found, F (1, 198) = 2.36, p = 65, η^2 =.00.

Discussion

Results provide evidence that all of the face pictures included in this study elicit a significantly larger neutral emotion in comparison to the other basic emotions. This effect is the same for both males and females. In terms of differences between genders in the general amount of affect reported in response to the pictures, there were no between gender differences, indicating that males and females responded with the same general amount of affect. These results indicate that the picture stimuli reliably elicit a neutral subjective affective response by males and females.

However, the interaction effects that were found show that there was an effect of gender, depending on the emotion category and the particular picture being viewed. In terms of responding

by emotion category, females rated greater subjective affect of fear and lower rating of neutral across pictures. When examining the face pictures separately (particularly effect sizes), it seems that females rated one picture (BM03) with higher general negative affect (higher sadness and fear) and less neutral affect than males, although this effect is not replicated with dimensional affective ratings. The same picture was rated, on the dimensional scales, with less positive valence and more arousal than all the other pictures by both males and females. These results indicate that the properties in this picture (BM03) that people find aversive on a dimensional scale cannot be attributed to gender of respondents, whereas on a categorical scale, they can. Everyone found this picture more aversive, but females found this picture more aversive on specific categorical ratings (sadness, fear) than men. Perhaps this is reminiscent of findings that show a greater impact of gender socialization when females are asked to rate their affect with global self descriptors rather than ratings of momentary affect (Barrett et al., 1998).

Specifically, in terms of the male picture BM03, our findings indicated that females rated their specific affect differently (potentially as a more specific self descriptor) but this didn't translate into the more general dimensional experience of affect. Categorical ratings of affect are more specific self descriptors (e.g. 'I feel happy', 'I feel anger') than dimensional ratings of affect (i.e. 'I feel positive affect' 'I feel arousal'), which can be seen as more experiential self descriptors, and these differences may impact how much gender role socialization is influencing these judgements. Again, these responses are in reaction to one specific picture, BM03, so that these interaction effects are likely indicative of gender-in-context effect (Deaux & Major, 1987) wherein aspects of social situations or stimuli interact with gender to enhance or attenuate observable sex-related differences.

Despite no evident gender differences on categorical emotion across pictures, we did find one significant gender difference on dimensional emotion. In terms of emotional dimensions, males and females differed in the amount of self –reported arousal in response to the pictures, with females rating their subjective arousal higher than men. This effect occurred regardless of the sex of the stimuli portrayed. Differences in categorical emotion to particular pictures indicate that females rated their affect higher on negative emotions than males. Differences in dimensional emotion indicate that females rated their affect with more arousal than males. These findings indicate that women experience selected emotions, particularly negative ones, more intensely than males (Kring & Gordon, 1998; Kuehner, 2003).

In conclusion, the sex of the stimuli portrayed and the gender of the participants seemed to exercise effects independently of each other, as we found no interactions for any emotion dimensions. That is, regardless of participants' gender, female pictures were rated with higher

valence, indicative of the effect of stimuli sex alone on valence. On the contrary, regardless of the sex of the stimuli, females rated their arousal higher than males. Indicative of the effect of participants' gender alone on arousal. Despite the aforementioned differences, it is important to note that on a whole, our findings suggest overwhelming similarities in subjective emotion responding, as, on the majority of measures for the majority of stimuli responses by males and females were the same.

Chapter 4: Psychophysiological and self-reported affective reactivity towards ingroup and outgroup facial pictures. The role of intergroup contact.

The fundamental role of emotions in prejudice is beyond doubt, but it is crucial to better understand how this happens (Brewer, 2003; Talaska et al., 2008; Pettigrew & Tropp, 2006; Stephan, 2014). Scientists have suggested that emotions impact prejudice formation and reduction through intergroup processes such as social categorization. Tajfel (1982) illuminated how belonging to groups impacts emotion through Social Identity Theory (SIT), which shows that people tend to favor those categorized as in-group members and feel more positive towards those people (Tajfel & Turner, 1979). According to SIT, through the automatic process of categorizing ourselves into social groups, the group identity is implicitly adopted by the individual and integrated into the self-concept, impacting self-esteem. As a result, amplified ingroup favoritism (Brewer, 1999) arises from the process of group categorization of the self and is considered a normative cognitive bias - an artifact of the process. In other words, social identity is crucial to the emotionality we feel towards ourselves (self-esteem), and, social identities are afforded through social categorization. Therefore, who we count as one of 'us' or 'them' has a strategic and motivated undertone.

Many biases operate under the radar to serve our idiosyncratic affective motives. The amplification effect is an implicit bias in perception that zooms in on ingroup similarity and outgroup differences to ourselves, to accommodate speedy categorization (Tajfel & Turner, 1979). This perspective, however, may homogenize members of the outgroup while giving a rich sense of heterogeneity to members of the ingroup, both of which likely do not represent the social groups involved. This, again, gives rise to ingroup favoritism, in that, we are motivated to feel favorably towards those who are perceived as similar rather than dissimilar in order to validate those aspects in ourselves. By not recognizing the individuation, richness and complexity of people in other groups to which we don't belong (outgroups), it is unlikely that we will find similarity with a homogenized mass. Optimal distinctness with outgroup may be achieved, preserving a sense of ingroup identity (Leonardelli, Pickett, & Brewer, 2010). Thus, the lack of common ground for knowing, understanding and interacting with the outgroup, will likely perpetuate ingroup favoritism.

SIT posits that many such biases in perception (i.e. Gestalt; Kofka, 1910) skew how we experience the social world, in order to serve our motives for a positive emotional experience. Consequently, prejudice itself may act to maintain the self-esteem of group members by generating bias both for the ingroup (ingroup sympathy) and against the outgroup (outgroup antipathy) (Wilder & Simon, 2003). Because group identity is saturated with history, meaning, and emotion - and is more often than not fraught with conflicting elements - ingroup favoritism can take the stark forms of

ethnocentric bias and ingroup supremacy. Tajfel & Turner (1979) point out that the individual's emotions converge (intra and inter-personally) based on group membership, suggesting that emotional experience itself is a social phenomenon dependent on social identification with groups. This is a dynamic, creative process of transaction between the self and the group that could lead to any number of emotional outcomes. Accordingly, contextual differences will impact how social identification unfolds and which types of social categorizations will take place (Stephan, Ybarra, Morrison, Rios, 2009). For example, highly patrolled boundaries between social groups that leave little flexibility for changes in group membership may lead to higher anxiety, fear and distress towards outgroup members. This may occur for numerous reasons, two of which are: apprehension towards the unfamiliar outgroup, and fear of losing ingroup status. Such negative intergroup emotions can exhibit themselves pre-consciously and have been conceptualized as 'intergroup anxiety' - the 'fear of negative psychological or behavioral consequences for the self and fear of negative evaluations by ingroup or outgroup members' (Stephan & Stephan, 1985).

Even if they are socially constructed, emotions unfold and exhibit themselves in individual bodies (Allport, 1919) - making the individual an agent of intergroup relations just by their emotional reactivity. This implicit task may be quite stressful for the individual (Stephan & Stephan, 2000), especially under conditions of active social conflict, which compound bias and discrimination (Sherif, 1961). Researchers, however, face a difficulty with studying emotional elements of intergroup bias, in that people may not be responding truthfully or masking emotional expression. Social convention prescribes rules for public displays of bias, which people are quite aware of. Social desirability, covert racism, fear of repercussions and other variables motivate people to regulate themselves rather than be spontaneous in their responses.

Social regulation of the self is especially relevant for prejudice research (as compared to research into stereotypes and discriminatory behavior) because prejudice is a direct measure of negative affect, anxiety, fear and distress – emotions that people generally do not like to feel (emotional experience) or display (emotional expression). Intense negative emotions can be quite disconcerting in and of themselves, but also, because they are often betrayed on the face for all to see, despite attempts at regulation. Intergroup anxiety, a construct that includes all types of negative emotionality in relation to outgroup contact, constitutes a negative experience. Subsequently, people who experience intergroup anxiety will likely monitor the self and exhibit a more socially acceptable response (Devine, 1989). The interference from social regulation of emotion can be curbed by using research methodologies that sample reactivity at the neural or physiological level. By examining emotional experience at its physiology, we can gain a clearer understanding of peoples' immediate, preconscious affect in relation to prejudice. Previous research on the neural basis of intergroup bias has provided evidence of the links

between psychophysiological indices of emotion and prejudice in both peripheral and central nervous systems (Cacioppo, & Berntson, 2001; Guglielmi, 1999; Ochsner, & Lieberman, 2001). This constitutes a solid basis from which to proceed with further inquiry into the quality of links between physiological emotion and prejudice, and the role of other factors in this association.

Although there is no unitary consensus as to the theoretical construction and operalization of emotion, it is generally agreed upon that emotion is associated with individual physiological reactions thus, emotion is fundamentally related to motivation and in turn, action (James-Lange, 1922; Cannon, 1927; Lang, 1994; Lang, 1979; Bradley, 2000). Affect, conceptualized dimensionally on the continuums of valence (pleasantness) and arousal (intensity), primes the organism for inhibition or activation (fight/flight/freeze actions) at a primitive level, and is not dependent on conscious attribution. Primitive neural motivational circuits prime approach or avoidance behavior in response to unconditioned aversive or appetitive stimuli, and mediate the conscious appraisal and subsequent behavior of the organism (Gray, 1990). Pleasant emotions are associated with the appetitive system (approach responses) and unpleasant emotions such as anxiety are associated with the inhibition system (defense responses including withdrawal, escape and aggression) (Vaidyanathan et al., 2009; Eder, Elliot, & Harmon-Jones, 2013). Valence (how pleasant or unpleasant), therefore, gives input as to direction of potential response, whereas arousal gives input as to the proximity of stimulus, which in turn informs intensity, timing and duration of potential response (Vaidyanathan et al., 2009).

From this dimensional point of view, psychophysiological reactivity indexes priming of the organism on an approach/activation or withdrawal/inhibition level in response to emotionally evocative stimuli, on the basis of valence and arousal (Gray, 1990; Fowles, 1980). The two main dimensions of valence and arousal constitute a circumplex area that all emotions map onto, according to the amount of arousal plus the type of valence they evoke (Russell, 1980). For example, highly negative emotions can be high in arousal (fear and anger) and low in arousal (sadness) which may prompt differential avoidance (Amodio & Harmon-Jones, 2011). Differential avoidance can include active avoidance, which refers to energies that aim to prevent the occurrence of an aversive event, and passive avoidance, which refers to withholding of responding to prevent an aversive event.

Unlike autonomic affective reactivity, subjective experience of emotion occurs on a discrete categorical basis so that emotions are recognized as meaningfully distinct from each other (Ekman, 1969). The highly arousing and unpleasant emotion of fear is not experienced the same as the highly arousing and unpleasant emotion of anger (Panayiotou, 2008), leading to different appraisals, different emotional expressions and different outcomes. Subjective emotion remains an important unit of analysis as it is the label given to the emotion that often drives the conscious experience of the emotion (Shachter & Singer, 1962). Therefore the details of emotion, the discrete and peculiar characteristics associated

with each subjective emotional experience, are of utmost importance. For instance, subjective emotion can even impact outcomes such as the sensation of physical pain! Rhudy and Meager (2000) induced subjective fear and anxiety in a laboratory setting and then exposed subjects to pain sensations, and confirmed that fear has analgesic qualities that inhibit pain whereas anxiety has qualities that enhance the sensation of pain.

The combined view that discrete concepts of emotions are just as important for human emotional experience as physiological reactivity (Schachter & Singer, 1962, Berkowitz, 1969) facilitated a synthesis of approaches to studying emotion, leading to widespread use of both dimensional and discrete approaches in emotion research. Often this culminates in the parallel use of scales that measure Ekman's six basic emotions, anger, fear, disgust, sadness, surprise, and happiness (Ekman, Sorenson & Friesen, 1969), as well as tools to measure physiological reactivity on the two basic dimensions of valence and arousal (Russell, 1995). This synthesized approach is predicated on the universality of valence and arousal as dimensions that apply to all emotional experience, but also accepts that beyond these dimensions, the rest of emotional experience is defined by discrete cognitive appraisals that give different sensations (Russell, 1994). Subjective emotional experience is both unique to individuals as no two emotional experiences are alike, but ontogenetically and culturally uniform enough to serve instrumental functions. A cross examination of both self-report and physiological indices of emotion will better inform researchers of the kind of emotion they are dealing with when examining intergroup bias

Commonly used physiological indices of affective reactivity of the autonomous nervous system include heart rate (HR), skin conductance response (SCR; electrical conductance of the skin which increases with sweat) and the affect modulated eye-blink response (startle reflex; SR). Commonly used physiological indices of affective reactivity of the somatic nervous system include facial electromyography of the zygomaticus and corrugator muscles, which create the expression of a smile and frown respectively, indicating positive and negative valence. Below we review these measures and their association with prejudice (for a comprehensive discussion, see Chapter 1).

The most reliable and widely used index of fear is the startle reflex (Lang, Davis, Ohman, 2000; Panayiotou, 2010). The startle reflex generally refers to muscular tension that occurs in an organism with surprise. The startle reflex has numerous components, from full body limb flexion to just facial muscle activity. In humans the startle reflex most often refers to an automatic and unconscious eye-blink reflex that interrupts ongoing processing to reorient towards potential danger and defend the organism (e.g. promotes escape from danger, protects the eyes, increases sympathetic arousal). The startle reflex is modified by attentional and emotional effects, so that, at short lead intervals (e.g. 400ms) the eye blink is attenuated by attention and at large lead intervals (e.g. 4000ms) the eyeblink is amplified by emotion (Blumenthal, 2015).

The magnitude of the startle reflex is indicative of degree of defensive preparation so that when paired with aversive visual stimuli, the startle magnitude ranges from smallest during least aversive and largest during most aversive (fearful) stimuli compared to neutral stimuli and positive stimuli. Positive visual stimuli yield startle inhibition in the opposite direction: the most pleasant and highly arousing visual stimuli (i.e. sexual scenes) lead to the most inhibited startle response (Vaidyanathan et al., 2009; Lang et al., 2000). Individual differences in the variable of trait fear most consistently and robustly predict startle magnitude to directly threatening pictures than other aversive pictures (e.g. mutilation, victimization).

The startle reflex is telling of the degree of readiness for defensive action which is primed by fear. Consequently, subjects reporting more frequent and intense fears exhibit significantly stronger startle affect modulated startle potentiation (Cook, Hawk, Davis & Stevenson, 1991). Anxiety, as sustained anxious apprehension rather than cue specific fear, may also lead to exaggerated startle reflex but evidence suggests that it is specifically relevant threats that evoke greater defensive reactions (Lang et al., 2000; Lang & Davis, 2006). Non-specific threat like generalized anxiety and pervasive worry does not result in substantial physiological activation (Borkovec & Hu, 1990). Recent research in psychopathology makes the distinction between circumscribed fear and general distress to illustrate their different startle response patterns (Panayiotou et al., 2017). Distress that is pervasive and diffuse was associated with less physiological reactivity, specifically, a lack of affect modulated startle responding (McTeague et al., 2010). This has been described as a 'blunting' of affect that may serve the purpose of passive avoidance (Amodio & Harmon-Jones, 2011) by restricting sympathetic nervous activity. Research consistently shows that the greatest affect modulated startle amplitude will occur under conditions of specific, relevant, circumscribed fear because this requires defensive preparation. The magnitude of the emotion modulated startle response is sensitive to action affects, like fear and anger, and less influenced by other unpleasant affect like sadness and misery that are not action oriented (Lang, Bradley & Cuthbert, 2002).

In sum, the affect-modulated startle reflex is largely driven by emotional valence and to a lesser extent emotional arousal (Bradley, 2000; Bradley, 2002). It should also be noted that the startle reflex has been demonstrated to occur across all ages (even infancy) and across various cultures across European and North American samples (Lang et al., 2000). Measurement of fear priming of the organism through startle potentiation is considered a method with unique resistance to human cultural bias. The few studies that have examined startle amplitude as a marker of prejudice yield mixed results. Brown, Bradley, & Lang (2006) found no effect of race on the startle amplitude response when viewing pictures of ingroup and outgroup. Vanman, Ryan, Pederson & Ito (2014) found that startle modification indexed differential attention to outgroup when intergroup threat was low, but not emotional bias,

whereas Amodio, Harmon-Jones, & Devine (2003) found evidence that the most prejudiced participants (white participants) exhibited both attention and affect modulated startle responses to pictures of Black faces compared to White faces, and also compared to Asian faces. This study points to the importance of specificities in fear conditioning towards outgroup members – some outgroups are highly paired with threat, while others are not. Taken together, results of previous studies suggest that in contexts where contact with outgroup is not characterized by threat or other strong emotions, stimuli representing the outgroup should be less likely to elicit effects of affective modification of startle, and more likely to elicit effects of attentional modification of startle. Greater attentional reactivity may occur as a result of a novelty effect, in that greater unfamiliarity with the stimulus captures more cognitive attentional resources.

The HR response is driven by both a combination of valence and arousal. HR increase occurs for both pleasant and exciting, and, unpleasant and arousing events, although with a different trajectory. HR reactivity also differs according to task characteristics (i.e. imagery vs. picture viewing) and context effects. Results that clarify the relationship between HR and emotion are mixed. In a more recent picture viewing paradigm, HR was mainly modulated by valence, showing larger HR deceleration in response to negative pictures compared to neutral or pleasant pictures (Gomez & Danuser, 2009). Others have tied heart rate acceleration specifically to arousal. Witvliet and Vrana (1995) found the greatest heart acceleration under conditions of high arousal and negative valence. In an imagery paradigm, white males exhibited substantial increase in HR when meeting and being touched by a Black male, compared to a nonsignificant decrease when meeting and being touched by a White male (Vrana & Rollock, 1998).

In picture viewing paradigms it seems that approach (high positive valence/high arousal) may be reflected and captured easier than avoidance by HR, as findings suggest potential reward leads to greater heart rate acceleration than potential punishment. The involvement of HR in avoidance is less clear. Findings from studies in psychopathology have suggested that a lack of heart rate reactivity may characterize general distress, especially when chronicity and severity are taken into account (McTeague and Lang, 2012; Panayiotou et al., 2017). Interestingly, Dambrun and colleagues (2003) found that in conditions of viewing outgroup (Arab target[3]), French students exhibited a significant heart rate acceleration than when viewing ingroup (French target), and that this effect was attributed to a significant decrease in parasympathetic activity. This illustrates the complexity of heart reactivity in avoidance of aversive stimuli because sympathetic and parasympathetic activity are independently and concurrently driving the response.

[3] The linguistic specifier of Arab outgroup vs. French ingroup is directly quoted from the original manuscript by Dambrun, M., Despres, G., & Guimond, S. (2003). The current authors acknowledge the linguistic implication of juxtaposing French nationality with Arab ethnicity is that they are mutually exclusive, whereas in lives of real people they are not.

Skin conductance reactivity (SCR) is more sensitive to arousal than it is to valence (Lang et al., 2000). In a picture viewing paradigm, avoidance (low positive valence/high arousal), which has long been associated with both trait and state anxiety (Fowles, 1988) is indicated by electrodermal conductance. SCR reflects action preparation because the pattern of responding persists even when the sensory foreground is removed, and it habituates slowly for pleasant and unpleasant pictures. In a picture viewing paradigm, Lann, Everaerd & Evers (1995) report SCR to be highest under conditions eliciting sexual threat, compared to general anxiety provoking pictures, neutral pictures or pleasant pictures. The earliest psychophysiological studies showed that whites displayed elevated galvanic skin response (GSR) in the presence of blacks (Rankin & Campbell, 1955; Vidulich & Krevanick, 1966). Another initial study went further by implicating individual differences, and found that, highly prejudiced whites, who heard blacks described in a favorable light exhibited increased skin conductance response (SCR) (Cooper & Siegel, 1956; Cooper & Singer, 1956). In an in vivo paradigm, prejudice towards blacks was positively correlated with GSR arousal in reaction to blacks by whites, where whites experienced touch by blacks (Porrier & Lott, 1967).More recent studies indicate that both white and blacks exhibited less skin conductance when viewing members of ingroup (ingroup sympathy effect; Brown et al., 2006) whereas French students exhibited more skin conductance when viewing pictures of Arab outgroup (outgroup antipathy effect; Dambrun et al., 2003).

Of the somatic peripheral nervous system, facial electromyographical activity (EMG's) are sensitive to both affective valence and intensity (Dambrun et al., 2003). The corrugator supercilii and zygomaticus major facial muscles show valence by expressing frowning and smiling - displeasure and pleasure (Larsen et al., 2003; Van Boxtel, 2010). In terms of facial EMG and intergroup anxiety, a study conducted by Vanman, Paul, Ito & Miller (1997), found that the more self-reported prejudice, the more right corrugator supercilli muscle activity was exhibited by whites to pictures of blacks (compared to pictures of whites), but, even without taking into consideration the self-report of prejudice, whites generally had this reaction across the board whether they reported prejudice or not. Brown, Bradley and Lang, (2006) found that facial EMG indicated greater pleasure when viewing ingroup pictures even though self report measures indicated that people rated their pleasure as higher when viewing outgroup members .Vanman and colleagues (2013) showed low-prejudice participants displayed more zygomaticus activity to Black targets, but high-prejudiced participants did not. In sum, evidence suggests that EMG is an effective indicator of implicit pleasure and displeasure towards ingroup and outgroup but this can be impacted by amount of self-reported prejudice. Particularly, the amount of prejudice was associated with EMG responding in the condition of pleasure (greater zygomaticus activity) towards outgroup, but not in the case of pleasure towards ingroup or displeasure towards outgroup. These results imply that, when it comes to normative and entrenched biases such as ingroup sympathy and outgroup

antipathy, EMG indicates affective valence regardless of self-reported prejudice, but, when it comes to the very different condition of outgroup sympathy, the amount of self-reported prejudice is more likely associated.

As we have noted earlier, evidence indicates that fear and anxiety differ in terms of physiological responding, as fear is associated with a more prescribed, phobic response and anxiety is associated with more diffuse distress (Panayiotou, et al., 2017) and inaction (Sylvers, Lilienfeld & LaPrairie, 2010). Lang et al. (2000) have found evidence for neural structures in the brain that appear to be differentially active in explicitly fearful situations compared to more generalized anxiety. Fear is generally considered to be a reaction to an explicitly threatening stimulus leading to escape or avoidance with increasing cue proximity, whereas anxiety is considered to be a more general state of distress, prompted by less explicit cues, lasting longer than fear, and leading to physiological arousal but not to specific reaction behavior. Anxiety, as sustained anxious apprehension, rather than cue specific fear, is likely less associated with a defensive response and more associated with helplessness, which does not prompt action preparation and therefore requires less arousal (Lang et al., 2000).

Even though previous findings are somewhat equivocal regarding psychophysiological reactions to ingroup and outgroup stimuli, from the very beginning, the initial studies using psychophysiological measures to examine prejudice found a strong physiological component to it (Guglielmi, 1999). Negative, anxious and/or ambivalent emotionality related to intergroup processes has been conceptualized as 'intergroup anxiety' (Stephan & Stephan, 1985). The construct of 'intergroup anxiety', denotes explicit and implicit feelings of threat/anxiety towards intergroup contexts (Stephan, 2014) and therefore, includes physiological activation in relation to outgroup. From this angle, defensive and aversive autonomous activation in response to outgroup stimuli *is* 'intergroup anxiety'. Studies suggest that intergroup anxiety, as indexed by cardiovascular and electrodermal responses to outgroup stimuli, is not significantly related to explicit prejudice level as measured by self-report (Dambrun et al., 2003). Further studies support the idea that implicit prejudice and stereotypic associations are uncorrelated and that each is associated with a unique set of behavioral outcomes (Amodio & Hamilton, 2012; Gilbert et al., 2012; Amodio and Devine, 2006). Subsequent studies consistently demonstrated that psychophysiological measures of affect and self-reported measures of affect in relation to prejudice are often discordant (Hass et al., 1991; Vanman et al., 1997). The positive and negative motivational systems in humans can operate in reciprocity or independently as uncoupled activation, or even uncoupled co-activation (Ito, Cacioppo & Lang, 1998). Uncoupled activation refers to the singular activation of either the positive motivation system or the negative motivation system. Uncoupled co-activation refers to the singular activation of the positive motivation system and the singular activation of the negative motivation system, which may result in, for instance, strong positive and strong negative feelings

towards outgroup. This is illustrative of the remarkable complexity in meaning that social stimuli hold for different people.

Accordingly, emotional responding on an intergroup level is extraordinarily complex. As a general rule, people are unaware of their implicit intergroup biases, and may be cognitively biased against being biased (!) so will pre-emptively compensate in order to view themselves in a favorable light. On other occasions people are motivated to be ethnocentrically biased, as this allows them to view themselves favorably, but they will regulate this penchant in public. Emotional responding seems to be the brute force behind prejudice: aggression, hatred, anger, guilt and other emotions have been implicated in its acquisition and sustenance, (Smith & Mackie, 2008) just as contact, forgiveness, cross-group friendships (Shook & Fazio, 2008) and empathy have been implicated in its reduction and extinction (Baker, Williams, Witvliet & Hill, 2017). In fact, prejudice reduction has long been associated with the Contact Hypothesis (Allport, 1954), which is the observation and formulation that intergroup contact reduces prejudice. This position has been widely supported (Pettigrew & Tropp, 2006), but, new research illustrates that negative contact may lead to increased prejudice (Wölfer et al., 2017) so that it is the valence of the contact experience that defines whether prejudice reduction will take place. Pettigrew & Tropp (2006) maintain that any change in prejudice has to do with emotional parameters of the intergroup experience, and in light of the 'negativity bias' humans exhibit (Cacioppo & Berntson, 1994), particular emotions such as anxiety and threat are the ones that are implicated.

The ideas in Contact theory can be paralleled to those found in psychotherapeutic theory and practice for anxiety reduction, which has its roots in systematic desensitization (Wolpe, 1958). Namely, cognitive behavioral interventions for anxiety and phobia reduction rely on exposure therapy – systematic, strategic, graded exposure to phobic stimulus, without autonomic, cognitive and behavioral avoidance (Barlow, 2002). For exposure therapy to work it is essential that avoidance of both internal state and external stimulus does not take place, otherwise emotional habituation, which is the key mechanism to anxiety reduction, will not take place. Emotional habituation, refers to the process by which an organism returns to baseline after experiencing autonomic activation. Once the organism experiences psychophysiological habituation, and the nervous system has settled, the organism is confronted with a new state of affairs (calm), thus experiencing intuitively that its previous response patterns (avoidance) is not functional or necessary. Emotional habituation occurs on a neural level, ultimately effecting change in semantic networks in memory that represent acquired fear cues (McNally, 2007). Contact may in fact operate like exposure therapy, through emotional habituation causing a decrease in negative affect, allowing for an optimal experience (Stephan, 2014), and thereby impacting changes in attitudes and cognitions. Although different pathways, mechanisms and outcomes exist for fearful vs. conceptual associations with outgroup, these do indeed transact with each other, and evidence

suggests that 'contact' or lack thereof, drives both emotional habituation and cognitive extinction of fear and anxiety (Mineka & Thomas, 1999).

The Cyprus Context

Constructs such as intergroup anxiety must be embedded into the microgenetic process of social interaction because individual differences exist within a society structured by social representations of identity (ingroup) in relation to the other (outgroup). Dominant social representations have at times consistently and purposefully cultivated feelings of fear and threat through past, present and future (Psaltis, 2015). Individuals exposed to fearful social representations, may feel more anxious at the prospect of contact with outgroup, and such anxiety is compounded by other social and environmental constraints and individual idiosyncrasy.

In the Cyprus context, the Turkish Cypriots and Greek Cypriots had been segregated since the island was divided in 1974 by a geographical dividing line marked by military checkpoints and travel restrictions. These were in place until 2003, after which certain military checkpoints were opened for the first time, marking a valuable opportunity to examine the Contact Hypothesis (Allport, 1954) and its attributes in the context of long standing conflict and complete prior segregation for almost 30 years. An interesting characteristic of the Cyprus context is that despite years of bi-communal segregation, there are no clear visual indicators of difference between Turkish Cypriots and Greek Cypriots, so that recognition of outgroup is largely dependent on prior social representations rather than situational cues. Additionally, there have been no incidents of violence in recent decades, which may impact intergroup anxiety differently than in contexts with overt threat.

Previous research on contact in Cyprus, using self report measures, has shown the beneficial effects of contact on prejudice reduction and increase in trust in children ages 9 and up (Psaltis, 2015). The same line of research showed that political ideology reflecting a nationalist identity was positively related to prejudice and trust after the age of 15. Research with young adults found that participants who repeatedly imagined positive contact subsequently reported greater intentions to engage in future contact with the outgroup (Husnu & Crisp, 2010). Direct and indirect forms of intergroup contact in Cyprus, such as interethnic online friendships, have been associated with reduced self-reported intergroup anxiety (Ioannou, 2013; Žeželj et al., 2017) but this has not yet been studied at a physiological level. For further discussion se Chapter 1.

Current Study

This study focuses on the relationship of affect, as physiological reactivity, and prejudice, and further probes how physiology is moderated by social identity and contact. The relationship between

emotion and intergroup bias is very strong, but, quite complex. Increasing evidence suggests that this relationship is actually driven by intervening variables, such as contact (Pettigrew & Tropp, 2006) and intergroup anxiety (Stephan, 2014). Therefore, it has become apparent that we need to look closer at other variables that have been shown to have an impact on either intergroup bias or emotion, to gain a more accurate understanding. Researchers in fields of social psychology and clinical psychology have identified 'contact/exposure' as an important intervening variable in regards to both intergroup bias and emotional adjustment. In addition, specifics of context should also be taken into account in the study of prejudice. Consequently, this study will contribute to the current literature on emotion and prejudice, as we will examine the potential of self-reported contact, as a covariate, to alter the relationship between viewing face pictures and physiological responding, specifically embedded in the Cyprus context.

Particularly, we examine whether a Group Induction will impact reactivity at the physiological level in reaction to viewing face pictures. Physiological reactivity was assessed when looking at faces perceived to be either members of the ingroup, outgroup or a neutral group in a between subjects design. Subjects underwent non-interactive exposure to faces from a standardized picture set (KDEF; Lundqvist et al., 1998; IAPS; Lang, Bradley & Cuthbert, 2008). In order to reduce the chance of biased responding, we measured autonomic emotion through peripheral measures of sweat and heart activity, as well as the startle eye-blink response, and electromyography of the facial muscles. But, we also measured subjective emotional responding, both as a manipulation check and as a variable that could inform us further of the level of concordance in the affective responses participants exhibited. Pluralism in data collection methods in prejudice research is an important consideration (Wölfer et al., 2017).

By creating a Group Induction, we examine whether participants will be more inclined to positive emotionality in relation to faces they believe to be the ingroup, in line with the ingroup sympathy hypothesis arising from Social Identity Theory, which postulates that social identity tempers positive emotionality in relation to the self (Tajfel, 1981; Leonardelli et al., 2010). By manipulating whether participants can identify with the face on the basis of ethnicity, we were able to examine more clearly how social identity impacts responding to faces in the absence of clear physical indications of ethnicity. Moreover, in line with the outgroup antipathy hypothesis (Allport, 1979; Tajfel, 1981), we assume participants will exhibit more negative emotionality when they are viewing pictures they believe to be outgroup faces.

This paradigm extends the idea of a minimal group identity by using a *real* group induction for *fictitious* stimuli. In a minimal group paradigm a fictitious and trivial group identity induction has been shown sufficient to create ingroup favoritism that leads to increased self-esteem (Lemyre & Smith, 1985) and increased ingroup reciprocity which in turn, may serve self-esteem motives (Gaertner & Insko, 2000). In our study, the group identity induced in subjects was not minimal - rather, it was maximal in

that it had extremely high relevance and saliency for participants due to the Cyprus context. The minimal aspect of group identity in this study refers to the use of face pictures that betray no clear markers of group identity, and in fact, belong to neither ethnic category given, and are identical for all groups. In this sense the minimal aspect of the induced group identity referred to the stimulus pictures and the maximal aspect of group identity referred to the induction given to participants. This study is the first to examine the physiological impact of fictitiously assigned ethnic facial stimuli in relation to actual social identity. Through this paradigm we can highly assume that participants are responding to the face based on participants' social identity rather than outgroup facial characteristics.

Finally, this study is innovative in that we include a gendered context to the intergroup framework, in recognition of the real life complexity of intergroup relations. Keeping in mind that all aspects of contemporary human life occur under the dichotomizing force of gender, power disparities and interdependence motives likely represent variables that permeate and inform all intergroup relations, thus, we considered it important to account for gender in our examination of prejudice.

Hypotheses:

1. The outgroup antipathy hypothesis (Allport, 1954; Brown, Bradley & Lang, 2006) will be expressed in the form of increased negative affect to exposure to face pictures by outgroup induction compared to ingroup induction, specifically, increased corrugator activity and decreased zygomaticus. Outgroup antipathy will not be reflected in self-reported affect.
2. Intergroup Anxiety (Stephan, 2014): outgroup induction will exhibit increased psychophysiological fear reactivity than ingroup induction acceleration of Heart Rate (HR) activity, increased skin conductance level, and greater fear potentiation in the eye-blink response (Bradley, 2000).
3. Ingroup sympathy (Brewer, 1999): Decreased negative affect to exposure to face pictures by Ingroup Induction compared to the outgroup induction, specifically, decreased corrugator activity, increased zygomaticus.
4. Intergroup Anxiety (Stephan, 2014): Ingroup induction will exhibit decreased psychophysiological fear reactivity to exposure to face pictures than neutral condition and outgroup induction condition, in the form of decreased skin conductance level, and smaller potentiation in the eye-blink response, no impact on Heart Rate activity (Bradley, 2000).
5. Intergroup contact will be associated with reduced negative affect (EMG) and intergroup anxiety in the form of defensive physiological reactivity (startle, HR, SCR) by those given outgroup induction (Pettigrew & Tropp, 2006) compared to neutral condition and ingroup induction condition.

Method

Participants: 93 Greek Cypriot students of the University of Cyprus (76.3% female) of an age range from 18 to 33 years (Mage = 20.22, S.D. = 2.75), inducted into three groups: Ingroup (IN; n =30), Outgroup (OG; n =33), Control (CN; n =33). Students participated in study for extra credit. Study was approved by the Cyprus Bioethics Committee.

Measures and Material

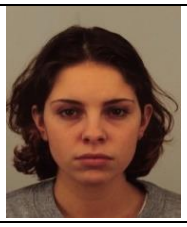
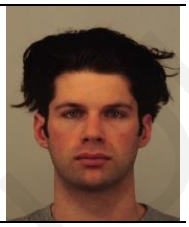
Self-report measures

Intergroup Contact: Amount of Border Crossings and quantity of interpersonal contact (Islam & Hewstone, 1993) with Turkish Cypriots were rated on a Likert scale of 1 – 5. This measure included four items, including one item on cross-group friendships (Turner, Hewstone, & Voci, 2007), and was previously adapted into Greek for use in a Greek speaking Cypriot population. Cronbach's alpha for 4 items is .77. See Appendix 2 for a list of items, descriptive statistics and correlations.

Subjective emotion: a subjective emotions rating questionnaire was used to measure dimensional affect (valence, arousal) and discrete emotion (joy, sad, fear, disgust, pleasant relaxation, anger, surprise and neutral) in response to the picture stimuli. Discrete emotions were rated on a scale of 1 (none) to 7(very much). Valence was measured on a scale of (1 = very unpleasant, 7 = very pleasant), arousal (1 = very relaxed, 7 = very tense) and dominance (1 = no control over the situation, 7 = fully in control of the situation), based on their own affective experience (how pleasant, aroused they felt. etc.).

Stimuli: a set of four faces with neutral expression, from the Karolinska Directed Emotional Faces database (KDEF; Lundqvist et al, 1998). The pictures were selected to be representative for gender and to have a resemblance to both ethnic groups living in Cyprus. This was achieved in a previous ethnic categorization task described in Chapters 2 and 3, wherein six pictures from the KDEF database were categorized as either Turkish Cypriot or Greek Cypriot. The final selection of the stimuli used in this study includes the pictures that most closely resemble both ethnic groups but ensuring gender balance (see Chapters 2 & 3). In our statistical analyses we use the ethnic group distinction, which we call PicCategory, in order to check and control for the potential confounding effect of characteristics in the pictures that may resemble either ingroup or outgroup. Therefore, PicCategory refers to the previous normative categorization of the pictures as either ingroup or outgroup members by an independent sample, unbiased by any other research procedures or tasks. Based on findings in Chapter 2, the ethnic categorization (PicCategory) given to pictures differed significantly rather than being given at random. These pictures with KDEF codes are presented in Figure 7 below.

Figure 7. Neutral face picture stimuli used in the study on psychophysiological reactivity (KDEF; Lundqvist, Flykt & Ohmann, 1998)

				
KDEF code	AF17	AF20	BM03	BM12
	Female 1	Female 2	Male 1	Male 2

Psychophysiological measures: BIOPAC MP150 for Windows and AcqKnowledge 3.9.0 software (Biopac Systems Inc., Santa Barbara, CA) were used for data acquisition. Ag/AgCl shielded electrodes were placed on participants' face and arms following standard procedures (Fridlund & Cacioppo, 1986). Electrocardiogram (ECG; recorded at the two inner forearms) was filtered by a BIOPAC ECG100C bioamplifier, set to record HR between 40 and 140 beats per minute (BPM), and were converted to BPM on line. Skin Conductance Level was recorded continuously using a BIOPAC GSR100C transducer amplifier using a constant voltage (.5V) and 1-cm3 AgAg/Cl electrodes attached to the medial phalanx surfaces of the middle and index finger of the nondominant hand. The startle eye-blink was measured via EMG at the right orbicularis oculi (ORB; Fridlund & Cacioppo, 1986; Wangelin, et al., 2012). Raw EMG were sampled at 1000 Hz, amplified, filtered (band pass, 20 Hz high frequency, 500 Hz low frequency), integrated over 20 samples, and rectified. Startle probes were presented at variable times, with a minimum 12s interval between them. Startle probes were presented at variable onset in one third of pictures and one-third of the ITIs, occurring at least 1s after picture offset to avoid pre-pulse attention effects of picture onset (Dawson, Schell, & Filion, 2000). Facial EMG were recorded at the right corrugator supercilii and zygomaticus major muscles, sampling rate 1000 Hz, filtered (bandpass, 20 Hz high frequency, 500 Hz low frequency), integrated over 20 samples, and rectified. For each physiological measure we checked for subjects with "noisy" signal (i.e. greater than 20μVt for facial EMG, and greater than 20microsiemens for SCL). We did not find such issues and therefore no subjects were removed.

Apparatus: E-prime 2.0 (Psychology Software Tools, Inc., 2012) was used to program and present the stimuli. Auditory stimuli presented through SONY-MDR-7506 headphones. The acoustic

startle probe was a 50-ms burst of 95-dB(A) white noise with instantaneous rise time. BIOPAC MP1500 and Acqknowledge software were used to gain measures of psychophysiological reactivity.

Procedure. Upon coming to the lab, participants were greeted in one of two rooms and given a consent form to read and sign. The form gave some basic information about the experimental procedure, including that the experiment was to examine '*how human beings process information about ethnicity when looking at faces',* in order to induce a general intergroup perspective (See Appendix 4 for full consent form). After informed consent was given, participants were taken to the second room, seated in a comfortable chair, and given the following instructions while being fitted with electrodes, '*you will see a series of 4 pictures depicting faces who are **x** ethnicity (x* corresponding to either IN, OG, or CN conditions). *Just look at the pictures as you would normally do, so we can record your natural reactions'.* Lights were dimmed, subject was left alone, and a 5-min adjustment period followed, to stabilize physiological recordings and familiarize participants with the equipment. During this process a series of ten acoustic startle probes were presented to subject in order to habituate their initial shock response so that following startle responses would not be disproportionately large (Patrick, Bradley & Lang, 1993). After baseline was recorded and experiment was about to begin, experimenter entered the second room and told participants one last time the supposed ethnicity (achieved through group induction) of the faces they were to view, for a total of two specifications of the ethnic categorization of the faces they were to view, one in the beginning of the instructions phase of the experiment and one right before initiating experiment. This was done so that group affiliation and membership saliency were activated. Each participant was given the same instructions, read from a script.

Participants then viewed a series of four neutral face pictures in color (2 male and 2 female) 12 times each for varied durations (either 6, 8, 9 11 seconds), totaling 48 exposures in a fixed pseudorandom order. Exposures were separated by 48 variable length inter-trial intervals (ITI's) to avoid emotional contagion effects. A total of 16 startle probes were presented during the picture viewing and 16 during the ITI's, making a sum of 32 probes distributed evenly. All probes were separated by at least 12 seconds duration. This procedure lasted approximately 45 minutes, after which electrodes were removed, lights undimmed and the subject was asked to remain seated and look at the pictures again. This time they were to rate them on subjective affect, using a keyboard they were given. Participants rated each face picture based on how much subjective emotion (fear, anger, etc.) they felt while looking at the picture. The order of stimuli presentation was counterbalanced across participants.

Design. Subjects were separated into three groups, Ingroup (IN; n =30), Outgroup (OG; n =33) and Control (CN; n =33), corresponding to the three different conditions of stimulus presentation. All groups were exposed to the same face pictures, however, they were given different verbal inductions. The first group was told the pictures were G/C, the second group was told the pictures were T/C and the third

group was told the pictures were Spanish (CN). Each group was given a different group induction, so that they believed they were viewing either Turkish Cypriot (OG), Spanish (CN, n = 30) or Greek Cypriot (IN, n = 30) face pictures. In actuality, the subjects were exposed to the same set of faces. This was feasible because there are no clear physical markers of difference between Turkish Cypriots and Greek Cypriots. Spaniards also share common Mediterranean facial features, and have not been implicated in conflict on the island in the past, so were used as a control. Despite this, we undertook a normative rating procedure (full description in Chapter 2) in which the set of pictures were categorized as being of either Greek Cypriot or Turkish Cypriot descent, to gage a sense of whether certain resemblance in the picture features somehow may effect the experimental procedure. See Appendix 3 for design details.

Statistical Analyses. We compared fear and anxiety reactivity in the form of startle amplitude, heart rate, skin conductance and facial electromyography to the ethnic group depicted, in a between group paradigm. In addition, we examined within subject effects of ethnic categorization and gender of the picture stimulus, and interactions between all the aforementioned variables. Finally we examined between groups differences in subjective affect and interpreted these in comparison to between groups differences in physiological reactivity. In all analyses, where homogeneity of variance assumptions have been violated, we report Greenhouse-Geisser corrected values.

Initially, we conducted GLM Repeated Measures ANOVA (3 groups X 2 PicCategory X 2 PicGender) analyses, in order to examine differences in physiological reactivity (SCR, SR, HR, EMG) between Group Inductions (Ingroup, Outgroup, Control) and within participants in relation to PicGender (Male/Female) and PicCategory (Greek Cypriot/Turkish Cypriot). Subsequently, we conducted GLM Repeated Measures ANCOVA (3 groups X 2 PicCategory X 2 PicGender X 1IntegroupContact) in order to examine the potential of Intergroup Contact to alter the relationship between Group Induction and physiological reactivity. Finally, we conducted a GLM one way MANOVA to examine differences between groups in subjective ratings of affect (3 groups X 12 subjective affective ratings).

Data reduction.

Heart Rate: The mean HR beats per minute (BPM) was computed for each picture viewing period and for each inter-trial interval (ITIs) period (a 5 second duration of blue screen with fixation point before each picture stimulus onset). Mean HR during ITI was subtracted from mean HR during picture viewing, so that difference scores could be calculated. For each participant, HR difference scores were averaged across all picture presentations. This method was used as a cleaner indication of reactivity as it reduces the potential effect of inter-individual variability compared to using raw mean scores (Manuck et al., 1989).

Skin Conductance Response (SCR): Mean SCL (skin conductance level) was computed for stimulus viewing periods and ITI periods, and again, were transformed into difference scores. The SCR amplitude for the trial was calculated as the difference between peak SCL and baseline SCL on that trial. Any difference between peak SCL and baseline SCL of less than 0.01microsiemens was considered to be no response on that trial. For each participant, SCR difference scores were averaged across all picture presentations. This method was used to correct for inter-individual differences in range of SCL variation (Lykken & Venables, 1971).

Startle Amplitude: Raw EMG was sampled at 1000 Hz, amplified, filtered (band-pass, 28 high frequency, 500 low frequency), integrated over five samples, and rectified. The peak of the startle response was defined as the highest point occurring between 20 and 120 ms following noise probe onset, and was scored offline within a 100-ms window after probe onset. Amplitude scores were calculated as the difference between peak orbicularis level and the mean level during a 25-ms baseline prior to each probe. Startle amplitudes were standardized within subjects by converting absolute amplitudes to T scores. For each participant, startle amplitudes were averaged across all picture presentations, after removing all responses to startle probes where a peak could not be identified either due to noise or due to zero-amplitude (Blumenthal, Cuthbert, Filion, Hackley, Lipp, & Van Boxtel, 2005). Average responses per participant removed amounted to 0.64, and the range of responses removed per participant was from 0 to 3 responses.

Mean facial EMG raw scores in microvolts [μV] were computed for each picture viewing period, as were mean baseline scores during intertrial intervals. They were averaged across picture viewing and across baselines, and subsequently transformed into proportion scores by dividing the mean EMG during picture viewing with the mean EMG during inter-trial intervals. For each participant, EMG proportion scores were averaged across all picture presentations. Again this method was used to counter inter-individual variability (Van Boxtel, 2010).

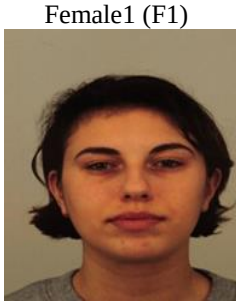
Within-subject trials that were +/- 2.5 Standard Deviations from the Mean of each measure, were considered outliers and were excluded from HR, ORB, SCR and EMG corrugator and zygomatic analyses. No multivariate outliers were removed.

Results

Physiological reactivity

Means and standard deviations of all psychophysiological measures for each picture across sample are reported in Table 6.

Table 6.Means and standard deviations for each picture stimulus across entire sample.

	Female1 (F1)	Female2 (F2)	Male1 (M1)	Male2 (M2)
				
	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)
Startle Amplitude T scores	48.50 (3.25)	53.80(5.24)	49.11(3.83)	49.99(4.29)
Skin Conductance Response Difference Scores (SCR; μS)	-.03 (.05)	-.06 (.07)	-.02 (.06)	-.02 (.08)
HR Difference Scores (BPM)	.06 (2.17)	-.04 (2.47)	-.32 (2.44)	-.05 (2.05)
ZYG Proportion Scores μV	1.00 (.12)	.97 (.09)	1.00 (.10)	1.00 (.11)
Corrugator Proportion Scores μV	1.00 (.06)	1.00 (.06)	.99 (.05)	.99 9.07)

Startle Amplitude

Between Groups Comparison. There was no significant main effect of Group Induction, indicating that Startle Amplitude responses were the same for all groups to the face pictures in general, $F(2, 90) = .38$, $p > .05$.

Within Groups Comparison. There was a significant main effect of PicGender, $F(1, 90) = 11.58$, $\eta p^2 = .11$, $p < .001$ on Startle Amplitude, indicating that responses differed across the sample according to the gender of the face depicted, regardless of Group Induction. Post hoc tests revealed that overall Startle Amplitude was greater for female face pictures (m = 51.15, SD = 2.56) than males (m = 49.56, SD = 2.37) (see Table 7).

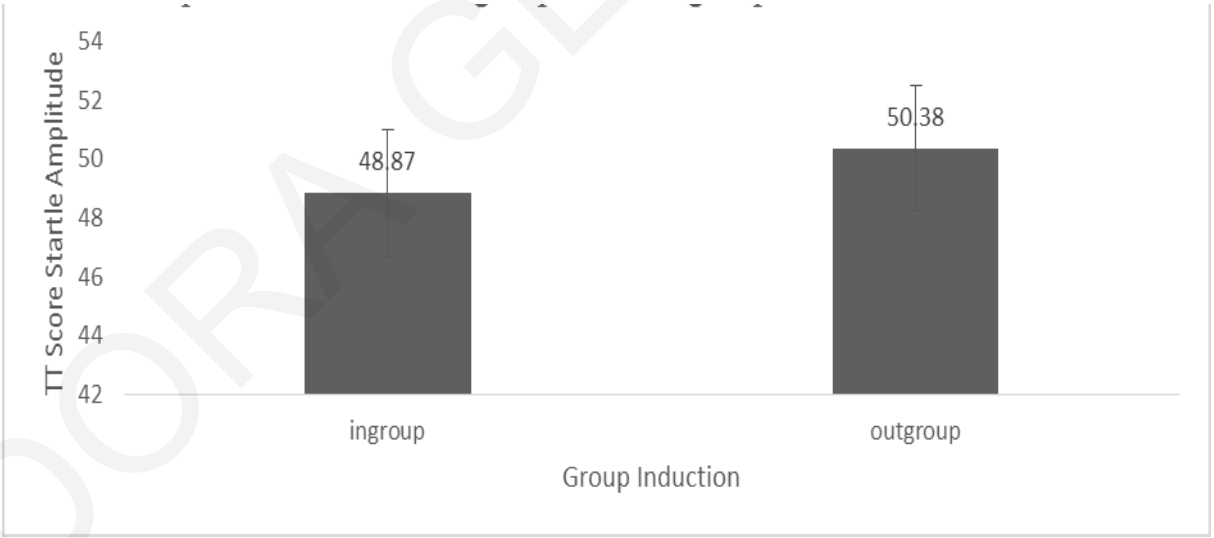
Table 7. Startle Amplitude by sex of stimulus and ethnic categorization of stimulus for entire sample (N = 93)

	Mean	SD
Sex of Stimulus		
Male Faces	49.56	2.37
Female Faces	51.15	2.56
Ethnic Categorization of Stimulus		
Greek Cypriot (IN)	51.46	2.94
Turkish Cypriot (OG)	49.25	2.29

There was a significant main effect of PicCategory, F (1, 90) = 17.90, ηp² = .17, p <.001 on Startle Amplitude, indicating that responses differed across the sample according to the ethnic categorization given to the picture, regardless of Group Induction. Post hoc tests revealed that participants elicited higher startle amplitude to pictures that were categorized as Greek Cypriot (m = 51.46, SD = 2.94) than pictures categorized as Turkish Cypriot (m = 49.25, SD = 2.29).

Interaction Effects. There was a significant interaction between PicGender and Group Induction on Startle Amplitude, F (2, 90) = 3.59, ηp² = .07, p <.05, indicating that responses to gender of pictures differed according to group induction. Parameter estimates showed that the group effect was significant for male pictures only. Pairwise comparisons show those given Outgroup Induction exhibited greater startle reactivity to male faces (m = 50.38, SD = 2.14) than those given Ingroup Induction (m = 48.87, SD = 2.15) and Control (SP) Induction (m = 49.34, SD = 2.00), however, the mean difference is significant between Ingroup and Outgroup Inductions. Specifically, participants given the Outgroup Induction exhibited the largest overall Startle Amplitude (m = 50.38, SD = 2.14), whereas participants given the Ingroup Induction exhibited the smallest overall Startle Amplitude (m = 48.87, SD = 2.15), with a mean difference of 1.51 (p = .011) (Figure 8).

Figure 8. Comparison of mean startle amplitude in response to male pictures between ingroup (IN) and outgroup (OG) inductions



There was a significant interaction between PicGender and PicCategory on Startle Amplitude, indicating that responses to gender of pictures differed according to ethnic categorization given to the pictures, F (2, 90) = 43.96, ηp² = .33, p <.05. To clarify our results, we conducted a one –way repeated measures ANOVA to examine if the differences in startle amplitude responding to face pictures were significant over entire sample. We entered each of the face pictures as four levels of the independent variable (FacePic) and examined within participants differences only. The results show that the effect of face was significant, and startle amplitude responding for entire sample was significantly affected by one

particular face picture, F (2.75, 253.21) = 22.57, p = .000. Contrasts revealed that startle amplitude responding to Female 2 was significantly higher than to all other pictures (in contrast to Male 1, F (1, 92) = 40.94, ηp^2 = .31; in contrast to Female 1, F (1, 92) = 52.28, ηp^2 = .36, and finally, in contrast to Male 2, F (1, 92) = 21.10, ηp^2 = .19). In addition, Male 2 elicited larger startle amplitude responses than Female 1, F (1, 92) =5.56, ηp^2 = .06.

Post hoc analyses:

To probe the interaction between PicGender and Group Induction further, we ran two GLM Repeated Measures ANOVAs, entering face pictures of males as nested levels of the independent variable (MaleFacePics) in one model (3 groups X 1 condition PicMales) and face pictures of females as nested levels of the independent variable (FemaleFacePics) in a second model (3 groups X 1 condition PicFemales) while retaining the between groups factor (Group Induction).

In sum, results of these tests showed that the main effect of PicGender remained significant only for the female face pictures, F (1, 90) = 51.24, p = <.01, ηp^2 = .36, whereas the main interaction of PicGenderXGroupInduction remained significant only for the male face pictures, F (2, 90) = 4.70, p = .011, ηp^2 = .10. That is to say, there was a significant main effect of FemalePicGender, F (1, 90) = 51.24, p <.01, on Startle Amplitude, indicating that responses differed in participants to faces of females, regardless of Group Induction. There was no significant main effect of MalePicGender, F (1, 90) = 1.63, p >.05, indicating that subjects' startle amplitude did not differ within participants as a function of the depiction of male faces alone. These results replicate and clarify the findings from our initial analyses. However, unlike results from our initial analyses, we found that the between participants effect of Group Induction became significant after separating the genders and using each face picture as a level of analysis. Particularly, participants who received Outgroup Induction reacted with larger Startle Amplitude to males, whereas participants who received Ingroup Induction reacted with larger Startle Amplitude to females.

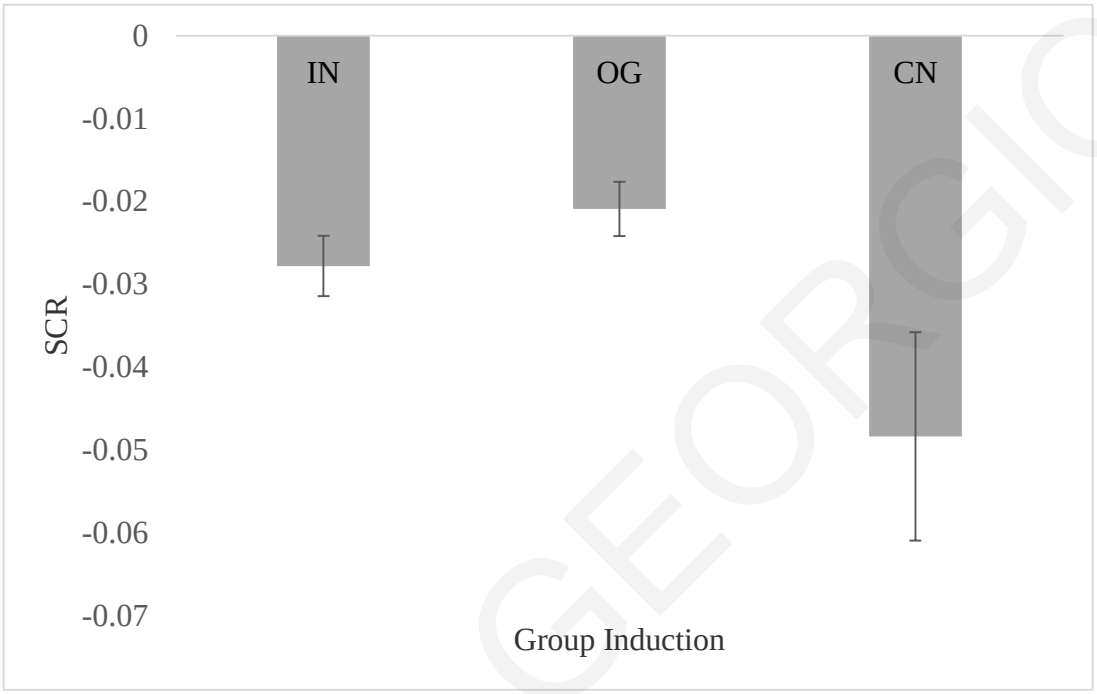
In terms of reactivity towards the male face pictures, the interaction shows that those who received Outgroup Induction reacted with larger Startle Amplitude to male face picture categorized as Turkish Cypriot. In terms of reactivity towards the female face pictures, the interaction shows that those who received Ingroup Induction reacted with larger Startle Amplitude to female face picture categorized as Greek Cypriot.

Skin Conductance

Between Groups Comparison: There was a significant main effect of Group Induction, indicating that Skin Conductance responding was different according to Group Induction (F (2, 90) = 3.54, ηp^2 = .07, p <.05). Descriptive statistics showed that participants who received Outgroup Induction exhibited greater overall skin conductance (m = -.021, SD = .02) than those who received Ingroup

Induction (m = -.028, SD = .01), who in turn exhibited higher SCR than those in Control Induction (m = -.048, SD = .07). Post hoc pairwise comparisons revealed that those who received Outgroup Induction had significantly higher levels of skin conductance (m = -.021mV, p = .012) compared to Control Induction (m = -.048mV, p = .012) but not compared to Ingroup Induction (m = -.028mV, SD = .01). No other pairwise comparisons were statistically significant. Figure 9.

Figure 9. Mean SCR difference scores for each group induction.



Within Groups Comparison. There was a significant main effect of PicGender, F (1, 90) = 11.32, p <.01 on SCR, indicating that responses differed according to the gender of the face depicted. Subjects in entire sample exhibited significantly higher skin conductance to male pictures than female pictures regardless of Group Induction.

There was a significant interaction between PicGender and PicCategory on SCR, indicating that responses to gender of pictures differed according to ethnic categorization given to pictures, F (1, 90) = 13.03, p <.05. In order to interpret this effect, we note that SCR was significantly greater for male pictures (m = -.020, SD =.06, p = .001) than female pictures (m = -.045, SD =.05, p = .001), and marginally significantly greater for outgroup categorization (m = -.027, SD =.05, p = .052) than for ingroup categorization (m = -.038, SD =.05, p = .052). However, post hoc tests showed that the interaction caused the male categorized as ingroup member to lead to higher SCR (m = -.017, SD = .06, p = .006) than the male categorized as outgroup member (m = -.023, SD = .08, p = .010) and the female categorized as outgroup member led to higher SCR (m = -.031, SD = .05, p = 000) than the female categorized as ingroup member (m = -.059, SD = .07, p = .000).

Heart Rate

There was no significant effect of Group Induction, F (2, 90) = .51, p=. 60, on HR during picture viewing. PicGender F (2, 90) = .61, p=. 44, and PicEthnicity, F (2, 90) = .24, p=. 63, did not show a significant effect. No interactions were significant.

Facial electromyography

Corrugator superciili. Between Groups Comparison. There was no significant main effect of Group Induction, indicating that corrugator responses were generally the same for all groups, F (2, 90) = 2.34 p =.10.

Within Groups Comparison. There were no main effects of PicGender, F (1, 90) = 2.00, p=. 16, and PicEthnicity, F (1, 90) = .21, p=. 65, indicating that the gender and characteristics of the face depicted did not elicit corrugator activity differentially within participants.

However, there was a significant interaction between PicGender and Group Induction on corrugator, F (2, 90) = 4.40, p =.02, indicating that responses to gender of pictures differed according to group induction.

Post hoc tests (using Bonferroni correction) reveal those who received the Ingroup Induction had more corrugator activity when looking at females by (m = 1.02, SD = .05) than those who received the Outgroup Induction (m = 1.00, SD = .05) and Controls (m = 0.98, SD = .04). This is in comparison to corrugator activity when looking at males (Ingroup Induction, m = 1.00, SD = .03; Outgroup Induction, m = 0.98, SD= .06; Controls, m = 1.00, SD = .05).

To clarify our results further, we conducted a one –way repeated measures ANOVA to examine group differences in corrugator activity to each female face picture. The results show that corrugator responding by group who received Ingroup Induction was significantly greater to Female 1, F (2,90) = 4.09, p <.05, than to Female 2, F (2,90) = 1.86, p <.05. Particularly, pairwise comparisons showed those who received Ingroup Induction had greater corrugator activity when viewing Female 1 (m = 1.02, SD = .05) than Outgroup Induction (m = 1.00, SD = .05) and Control Induction (m = 0.98, SD = .07), respectively. However, the difference was statistically significant (p = .02) only between the Ingroup Induction and the Controls. No other pairwise comparisons were significant.

Zygomaticus There was no significant effect of Group Induction, indicating that zygomatic responses were the same for all groups, F (2, 90) = p >.05. Gender of picture and facial characteristics of Picture did not have a significant main effect, F on zygomatic activity. No interactions with Group Induction were significant**.**

Covariation between psychophysiological reactivity to face pictures, group induction and intergroup contact.

To examine if mean differences remain in psychophysiological reactivity to face pictures after controlling for the amount of previous Intergroup Contact, we conducted a repeated-measures analysis of covariance (ANCOVA). In three separate analyses, we entered each of the measures that exhibited significant differences in our previous analyses – startle amplitude, skin conductance and corrugator activity – as dependent variables, while retaining the independent variables of PicGender, PicCategory and Group Induction, and controlling for the variance of Intergroup Contact. We compared results from these analyses with our previous ones to determine if significant differences remain.

Startle Amplitude

Between Groups Comparison. After controlling for the effect of Intergroup Contact the non- significant main effect of Group Induction remained without change, $F(4, 88) = .36$, $p > .05$., indicating that Startle Amplitude responses were the same for all groups to the face pictures in general and that the covariate did not account for any group effects.

Within Groups Comparison. After controlling for the effect of Intergroup Contact, the main effect of PicGender continued to be significant, $F(2, 88) = 5.15$, $p = .03$ explaining 6% of the variance, but was reduced compared to before controlling for the covariate - in which case 11% of the variance was explained. This indicates that responses in Startle Amplitude still differed across the sample according to the gender of the face depicted, regardless of Group Induction, but that this effect was in part accounted for by Intergroup Contact. Post hoc tests revealed almost identical descriptive statistics to the previous analysis.

After controlling for the effect of Intergroup Contact, the main effect of PicCategory continued to be significant, $F (1, 88) = 8.23$, $\eta p^2 = .07$, $p = .01$ on Startle Amplitude but was also reduced. This indicates that responses still differed across the sample according to the ethnic categorization given to the picture, regardless of Group Induction, but when controlling for intergroup contact 7% of the variance is explained as opposed to 17 % when Intergroup Contact was not included. Post hoc tests revealed almost identical descriptive statistics to the previous analysis.

Interaction Effects. After controlling for the effect of Intergroup Contact, the interaction between PicGender and Group Induction on Startle Amplitude continued to be significant, $F (1, 88) = 3.33$, $\eta p^2 = .07$, $p = .04$. Controlling for Intergroup Contact did not change results in a marked way compared to previous analysis ($F (2, 90) = 3.59$, $\eta p^2 = .07$, $p = .03$), and effect sizes remain identical.

After controlling for the effect of Intergroup Contact, the interaction between PicGender and PicCategory on Startle Amplitude was no longer significant, indicating that responses to gender of pictures no longer differed according to ethnic categorization given to the pictures, $F (1, 88) = .58$, $\eta p^2 = .01$, $p > .05$. Controlling for Intergroup Contact removed the interaction effect on Startle Amplitude entirely.

Skin Conductance

Between Groups Comparison: After controlling for the effect of Intergroup Contact, the significant main effect of Group Induction on Skin Conductance, F (2,90) = 3.54, eta² = .07, p = .033, was eliminated, F (4,88) = 3.07, eta² = .07, p =.052.

Within Groups Comparison. After controlling for the effect of Intergroup Contact, the significant main effect of PicGenderDifferenceScore, F (1, 90) = 11.32, p =.01 on SCR was eliminated, F (1, 88) = 11.32, p =.27

After controlling for the effect of Intergroup Contact, the significant interaction between PicGender and PicCategory, F (1, 90) = 13.03, p =.01, on SCR was eliminated, F (1, 88) = .68, p =.41. Findings suggest that all SCR effects are accounted for by contact.

Facial electromyography

Corrugator superciili. Between Groups Comparison. After controlling for the effect of Intergroup Contact the non- significant main effect of Group Induction F (2, 90) = 2.34 p >.05, remained almost without change, F (4, 88) = 2.29, p =.11.

Within Groups Comparison. After controlling for the effect of Intergroup Contact the non-significant main effects of PicGender, (F (4, 88) = .87, p =.35), and PicCategory, (F (4, 88) = .22, p =.64), remained.

After controlling for the effect of Intergroup Contact, the significant interaction between PicGender and Group Induction on corrugator F (2, 90) = 4.40, eta² = .09, p =.015, remained unchanged, F (2, 88) = 4.06, ηp² = .09, p =.021. This result indicates that responses to gender of pictures still differed according to group induction as described in previous analysis, despite controlling for intergroup contact.

Self-reported subjective affect: comparison between groups

We conducted a GLM one –way multivariate analyses of variance (MANOVA) to check for differences on subjective affective ratings between the three groups.

A significant Box's M test (p = .01) indicates lack of homogeneity of covariance matrices of the dependent variable across the groups. Levene's test for each dependent variable separately, however, indicates homogeneity of variance (p>.05) for almost all variables. There were three exceptions, with Levene's test indicating violations of homogeneity of variance in the ratings of 'valence' (F (2,122) = 3.64, p = .03), 'sadness' (F (2,122) = 7.05, p = .01) and 'disgust' (F (2, 122) = 9.37, p = .01. With these three face traits we used an alpha level stricter than .05 (.001) when evaluating univariate ANOVAs. Pillai's Trace is reported.

The multivariate effect was not significant between groups, F (24,224) = 1.459, p >.05, ηp² = .14.

However, a closer examination of univariate tests showed that there was one significant difference between groups on valence, $F(1, 122) = 3.99$, $p = .02$, $\eta p^2 = .06$. In order to examine this effect further, we conducted a post hoc ANOVA on valence alone. We entered group (3) as an independent variable and valence as the dependent variables. Again, Levene's test indicated violation of homogeneity of variance in the ratings of 'valence' ($F(2,126) = 3.20$, $p = .04$). Since the assumption of homogeneity of variance was not met, we used the Welch's adjusted F ratio, which was significant at the .01 alpha level ($F(2, 80.55) = 5.05$, $p < .01$). We can conclude that at least two of the three groups differ significantly on their average valence ratings. Post hoc comparisons using a Bonferroni correction indicate that the Outgroup Induction (OG) participants rated their affect with the highest positive valence ($m = 14.89$, $SD = 2.13$), compared to Ingroup Induction ($m = 13.43$, $SD = 3.13$) and control ($m = 13.42$, $SD = 2.92$), which did not differ between them.

Control for gender of participants: as a final check we ran a MANOVA to examine if physiological reactivity differed between gender of participants. We only examined measures that were statistically significant in our previous analyses. Results indicate no differences on startle amplitude, SCR and corrugator activity and self-reported valence between males and females, $F(4, 88) = .36$, $p = .83$, $\eta p^2 = .02$).

Discussion

In opening, we note that we found no significant differences in responding on heart rate or zygomaticus activity. We also note that the main effect of group induction was only significant in the instance of skin conductance, but there were significant interactions between group induction and corrugator, and group induction and startle amplitude. In terms of self-reported subjective affect, there also was a main effect of group induction on valence. Finally, we note that the sex of the stimuli (face pictures) differentiated psychophysiological reactivity across all of the significant measures, however, the gender of respondents did not. That is, there were no differences in psychophysiological reactivity between male and female respondents.

Our findings provide support for the intergroup anxiety hypothesis, in that the group who received the Outgroup Induction elicited greater overall skin conductance, replicating findings from previous studies (Rankin & Campbell, 1955; Vidulich & Krevanick, 1966; Cooper & Siegel, 1956; Cooper & Singer, 1956; Dambrun et al., 2003). Moreover, the Group Induction interacted with the gender of picture in relation to startle amplitude, in that participants given Outgroup Induction reacted with greater startle amplitude to male pictures compared to other groups. To sum up, the group who received outgroup induction exhibited greater general skin conductance, and exhibited greater fear potentiated startle responses to male pictures, compared to other groups, in support of the intergroup

anxiety hypothesis. Contrarily, this same group reported greater overall subjective positive valence compared to the other groups.

The increased skin conductance response indicates greater overall arousal (Lang et al., 2000), perhaps akin to anxious avoidance (Fowles, 1988), was exhibited by those who believed they were viewing Turkish Cypriots, and this applied to all pictures. In addition, this same group exhibited specific defensive reactivity, indexed by startle amplitude, when they thought they were viewing pictures of male Turkish Cypriots. These results suggest that generalized intergroup anxiety as well as focal fear color autonomic reactivity to perceived outgroup stimuli as startle potentiation was specifically responsive to male pictures, whereas skin conductance responded more generally to both males and females. Finally, the self-reported affect by this group (Outgroup Induction) indicated that they felt more pleasant when viewing the pictures than the other groups. This is a discordant response when viewed in light of the defensive autonomic reactivity and anxiety exhibited by this group and supports previous studies that have consistently demonstrated that psychophysiological measures of affect and self-reported measures of affect in relation to prejudice are often discordant (Hass et al., 1991; Vanman et al., 1997).

As stated previously, in terms of startle amplitude, the interaction effect indicates that the outgroup induction successfully elicited greater fear responding to male pictures but not female pictures. This contrasts to subjects who received the ingroup induction, who thought they were looking at Greek Cypriots; they actually responded to the pictures of the males with the lowest startle amplitude, compared to controls. This also supports the intergroup anxiety hypothesis, in terms of less defensive preparation in relation to ingroup. Moreover the skin conductance measure also shows less arousal in subjects given ingroup induction, compared to outgroup induction, across face pictures. This echoes findings of Brown and colleagues (2006) that indicated that both white and blacks exhibited less skin conductance when viewing members of ingroup.

In terms of facial reactivity, our findings do not support the ingroup sympathy hypothesis, nor the outgroup antipathy hypothesis. In fact, we had somewhat puzzling findings in that the group who received Ingroup Induction reacted with greater corrugator activity to female pictures than other groups and a closer inspection showed that this effect was solely driven by the picture of Female 1/TC. This puzzling reaction to females by those in ingroup induction seems to be replicated in the interaction showing that those who received Ingroup Induction reacted with larger Startle Amplitude to Female 2/GC. Why would those given the ingroup induction exhibit heightened reactivity to females? This could be indicative of a dissonance effect in that after having categorized the females as members of the ingroup (due to group induction) and then being exposed to them in a study with clear intergroup overtones may seem incompatible - and somehow create a sense of heightened threat, arousal and displeasure. Conversely, our results do not support the outgroup antipathy hypothesis, in that the group

given outgroup induction did not exhibit significantly different corrugator activity than the other two groups. Also, it is important to note that these results are not reflected in self report ratings, wherein those given ingroup induction did not rate their subjective affect differently compared to the other groups.

The only difference we registered in self-reported affect, was, as already mentioned, in valence by the group who thought they were looking at Turkish Cypriot outgroup members. This discordance in emotional response systems may be illustrative of the implicit nature of contemporary prejudice, or uncoupled co-activation (Ito et al., 1998) of both strong positive and strong negative feelings towards outgroup. Other explanations that could account for this effect are social regulation of the self and/or an attempt to increase self-esteem by perceiving subjective affect as more pleasant. Countless processes could be at play. The mechanism behind this is unclear. Because these effects are significant for pictures that had been previously categorized as ingroup (Female 2; KDEF code AF20) and outgroup (Female 1; KDEF code AF17), the role of PicCategorization does not yield a clear trend. This suggests that facial characteristics, indexed through categorizing pictures as resembling either Greek Cypriot or Turkish Cypriot, impact autonomic reactivity but not in a clear dichotomized ingroup versus outgroup way. The mixed evidence for an implicit effect of ethnic resemblance of pictures does not reliably indicate clear effects.

The effect of gender of face picture (but not of subjects) had a large impact on the results, either alone or in conjunction with the Group Induction. Interestingly, greater startle amplitude was elicited by female gendered face pictures across the sample. Ingroup characteristics of face pictures (measured by how closely the faces in the pictures resemble ingroup or outgroup) also elicited greater startle amplitude responding. This seems to be indicative of particular picture effects, because the greatest startle responses across groups and across participants were elicited by the single most attractive picture, that of a female (F2, previously categorized as an ingroup member and the most attractive of the face pictures (see Chapter 2) . Normally this should lead to increased startle amplitude, as attractiveness and ingroup characteristics should be not be threatening, however, the same picture was also rated as having the most mean and dominant traits of all the faces (both males and females). This may effect aversive responding because this face seems to elicit mixed positive and negative, approach and avoidance responses.

We did not register any significant results in relation to Heart Rate, perhaps because we did not disentangle potential effects of sympathetic and parasympathetic impulses to the cardiovascular system. Previous studies have yielded results both reporting acceleration and deceleration depending on the paradigm used (Gomez & Danuser, 2009; Vrana & Rollock, 1998) and whether sympathetic but also, parasympathetic activity was considered. Dambrun and colleagues (2003) found that in conditions of viewing outgroup (Arab target), French students exhibited a significant heart rate acceleration than when

viewing ingroup (French target), and that this effect was attributed to a significant decrease in parasympathetic activity. Researchers (Porges, 1991, 1995) have suggested that to study emotions like prejudice, the cardiac parasympathetic division of the ANS needs to be considered because heart rate acceleration may be larger to an aversive stimulus than to a low-intensity stimulus, not because of differential sympathetic activity but because parasympathetic activity decreases with high-intensity stimulation. In the case of picture viewing, parasympathetic activity need not decrease, as the stimulus is low intensity.

By conducting covariation analyses and controlling for intergroup contact we found that the amount of variance in startle amplitude explained by differences within subjects in response to PicGender and Pic Category was reduced, however, the interaction effect between PicGender and Group Induction was not altered. But, the interaction between PicGender and PicEthnicity was no longer significant. Overall, including the covariate created a reduction of the impact on each independent variable on startle amplitude. Including the covariate caused differences in psychophysiological reactivity in the form of skin conductance response between and within groups to be eliminated entirely. This indicates that the covariate, intergroup contact, accounted for all of the effect of the independent variables on skin conductance and some of the effect of the independent variables on startle amplitude. The fact that within group measures, such as PicGender, were also effected by the covariate regardless of their direct significance with Group Induction, may point to the strength of the covariate to account for an overall negative arousal in relation to the experimental context (intergroup relations). That is, the covariate not only removed variance otherwise accounted for by Group Induction but also removed and reduced variance accounted for by PicGender.

Important to note that the covariate had no major impact on the interaction between Group Induction and startle amplitude. In fact this was the only measure not to be impacted by the inclusion of the covariate in the model. This may be indicative of the highly resistant specific fear conditioning that may not be as susceptible to the kind of contact reported in this study, which was on average low to medium in quantity and generally not consisting of high quality ties, like friendship, but more of sporadic experiences and acquaintances. Moreover, the instantaneous rapidity and reflexivity of the startle response makes it less susceptible to conscious attempts at change.

Limitations of Current Study and Future Recommendations

Future research on intergroup defensive reactivity would benefit by further examining the association of psychophysiological responding with specific intergroup contextual and motivational variables in real world conditions. Particularly, it would be useful to look into patterns of physiological responding in relation to a conglomeration of characteristics such as self-reported emotion and socio-political attitudes, which may yield different profiles of responding in line with a typology or may yield

central dimensions in responding that cut across all people in all contexts. This will help us better understand how specific kinds of contact can have different impact in real world conditions, as we may be dealing with people with specific profiles of psychophysiological reactivity, or we may be neglecting a central dimension of autonomous reactivity that may be exercising its effects across the board. Ecological validity should always be attended to and maximized in this kind of research, unless the removal of the phenomenon under study from its context and its abstraction, is justified. In addition, future research should further investigate the discordance effect between subjective and autonomic emotion systems.

Our study is hindered by numerous limitations. In regards our stimuli, we are limited by the small amount of picture stimuli (6 face pictures) we have used. In regards our measures, we haven't corroborated what the maximal group induction we used in our study achieved exactly, or whether it was believed by our participants to begin with. Future research should include measures to investigate the effectiveness of the maximal group induction starting with how convincing it was, and continuing with what mechanism was driving the effect. For example, did the maximal group induction create the need to increase self-esteem, and did this arise to counter negative arousal? Investigating the mechanism involved in driving the effect of a maximal group induction on psychophysiological responding would help answer questions around the implicit and explicit expression of prejudice in contemporary society, especially in regards motives for regulation of affect. Also, we only measured direct, face to face contact, but it would be useful to measure other forms of contact as well.

Another limitation of this study is the small sample and the fact that they were university students who generally exhibit low prejudice relative to the rest of the population. It would be useful to conduct the same kind of research on non-normative samples, that is, people with high prejudice or in self-identified social groups with extreme polarized ethnic identities. Finally, attempts should be made so that Turkish Cypriot participants be included in such research efforts.

Chapter 5: Individual differences in relation to prejudice: personality, authoritarianism, social identity and empathy. Does intergroup anxiety mediate their effect on intergroup contact and negative outgroup attitudes?

The role of individual and social factors in intergroup relations have been of consistent interest to researchers from the very inception of the field of social psychology. Properties related to the individual and properties related to the social context both operate to shape intergroup relations. Despite this, researchers have prioritized either the individual or the social in the advancement of the study of prejudice – one line of study emphasized the role of individual characteristics and the other line of study emphasized the role of social factors (Allport, 1919; Tajfel, 1972) in determining intergroup bias and its outcomes.

Researchers studying prejudice from a social point of view, were trying to understand the conditions that foster prejudiced attitudes and behavior, while theorists focusing on the individual were trying to understand why some people believe and act prejudicially while others do not. Reconciling the need to approach the study of prejudice from both perspectives, albeit in opposition to what he perceived to be an over-stressing of the role of the group at the time, Floyd Allport (1919) framed the issue as such, 'We have been so busy talking about group types, group interests, group consciousness, and degree of group solidarity, that we have forgotten that the locus of all psychology, individual or social, is in the neuromotor system of the individual (p298)'.

Part of the difficulty of studying prejudice from both perspectives is practical – it is very tricky to find a way to empirically operationalize abstract social phenomena, and the inclusion of too many different measures restricts scientific parsimony and can cloud results. However, measures of individual differences can, to varying degrees, be indicative of social factors and social context as experienced by the individual, as well as tendencies rooted in individual temperament. Measures of individual difference are also quite easily garnered as opposed to other sampling methods. Through this study we examine a spectrum of individual and social factors, assessed through individual difference measures, from intraindividual (personality) to interpersonal (empathy) to intergroup (social identity and sociopolitical attitudes) in association with prejudice.

Theorists approaching the study of prejudice in order to examine the role of social conditions, have shown that social context relates to prejudice in a multitude of ways. Evidence that group norms cue attitudes and behaviors had been provided as early as 1939, with research findings showing that prejudiced social norms are internalized by children as young as age 5, and influence both esteem towards self and others (Clark & Clark, 1939). Sherif and collaborators demonstrated that, all things considered equal (as possible), social conditions such as realistic conflict over resources led to prejudice,

and group co-operation towards a common goal eliminated it (Sherif & Sherif, 1953). Beyond the role of realistic threat and realistic conflict in prejudice formation, evidence suggests that symbolic threat is also sufficient to elicit prejudiced attitudes (Stephan et al., 2002). Still retaining a focus on social factors but moving in a cognitive direction, Tajfel & Turner (1979) promoted the position that the mechanism behind prejudice acquisition was social categorization - the cognitive process of categorizing 'them' vs. 'us – for the purpose of creating social identity, which is explicitly tied to emotional needs.

Expounding on social categorization further, how one feels about the outgroup is largely dependent on how one feels about their ingroup, which is, itself, part of one's social identity. Social identity refers to the part of our self-concept that derives from belonging to groups and the emotional significance and value it has for us (Tajfel, 1981). By emphasizing the affective impact of social identification with groups, and identifying the mechanism of social categorization as instrumental to this process, Tajfel & Turner (1979) provided a solid basis for further inquiry into emotional processes on a social and intergroup scale. Social Identification Theory (Tajfel, 1982; Tajfel & Turner, 1979) describes social categorization processes by which people implicitly tend to favour those categorized as in-group members and feel more positive towards those people. Under this conceptualization, prejudice may act to maintain the self-esteem of group members by generating bias against the outgroup (Wilder & Simon, 2003). Therefore, emotional experience is key to prejudice, in the motive to bolster self-esteem through group membership and in the motive to solidify/retain group cohesiveness by experiencing emotionality at a group level (Mackie & Smith, 2004). Through dynamics of social identity, people can experience group based emotions even if there are no direct repercussions on the individual (Mackie, Devos, & Smith, 2000).

Social identity is an essential and fundamental part of how individuals perceive and value themselves through the ordering, systematizing, and simplifying of the complex network of social groups confronting them in social environments (Tajfel, 1982). As an individual member of a group, the group (or social) identity is adopted by the individual member as part of their self-understanding. Social categorization serves social identity, in that we tend to include and exclude people from our ingroup so that we can see and relate to ourselves in a particular way - namely, to increase self-esteem in relation to others. In the process of social categorization, perceived intragroup similarities and intergroup dissimilarities are accentuated by the use of the cognitive mechanism of social comparison, especially if the social categories are associated with value differentials. But, the same mechanism, social comparison, also leads to the homogenization of the outgroup as one undifferentiated mass, allowing for more heterogeneity of individual expression within the ingroup. The dynamics of social categorization are determined by the need to preserve or achieve a "positive group distinctiveness" which in turn serves

to achieve and protect a positive social identity for members of the group (Tajfel, 1974, 1981; Turner 1975; Tajfel & Turner 1979).

According to this view, even though social categorization relies on individual and internal schematic processing, it is largely a social process, because the production and availability of categories that are utilized to create social identity are socially constructed. That is, even though one's social identity unfolds and is measured at the level of the individual, it is not only indexing personal characteristics but, to a large extent, characteristics in the social context. For example, if in one's social context two dichotomous categories exist on a mutually exclusive basis, such as two conflicting ethnic groups, one's social identity depends on which group one is born into and the pre-existing values associated with that group. The quality of one's social identity, such as how rigid or flexible it is, is necessarily effected by individual differences, but again, also by context.

Using a much more individualistic approach to understanding prejudice, Theodor Adorno (1950) and his colleagues pioneered the notion of the 'Authoritarian Personality' as a complex of traits developed in childhood that lead to prejudice. Particularly, Adorno and his colleagues viewed internal to the individual conflicting dynamics of dominance and submission as the source of misplaced aggression towards 'weaker' others – culminating in fascist and prejudiced ideology and behavior. This view emphasized characteristics contained within the individual, acquired through a rigid and oppressive process of childhood socialization as determinants of prejudice. Adorno's theory on prejudice/fascism is very individualistic, in that it attributes the causes of prejudice to 'personality', whereas the theories described previously attribute the causes of prejudice to social context.

Synthesizing individualistic and social approaches, Gordon Allport (1954), viewed prejudice as an antipathy, emphasizing individual negative emotions as a critical element, but, he also viewed prejudice as 'rationalized exploitation' of inequality, emphasizing a systemic basis (Dovidio et al., 2005). Allport (1954) promoted the Contact Hypothesis, which largely states that, under optimal conditions, contact with outgroup will lead to reduced prejudice, a position that has received extensive empirical support (Pettigrew, 1997; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; Pettigrew & Tropp, 2006, Davies et al., 2011). Allport implicated conditions in social groups (equal status, institutional support, common goals, intergroup cooperation) as optimal for prejudice reduction through contact, but he emphasized that these processes unfold on an interpersonal level, recognizing the role of individual differences.

An even more recent attempt at synthesizing social and individual approaches in the understanding of prejudice has been applied by Stephan & Stephan (1985) with the conceptualization of 'intergroup anxiety' as a major mediator of intergroup relations. The construct of intergroup anxiety embodies both feelings of threat and uncertainty people may feel in intergroup contexts and is caused by

situational and personal characteristics (Stephan, 2014; Pettigrew & Tropp, 2006). More specifically, intergroup anxiety involves a fear of:

(1) psychological outcomes to the self (e.g. discomfort, frustration, irritation) and

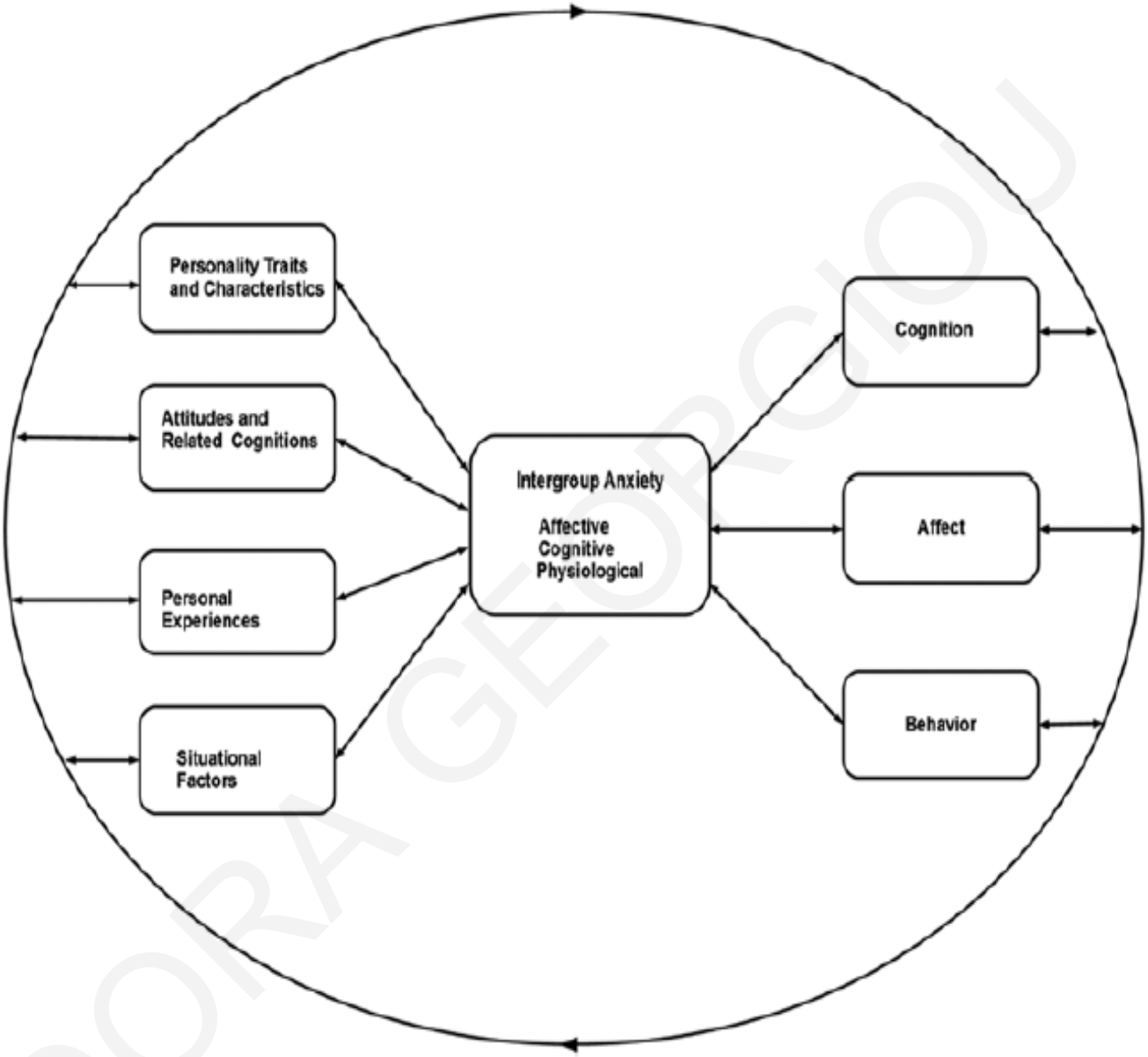
(2) behavioural outcomes to the self (e.g. violence, ostracization),

(3) fear of negative evaluations by ingroup members (e.g. rejection) and

(4) fear of negative evaluations by outgroup members (e.g. disapproval, ridicule, scorn).

Intergroup anxiety may be due to negative bias towards the out-group or it may be due to apprehension at engaging with the unfamiliar, and Stephan (2014) implicates personality traits, individual characteristics and context to account for individual differences between those who experience a high degree of intergroup anxiety and those who do not. Most importantly, intergroup anxiety is thought to mediate the relationship between a host of social and individual difference variables (i.e. personality characteristics/ ethnocentrism) on intergroup relations (i.e. avoidance of contact with outgroup) (Figure 10).

Figure 10. The theoretical model of intergroup anxiety (Stephan, 2014)The following figure has been taken from Stephan, W. G. (2014). Intergroup anxiety: Theory, research, and practice. Personality and Social Psychology Review, 18(3*)*



Stephan (2014) posits that four antecedents likely cause intergroup anxiety, in which he clearly includes social and individual factors. Both (1) situational and (2) personality variables, as well as factors such as (3) prior intergroup relations (which are largely context based) and (4) prior intergroup cognitions (which are largely internal processes) are implicated in the formation of intergroup anxiety. The consequences of intergroup anxiety emerge at all levels of functioning: behavioural, cognitive and affective (Stephan, 1987). Behavioural consequences may take the form of avoidance, reliance on intergroup interaction norms, or even pre-emptive behavior such as aggression (Van Zomeren & Fischer, 2010). Cognitive consequences include increased reliance on schematic processing (i.e. stereotypes) and

intensified public and private self-awareness (Stephan & Stephan, 1985), negative attitudes to social policies favouring outgroup (Barlow et al., 2010), and reduced willingness to engage in future contact (Hutchison et al., 2010). Affective consequences include and increases in fear (Van Zomeren & Fischer, 2007), and general negative emotions (Binder et al 2009).

The intergroup anxiety model accounts for both social context and individual variables in the formation, acquisition and expression of prejudice, and is measured by a psychometric tool developed by Stephan & Stephan (1985) called the Intergroup Anxiety Scale. On the one hand, situational variables that are posited to increase intergroup anxiety are included in the model, particularly, competition for resources, unequal ratios of ingroup to outgroup members, status differences between groups, lack of clarity in the roles of the participants and a lack of familiarity with the context (Stephan, 2014). On the other hand, personality traits and other 'relatively enduring' characteristics, as well as attitudes (intergroup cognitions) are included in the model, particularly, being mistrustful, intolerant of uncertainty, lacking in self-confidence, low in empathy, low in cognitive complexity, and being hostile or aggressive. Stephan (2014) also includes ingroup membership saliency (social identity), as well as holding negative views of outgroup, as individual difference variables that are thought to increase susceptibility to intergroup anxiety, and in turn, lead to prejudiced outcomes.

Stephan's (1987) model provides a comprehensive theoretical framework for understanding intergroup bias from an affective point of view, based on empirical evidence. The utility of this model serves to bring empirically valid constructs together and examine their interrelatedness, rather than examining their relation to intergroup bias in a disconnected fashion. The variety of constructs included in the model, from individual difference to context variables that may impact the formation and expression of intergroup anxiety, have received previous empirical support in relation to prejudice. Currently, using the umbrella of Stephan's model, we examine the extent to which intergroup anxiety mediates the relationship between the antecedent individual difference variables of personality, attitudes, empathy and social identity on two different outcomes - intergroup contact and negative outgroup attitudes. Despite the fact that contact is formulated as a predictor of decreased prejudice (the Contact Hypothesis; Allport; 1954), we will also look at contact as an outcome measure. Stephan's model provides a theoretical basis for examining the bidirectional effects of contact (as previous relations) on reducing intergroup anxiety and leading to more (frequent and positive) contact (as behaviour), and vice versa. The few longitudinal studies on the Contact Hypothesis indicate that the distinction between predictors, mediators and outcomes becomes fluid over time, suggesting that contact scores bi-directionally enhance each other in a dynamic, reciprocal process (Van Laar, Levin, Sinclair and Sidanius, 2005; Eller & Abrams, 2003; Swart, Hewstone, Christ & Voci, 2011).

We also hope to shed light on the extent to which broad individual differences (attitudes, cognitions, characteristics, empathy and social identity) are more related to trait-like personality variables or mutable characteristics acquired through social learning. By examining the degree to which antecedent differences in individuals are mediated by intergroup anxiety, we may ascertain which are more susceptible to change and are therefore, less likely to be indicative of personality traits. But what are personality traits? Describing individual differences in relation to prejudice as characteristics of personality has been feasible because a scientific consensus on the definition of personality didn't exist for a long time (and in fact, may even be an impossible feat, but there is currently more substantive agreement than ever before; Fiske, 1994). Consequently, the meaning of personality differences for prejudice was not clear; these characteristics could be intrinsic or extrinsic, enduring or fickle, core or peripheral to individual subjectivity, dynamic or static, etc. As the field of personality research itself began to flourish, independently of prejudice research, findings consistently showed very few facets of personality to be broad dimensions that are relatively stable throughout the life span and applicable to many humans of different racial/ethnic background (Costa & McCrae, 1992). This made it very difficult to continue attributing prejudice to certain characteristics identified in the person, thus given the title of 'personality', because it was evident that not all, or even most, individuals involved in extremely prejudiced acts have the same personality configuration.

In an effort to elucidate how individuals differ along 'enduring emotional, interpersonal, experiential, attitudinal and motivational styles (McCrae & John, 1992)', and place these differences in some kind of unifying framework of personality, Costa & McCrae (1985) systematized the Five Factor Model of personality (FFM; Tupes & Christal, 1961; McCrae & John, 1992). McCrae & John (1992) view the structure of personality traits as 'patterns of covariation of traits across individuals rather than the organization of attributes within the individual'. In this sense, the basic dimensions of personality as they unfold in society across individuals is what is measured (NEO PI; Costa & McCrae, 1985), and there is a great deal of agreement amongst researchers as to the theoretical soundness and practical utility of the Big 5 personality dimensions framework (Fiske, 1994).

To avoid a mechanistic, deterministic formulation of personality development across the life span, Costa et al. (2000) explicate further, by describing the Big Five Factors (Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness) as 'basic tendencies'. *Basic tendencies are based in biology, they are rooted in temperament, and follow a pattern of intrinsic maturation; they are distinguished from 'characteristic adaptations', which are culturally conditioned constructs that are encoded in environmental conditions of time, place and role*. Many contemporary researchers agree on the point of the stability of the Big 5 personality traits, and that other individual characteristics, such as socio-political ideals are not stable enough to be 'personality' and can be thought of as attitudes that are

produced and learned socially. Therefore, the main distinguisher between basic tendencies and characteristic adaptations is that the latter respond to opportunities and incentives afforded by the social environment.

This formulation of the relationship between dispositional traits and environmental influences is useful in that the unique blend of stable biologically-based personality processes within each individual are recognized and accounted for, so that beyond these, it is the adaptations of traits to social surroundings (characteristic adaptations) that are the most susceptible to change. This formulation expresses a humanistic recognition of the specialness of each individual, and a recognition that change can be directed to aspects of personality that will retain maximal influence; in other words, 'traits can be channeled even if they cannot be changed (Costa et al., 2000)'.

A distinction is drawn between personality as intrinsic and stable tendencies, and attitudes as extrinsic and mutable characteristic adaptations. In approaching the problem this way, both paths have validity, in a combined approach to understanding the formation of prejudice – personality variables interact with social context and learning to shape the unique mix of attitudes and behaviors representing the spectrum from high to low prejudice. That is, social conditions impact prejudice acquisition/expression, but individuals differ in how they respond, so, the question of individual differences in regards to prejudice is still pertinent. This is the approach championed by contemporary social psychology theorists in the field of prejudice, and increasingly, current evidence supports this position (Sibley & Duckitt, 2008; Stephan, 2014). However, the difficulty in integrating such a vast array of disconnected personality constructs and measures with prejudice research has created obstacles to interpretation and generalization of results. Therefore, it has been suggested that researchers use a more unified approach to the study of the relationship between personality and prejudice by consistently employing the Five-Factor Model of personality (Jackson & Poulsen, 2005).

Research that has focused on personality, as conceptualized by the Big Five model, has shown that personality variables influence areas closely related to prejudice such as attitudes towards social and economic issues (Gerber et al. 2010), and a wide range of political beliefs and behaviors (Gerber et al. 2011; Mondak et al. 2010). Ekehammar and Akrami (2003) carried out the first study to specifically examine the relationship of the Big 5 to prejudice, and they found that the personality facets of openness to experience and agreeableness were strongly negatively correlated with generalized prejudice. Further supporting the centrality of these two personality traits in relation to prejudice, Jackson and Poulsen (2005) found that openness to experience was related to both frequency and quality of intergroup contact, whereas agreeableness was related to quality but not frequency. Probing further, researchers found that openness to experience and agreeableness were, again, the personality variables that have the

single greatest impact on prejudice, but that their effect was indirectly transmitted through socio-political orientations rather than directly significant (Ekehammer, Akrami, Gyles & Zakrisson, 2004).

Trying to reconcile a direct and indirect path effect of personality on prejudice, Akrami, Ekehammer, Bergh, Dahlstrand and Malmsten (2009) propose that the strength of personality on prejudice is in its rank order rather than relative stability in different situations. They examined openness to experience and agreeableness under conditions where situational prejudice was altered in both a positive and negative direction, and found that the rank order relation between these personality facets and prejudice in the individual hadn't changed significantly, even if reported prejudice levels had changed significantly. According to these results, a stable relationship exists between personality and prejudice, while at the same time situational effects alter the amount of prejudice but do not alter core personality disposition. Specifically, personality explained up to 17% of the total variance in prejudice, while situational variables explained a further 4%, which seems small compared to the variance explained by personality. But, if we consider that this number reflects only one situational manipulation while personality reflects a set of stable characteristics at the core of the individual, it becomes apparent that both personality and situational variables (once they are added up) influence the formation and expression of prejudice in important yet independent ways.

Beyond clear situational variables that can be directly tied to context, characteristic adaptations that are indirectly tied to context in the form of sociopolitical attitudes have been implicated in the relationship of personality to prejudice. According to Sibley & Duckitt (2008) personality influences prejudice indirectly through two specific social attitudes that express different intergroup motivations - submissive and dominant authoritarianism (dual process model of ideology and prejudice; DPM). They were referring to Social Dominance Orientation (SDO) and Right Wing Authoritarianism (RWA), which are outcrops of Adorno's initial line of inquiry. In the DPM model (Sibley & Duckitt, 2008) theorists posit that the motivation for security and social cohesion drive the effect of RWA on prejudice and the motivation for superiority drives the effect of SDO on prejudice, and that these motivations mediate the effect of personality (Sibley & Duckitt, 2010). This position supports the idea that the relationship between personality and prejudice is mediated by other variables because of their motivational significance.

The authoritarian personality, conceived originally as a unidimensional personality type (from high to low authoritarian) characterized by nine traits (conventionalism, authoritarian submission, authoritarian aggression, anti-introspection, superstition and stereotypy, toughness and power, destructiveness and cynicism, projectivity, sexual ethics) was re-conceptualized as a bi-dimensional construct with social dominance on the one hand and rigid conventionalism on the other (Altmeyer, 1981; Sidanius & Pratto, 1999). The Right Wing Authoritarianism (RWA) scale, developed by Altmeyer

(1981), converged three of Adorno's traits (conventionalism, authoritarian aggression and authoritarian submission) into a reliable unidimensional measure of rigid conventionalism. Social dominance was later theoretically refined, and developed into a measure of an attitudinal orientation that social relations should be hierarchical rather than equal, with one's ingroup at the top (Social Dominance Scale; Pratto, Sidanius, Stallworth & Malle, 1994). Both types of attitudes (RWA & SDO) have strong predictive power for generalized prejudice and ethnocentricity but evidence suggests that they predict prejudice independently of each other (Pratto, Sidanius, & Levin, 2006).

Having more agreement around the construct of personality and more valid measures of both personality and prejudice, studies provided evidence that the association between Big 5 and prejudice is mediated through such attitudes. Ekehammari, Akrami, Gyljei & Zakrisson (2004) examined RWA & SDO in relation to the Big 5 and prejudice, and found that only agreeableness affected prejudice through SDO whereas three of the other personality factors (extraversion, conscientiousness, openness to experience) affected prejudice through RWA. Sibley & Duckitt (2008) meta-analyzed 71 studies with the hypothesis that Social Dominance Orientation should be represented by facets of low agreeableness, whereas Right Wing Authoritarianism should be represented by facets of low openness to experience and high conscientiousness, and that these personality facets will impact prejudice indirectly, through the corresponding social attitude. Their results indicated that prejudice was predicted primarily by two facets, low Openness to Experience ($r = .36$) and low Agreeableness ($r = .29$), and that these two facets differentially predicted RWA and SDO in turn. After removing the effect of SDO the association between Agreeableness and prejudice was dramatically reduced, as was the association between Openness and prejudice after controlling for RWA. These results have since received further empirical support, as findings consistently show low Openness and low Agreeableness to be the two main traits that predict RWA & SDO (as well as other social attitudes), which in turn predict prejudice (Sibley & Duckitt, 2009; Duckitt & Sibley, 2010).

These findings further support the notion that RWA and SDO reflect socio-political attitudes central to prejudice, through which personality exercises most of its effects, but they are not actually personality dimensions, as personality dimensions still retained an independent albeit minor association with prejudice. According to the DPM of ideology and prejudice, direct effects of socio-political attitudes on prejudice are more likely than direct effects of personality on prejudice, as personality is thought to precede socio-political attitudes in its formation, and socio-political attitudes are thought to develop around the time of late adolescence and early adulthood (Hooghe & Wilkenfeld , 2008). In the first study to examine causality, Sibley & Duckitt (2013) conducted a longitudinal analysis, and found support for a causal sequence in that low openness predicted a dangerous worldview which in turn

predicted authoritarianism, and low agreeableness predicted competitive worldview and competitive worldview prospectively predicted social dominance, but there were no cross lagged effects.

If, as Sibley & Duckitt (2013) suggest, rather than the particular constellation of socio-political attitudes, it is the motivational significance for security on the one hand and superiority on the other that matters most to the formation of prejudice, intergroup anxiety is also implicated as it may have a similar motivational significance. Intergroup anxiety is largely associated with outcomes of avoidance of outgroup members (Barlow et al, 2010; Bromgard & Stephan, 2006; Duronto, Nishida, & Nakayama, 2005) which belies a motivational significance. Avoidance may be driven by both motives for security/social cohesion and motives for superiority. Avoidance, in relation to intergroup anxiety, has been associated with concerns about being rejected, ridiculed and excluded by members of other and own group (Stephan & Stephan, 1985; Barlow, Lewis & Hewstone, 2009).

Characteristics that reflect a concern with the maintenance of social order have been positively correlated with intergroup anxiety, such as right wing authoritarianism, conservatism, ethnocentrism, and religiosity (Blair, Park, & Bachelor, 2003; Costello & Hodson, 2011; Matthews, Levin & Sidanius, 2009; Stephan & Stephan, 1989). Moreover, a characteristic that may reflect a penchant for superiority, in terms of strength of identity with the ingroup (social identity) has been positively correlated with intergroup anxiety as well (Aberson & Gaffney, 2008; Corenblum & Stephan, 2001; Renfro, Duran, Stephan & Clason, 2006; Stephan et al., 2002). Other studies provide support for the idea that negative outgroup attitudes of significant others (family/friends) are associated with increased intergroup anxiety (Jasinskaja- Lahti, Mahonen, & Liebkind, 2011).

These findings reflect a broad array of attitudes, cognitions, beliefs and characteristics that have been associated with intergroup anxiety and reflect different motivations. Evidence for the role of intergroup anxiety as mediator of the Big Five personality facets on prejudice (conceptualized as outgroup attitudes) was provided by Turner, Dhont, Hewstone, Prestwich & Vonofakou (2014). This study demonstrated that the relationship between openness to experience and outgroup attitude was partially mediated by intergroup anxiety, whereas the relationship between agreeableness and outgroup attitude was fully mediated by intergroup anxiety. These findings suggest that people who are very open and agreeable are more prone to initiate intergroup contact and view potential contact experiences favourably, which is associated with less intergroup anxiety, and less intergroup anxiety leads to prejudice reduction.

In Stephan's model (2014) being low in empathy is thought to predispose people to feeling intergroup anxiety. Empathy, in the form of an orientation to take the perspective of the other, to share in their emotional experience, and to allow it to impact subjective emotional experience, is central to intergroup relations (Finlay & Stephan, 2000) because it fosters understanding and reduces negative

expectations. Empathy, in particular feeling sympathy and compassion for others, and taking the perspective of others have been found to inversely predict generalized prejudice, even when controlling for authoritarianism and social dominance (Bäckström & Björklund, 2007; McFarland, 2010). Experimental studies have shown that empathizing with outgroup members can reduce prejudice (Batson et al., 1997; Finlay & Stephan, 2000). Findings from laboratory-based studies indicate the utility of perspective taking and empathic concern for reducing prejudice (Galinsky & Moskowitz, 2000; Levin et al., 2016). High empathy may have a role in reducing ingroup bias, because a shared emotional experience may lead to uncertainty reduction or it may even lead to re-categorization into a superordinate group, thus blurring the lines between 'them' and 'us'.

Findings demonstrate that empathic concern and perspective taking alone do not fully account for the variance in generalized prejudice (McFarland, 2010) and is not be enough to change behaviors (Stephan, Renfro, Esses, Stephan, & Martin, 2005) thus, other predictors and their interrelatedness need to be identified. This is where intergroup anxiety comes in, as findings indicate that emotional empathy is correlated with intergroup anxiety (Stephan & Stephan, 1985; Vezzali, Giovannini, & Capozza, 2010). Low empathy may predispose people to feel intergroup anxiety because it may be more difficult for them to understand outgroup members and predict their behaviour. In fact, findings indicate that empathizing with members of an immigrant group decreases the negative attitudes created by intergroup anxiety (Stephan, Renfro, Esses, Stephan, & Martin, 2005). Increasing emotional empathy may decrease intergroup anxiety because it humanizes outgroup members, countering the tendency for homogenization of outgroup through processes of social categorization (Tajfel, 1982).

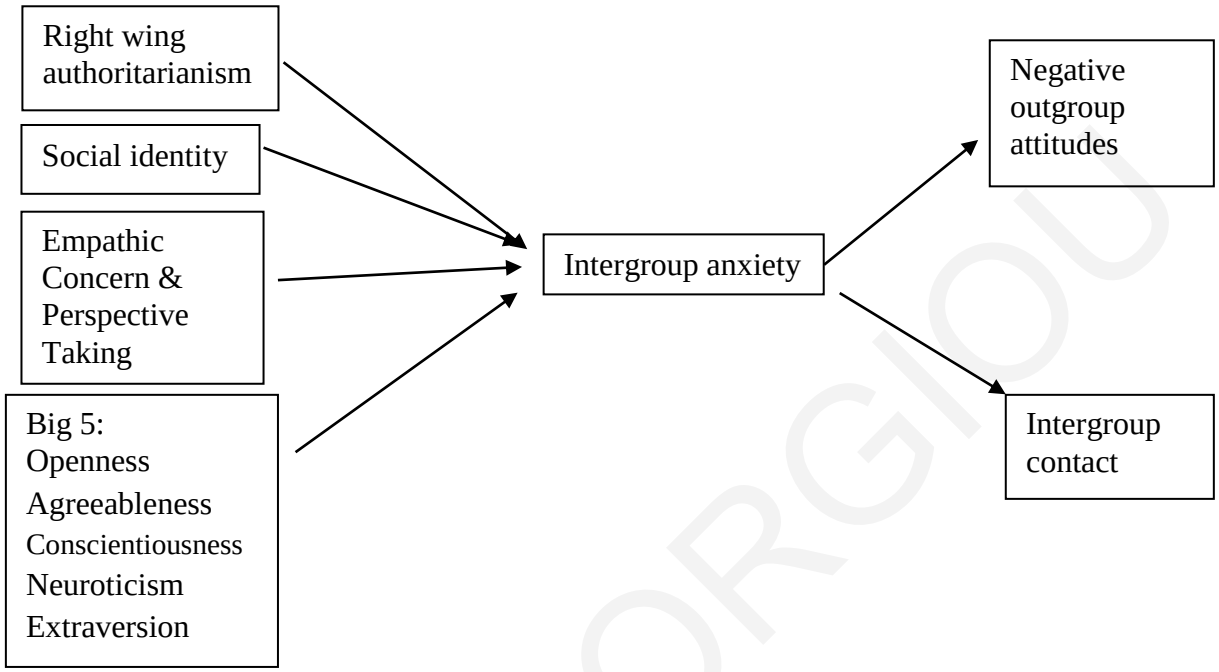
Empathy contains both cognitive and emotional aspects and occurs both involuntary and effortfully, in what early theorists described as instinctive/emotional empathy vs. intellectualized empathy (Smith, 1759; Spencer, 1870). Recognizing that empathy does not represent a single construct, and that different aspects of empathy may lead to very different results, Davis (1980) developed a psychometric tool to measure individual differences in empathy that provides separate assessments of cognitive, perspective-taking abilities and emotional reactivity. Four subscales to empathy were found: 1. Fantasy, a tendency to identify strongly with fictitious characters in books, movies, or plays. 2. Perspective-taking, a tendency to adopt the point of view of other people. 3. Empathic concern, a tendency to experience feelings of warmth, compassion and concern for others undergoing negative experiences. 4. Personal Distress, a tendency for feelings of discomfort and anxiety when witnessing the negative experiences of others. It is important to note that the literature on empathy shows consistent sex differences, with women scoring significantly higher than men on all four subscales (Davis, 1980). The smallest difference between men and women was on the perspective-taking scale (PT), in contrast, the other three subscales all exhibited large sex differences greater. Theorists believe that consistent

differences between males and females probably do exist with respect to their affective responses to others' experiences, (Dymond, 1949; 1950; Mehrabian & Epstein, 1972; Hoffman, 1977), with females exhibiting greater emotional responsivity, but not a better ability for role-taking and recognition of affect in others.

Current Study

The purpose of the current study was to examine whether (and to what extent) intergroup anxiety will be effective in mediating the effect of both contextual and personality measures of individual differences on two different outcomes: negative outgroup attitudes and intergroup contact. The individual differences measures we have included correspond to almost all categories of antecedents of intergroup anxiety outlined by Stephan (2014), and the outcome measures also correspond with the consequences in the model. We have attempted to integrate the social and the individual perspectives by including antecedent and outcome constructs that reference both. The measures of social identity and right wing authoritarianism are more closely related to context, whereas the measure of empathy indexes an interpersonal orientation, and the measures of personality are clearly related to individual traits. The outcome measures included are degree and quality of intergroup contact (referencing social context) and degree of negative attitudes towards outgroup (referencing the individual). Specifically, we examined whether intergroup anxiety mediates the relationship between the following series of predictor variables, the Big Five personality facets, socio-political attitude of right wing authoritarianism, empathic concern and perspective taking, social identity in the form of ingroup membership saliency, and two outcome variables, intergroup contact and negative outgroup attitudes (outgroup prejudice) (Figure 11).

Figure 11. The specific antecedents and outcomes examined in our mediation analyses.



Our specific hypotheses were:

Hypothesis 1: Openness to Experience and Agreeableness personality facets, social identity, RWA, Empathic Concern, Perspective Taking and Intergroup Anxiety will directly predict Negative Outgroup Attitudes. (Duckitt & Sibley, 2010; Ekehammar and Akrami, 2003; Akrami, Ekehammer, Bergh, Dahlstrand & Malmsten, 2009)

Hypothesis 2: Social identity, RWA, intergroup anxiety and negative outgroup attitudes will directly predict intergroup contact. No personality or empathy dimension will be associated with intergroup contact. (Ekehammar, Akrami, Gylje & Zakrisson, 2004; Duckitt, 2013; Barlow et al., 2010; Bromgard & Stephan, 2006; Duronto et al., 2005)

Hypothesis 3. Intergroup Anxiety will mediate the effect of openness to experience, agreeableness, social identity, RWA, empathic concern and perspective taking on negative outgroup attitudes (Stephan & Stephan, 1985; Stephan, 2014; Pettigrew & Tropp, 2006; McFarland, 2010; Stephan et al., 2005; Turner et al., 2014)

Hypothesis 4. Intergroup Anxiety will mediate the effect of social identity and RWA on intergroup contact (Stephan, 1987; Van Zomeren & Fischer, 2010; Stephan & Stephan, 1985; Hutchison et al., 2010).

Method

Sample: 93 Greek Cypriot students of the University of Cyprus (76.3% female) of an age range from 18 to 33 years (Mage = 20.22, S.D. = 2.75) participated in the study for extra credit. Approval was given by the Cyprus Bioethics Committee. This sample was the same as in the previous chapter (Chapter 4).

Procedure. Participants underwent an experimental procedure described in detail in Chapter 4. After the experimental procedure, which lasted approximately 45 minutes, in which physiological data was recorded, participants were asked to complete the self-report questionnaire measures. Questionnaires were completed in paper and pencil format, while subjects were alone. No time constraints were given

Measures and Materials

NEO-Five Factor Inventory (Costa & McCrae, 1992): A Greek translation of the instrument that had previously been validated and standardized (Panayiotou, Kokkinos & Spanoudis, 2004), maintaining the same number of items (12) for each subscale and scoring procedures as the original. Cronbach's alpha for each subscale: Openness to Experience (.68), Conscientiousness (.86), Extraversion (.70), Agreeableness (.74), Neuroticism (.78). Females and males did not differ on any subscale: Openness to Experience, F (1,91) = .68, p = >.05., Conscientiousness F (1,92) = .02, p = >.05., Extraversion F (1,92) = .16, p = >.05., Agreeableness F (1,92) = 3.17, p = >.05., Neuroticism F (1,92) = 3.28, p = >.05.

Right Wing Authoritarianism Scale (Altmeyer, 1981): The original questionnaire was translated into Greek using the back translation technique, wherein it was first translated into Greek by the research team and then back to the original language by an independent researcher who had no contact with the original document. Finally, it was compared by the researchers with the original document for discrepancies. Minor discrepancies were corrected using the same process on an item level. The validity of this scale is well established (Altemeyer, 1981, 1996). The structure and scoring scheme of the original was retained, so that responses were made on a nine-point Likert scale. The lowest total possible would be 20, and the highest, 180, but real scores are almost never that extreme. The original researchers found that introductory psychology students at their North American university average about 75 (Altmeyer, 2006). The mean of our sample was 78.22 (SD = 26.56), Cronbach's alpha for 20 items is .87. Females and males did not differ on the RWA, F (1, 91) = .02, p = >.05.

Empathic Concern and Perspective Taking subscales of the Interpersonal Reactivity Index (IRI; Davis, 1980): A well-established and reliable measure of empathy, the original questionnaire was translated into Greek using the back translation technique. Subjects responded to 28 items on a 5-point scale running from 0 (does not describe me well), to 4 (describes me very well). The index consists of four subscales corresponding to seven items each: 1. Fantasy, 2. Perspective-taking, 3. Empathic concern, 4. Personal Distress.

Principal Components Analysis was conducted to replicate the original four factor solution. The four factor solution was a sufficient fit to our data and the original IRI structure was retained. Loadings and reliability coefficients for each factor are reported in Appendix 1. Cronbach's alpha for entire scale (28 items) is .82. The alphas for each subscale were moderate: .74 for PT (7 items), .74 for FS (7 items), .60 for EC (7 items) and .67 for PD (7 items).

Sex differences. Unlike original findings wherein females scored significantly higher than males on all subscales (Davis, 1980), we found significant differences between males and females on three of the four subscales in the same direction as the original - with females displaying higher scores than men in each case. Females and males did not differ on the Perspective Taking Subscale ($F (1, 89) = .23$, $p = <.05$), which was also the subscale with the least gender difference in the original study. Consistent with Davis' (1980) results, we found that the largest difference was for the fantasy scale; the mean score on this scale was 19.49 for women and 14.38 for men, $F (1, 89) = 22.72$; $p <.001$. Mean scores on the other two subscales, for women and men respectively, were as follows: empathic concern scale, 21.96 vs. 19.29, $F (1, 90) = 8.88$; $p <.05$, and personal distress scale, 12.62 vs. 14.68, $F (1, 89) = 4.33$; $p <.05$.

Social Identity: assessed using an adaptation of the social identity subscale of the Collective Self Esteem Scale (CSES; Luhtanen & Crocker, 1992). The social identity subscale of the CSES is a measure of the importance of ingroup membership to identity, and we interpret as a static measure of ingroup membership saliency. Particularly, six items were used, translated in the Greek language that probe how central to the individual's identity is their ingroup membership. The following items were scored on a Likert scale of 1 (totally disagree) to 5 (totally agree): 1. I'm glad to be Greek Cypriot, 2. I'm proud to be GC, 3. Being GC is an important part of me, 4. I often wish I wasn't Greek Cypriot (reverse scored), 5. Being Greek Cypriot is **not** an important part of me (reverse scored). 6. Being GC is the most important part of me. Cronbach's alpha for 6 items is .82. Females and males did not differ on ingroup membership saliency, $F (1, 91) = .89$, $p = >.05$.

Intergroup Anxiety (Stephan & Stephan, 1985): the original questionnaire was translated into Greek using the back translation technique. Respondents indicated the degree to which they experience a set of affective states during (or when anticipating) intergroup interaction. Participants rated the following six items on a 1 (not at all) to 10 (very) point Likert Scale: anxious, comfortable, at ease, awkward, confident and apprehensive, with positive adjectives reverse coded. Cronbach's alpha for 6 items is .88

Intergroup Contact: assessed with four items indexing amount of border crossings and quantity of interpersonal contact (Islam & Hewstone, 1993) with Turkish Cypriots, including one item on cross-group friendships (Turner, Hewstone, & Voci, 2007). This measure was previously adapted into Greek for use in a Greek speaking Cypriot population. Items were rated on a Likert scale of 1 – 5. Participants

were asked to note: how often they have crossed the physical border to go over to the Turkish Cypriot side (1 = never, 5 = over 7 times); how many Turkish Cypriots they have met in the past (1 = none, 5 = very many); how much contact they have had with Turkish Cypriots (1 = none, 5 = very much); with how many Turkish Cypriots do they maintain a friendship (1 = none, 5 = over 10). Cronbach's alpha for the scale is .77. Females and males did not differ on intergroup contact, $F(1, 91) = .36$, $p = >.05$. See Appendix 2 for a list of items, descriptive statistics and correlations

Negative Outgroup Attitudes: Negative evaluations of the Turkish Cypriot community on a whole were assessed with the short version (Swart, Hewstone, Christ, & Voci, 2011) of the General Evaluation Scale (GES; Wright et al., 1997), consisting of four items previously translated into the Greek language. Participants' task was to rate how they evaluate the Turkish Cypriot community on a scale that ranged from 1 to 5 on opposite pairs of attitudes: from negative (1) to positive (5); cold (1) to warm (5); hostile (1) to friendly (5); and dismissal/disrespect (1) to respect (5). In order to develop a composite of score that indexes a general negative attitude towards outgroup, we reversed the four questions and generated a mean score. Cronbach's alpha for the four items in the scale is .87. Females and males did not differ on this measure, $F(1, 91) = .20$, $p = >.05$.

All self report measured are listed in Appendix 5, provided in Greek in Appendix 6 and original are provided in Appendix 7.

Statistical analyses

Before the main analyses, all measures were standardized on a Greek speaking sample (N = 257) by computing bivariate correlations (r) and Cronbach's alpha coefficients. Scale reliabilities were generally satisfactory. Controls for differences between genders on the measures were conducted on the experimental sample (N = 91) using Analyses of Variance (ANOVA). No significant gender differences were found on any of the measures except on the empathy scale (IRI), as reported above. We controlled for gender differences in our mediation models by entering gender as a covariate in all the analyses. Gender was not a significant predictor of the outcome measures in any case and was subsequently removed from the proposed mediation models.

Results

Means and standard deviations for all measures based on current sample are provided in Table 8.

Table 8.Descriptive statistics for all self report measures (N = 91)

Measure	Min	Max	Mean	SD
Neuroticism	6	38	21	7
Extraversion	17	42	30	6
Openness to Experience	11	42	28	6
Agreeableness	18	47	34	6
Conscientiousness	21	48	35	7
Empathy	41	103	73	11
Right Wing Authoritarianism	25	138	78	27
Intergroup Anxiety	6	53	28	10
Negative Outgroup Attitudes	4	20	12	4
Intergroup Contact	4	18	7	3
(Ingroup) Social Identity	9	30	22	4

Bivariate correlations between all measures

All scale intercorrelations were generally moderate to high. The largest correlation coefficient ($r = 0.47$, $p < .01$) was obtained for the relation between in-group membership saliency and right wing authoritarianism, and the smallest ($r = -.21$, $p < .05$) for the relation between outgroup prejudice and intergroup contact. Bivariate correlations between variables are presented in Table 9 below.

Table 9. Correlations between facets of the NEO Five Factor Inventory of Personality, Right Wing Authoritarianism Interpersonal Reactivity, Social Identity, Intergroup Anxiety, Intergroup Contact and Outgroup Prejudice

	1	2	3	4	5	6	7	8	9	10
1. Neuroticism										
2. Extraversion	-.363**									
3. Openness	-.005	-.068								
4. Agreeableness	-.334**	.100	.153							
5. Conscientiousness	-.231*	.315**	-.103	.265*						
6. Right Wing Authoritarianism	.146	-.029	-.451**	-.060	.090					
7. Social Identity	.139	.207	.337**	.358**	.160	-.162				
8. Ingroup membership saliency	-.068	.359**	-.185	.091	.289**	.469**	.109			
9. Intergroup Anxiety	.111	-.169	-.294**	.003	.095	.435**	-.185	.228*		
10. Intergroup Contact	.249*	-.039	.129	-.186	-.053	-.146	.087	-.125	-.110	
11. Outgroup Prejudice	.046	.073	-.458**	-.097	.089	.441**	-.265*	.325**	.346**	-.209*

** Significant at the p <0.01 level
* Significant at the p< 0.05 level

Examination of the Proposed Mediational Model.

To test hypotheses 1 and 2, we ran a series of linear regressions from each predictor to each outcome (see Table 10).

Table 10. Results of linear regression analyses for variables predicting negative outgroup attitudes and intergroup contact (N = 92)

	Negative Outgroup Attitudes						Intergroup Contact					
Variable	*B*	*SE B*	*β*	*t*	R^2	F	*B*	*SE B*	*β*	*t*	R^2	F
Neuroticism	0.03	0.06	.05	.439	.00	.19	0.91	0.85	.25*	2.44	.06	5.95
Extraversion	0.05	0.07	.07	.687	.01	.47	-0.18	0.48	-.04	-.372	.00	0.14
Openness	-0.28	0.06	-.49**	-4.84	.21	23.39	0.52	0.43	.13	1.23	.02	1.52
Agreeableness	-0.06	0.07	-.10	-.920	.01	.85	-0.08	0.45	-.19	-1.79	.04	3.22
Conscientiousness	0.05	0.06	.09	.841	.01	.71	-0.20	0.40	-.05	-.500	.00	0.25
Right Wing Authoritarianism	.06	.01	.44**	4.60	.19	21.20	-0.14	0.01	-.15	-1.38	.02	1.93
Interpersonal Reactivity	-.09	.04	-.27**	-2.55	.07	6.49	0.02	0.03	.09	.818	.01	0.67
Intergroup Anxiety	.14	.04	.35**	3.48	.12	12.11	-0.03	0.03	-.11	-1.04	.01	1.09
Social Identity	.28	.09	.33**	3.25	.11	10.53	-0.07	0.06	-.16	-1.19	.02	1.42
Outgroup Prejudice	-	-	-		-	-	-0.14	0.07	-.21*	-2.01	.04	4.06
Intergroup Contact	-.031	0.16	-.21*	-2.01	.04	4.06	-	-	-		-	-

*p ≤ .05. **p ≤ .01.

To test mediation hypotheses 3 and 4, the approach proposed by Baron and Kenny (1986) was applied. Significant results of these analyses are presented below.

Intergroup Anxiety as mediator of personality on outgroup prejudice

According to Baron and Kenny (1986), support for a mediational model will be provided if: personality significantly predicts of (a) outgroup prejudice, (b) intergroup anxiety, (c) intergroup anxiety significantly predicts outgroup prejudice, and (d) personality does not remain significant predictor of prejudice once intergroup anxiety (i.e., the mediator) is entered into the model.

The potential of multicollinearity between intergroup anxiety and personality dimensions was eliminated first by examining the correlation matrix; no correlations higher than .50 were observed. In addition to this criterion, the variance inflation factor (VIF) and tolerance statistic were examined in the following reported regression analyses. For VIF, none of the values were higher than 10. For tolerance statistic, none of the values were below .2. Therefore, multicollinearity should not be a concern.

First, to examine whether personality significantly predicts negative outgroup attitudes, separate linear regression analyses were conducted with the five personality factors entered as independent variables and negative outgroup attitudes serving as the dependent variable.

A non-significant regression equation was found for neuroticism ($F (1, 91) = .19$, $p > .0.05$).

A non-significant regression equation was found for extraversion ($F (1, 91) = .47$, $p > .0.05$).

A significant regression equation was found for openness to experience on negative outgroup attitudes ($F (1, 91) = 23.39$, $p < .0.01$), with an R^2 of .21, $\beta = -.46$, $t = -4.84$.

A non-significant regression equation was found for agreeableness ($F (1, 91) = 0.85$, $p > .0.05$).

A non-significant regression equation was found for conscientiousness ($F (1, 91) = 0.71$, $p > .0.05$).

Next, separate linear regression analyses were conducted to examine whether personality significantly predicts intergroup anxiety. Personality dimensions were entered as the independent variables, with intergroup anxiety as the dependent variable.

A non-significant regression equation was found for neuroticism ($F (1, 91) = 1.19$, $p > .0.05$).

A non-significant regression equation was found for extraversion ($F (1, 91) = 2.65$, $p > .0.05$).

A significant regression equation was found for openness to experience on intergroup anxiety ($F (1, 91) = 8.41$, $p < .0.01$), with an R^2 of .09, $\beta = -.29$, $t = -2.90$.

A non-significant regression equation was found for conscientiousness ($F (1, 91) = .00$, $p > .0.05$).

A non-significant regression equation was found for agreeableness ($F (1, 91) = 0.81$, $p > .0.05$).

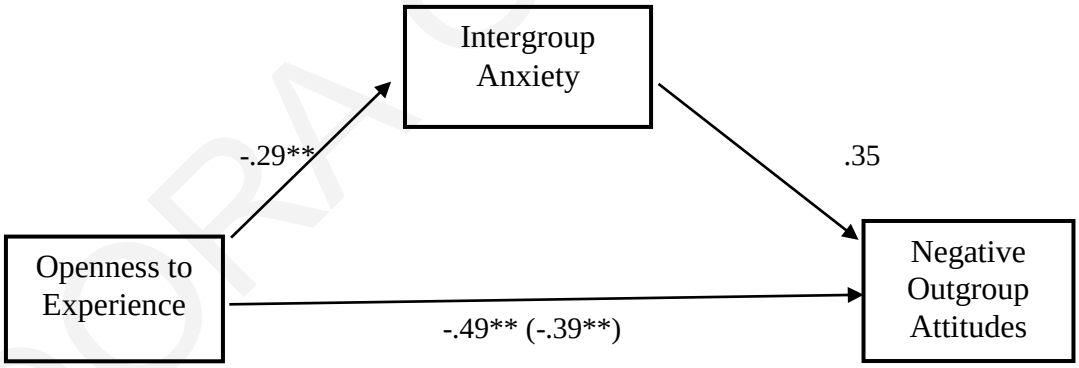
In the third step, a regression analysis was conducted to determine whether the proposed mediator (intergroup anxiety) significantly predicts negative outgroup attitudes, entering intergroup anxiety as the

independent variable. The model was significant, ($F(1, 91) = 12.11$, $\beta = .35$, $t = 3.48$.$p < .0.01$), with intergroup anxiety accounting for 12% of the variance in negative outgroup attitudes. This confirms that it is feasible to examine intergroup anxiety as a mediator.

The final step of the mediational model was tested using a hierarchical regression analysis. As we did not find that the Agreeableness personality dimension predicted negative outgroup attitudes, we did not include this variable in the final model. The personality dimension Openness to Experience, was entered in the first step, and the proposed mediator, that is, intergroup anxiety, in the second step of the model. The proposed mediator significantly improved the model, accounting for an additional 5% of the variance in outgroup prejudice ($F(1, 91) = 51.21$, $p<.01$, with an R^2 of .26. However, the results indicated no mediation of the effects of Openness to Experience by intergroup anxiety. Openness remained a direct significant predictor of prejudice, ($\beta = -.39$, $t = -4.04$.$p < .0.01$), even with the mediator entered in the model. Intergroup Anxiety also remained a direct significant predictor of negative outgroup attitudes ($\beta = .23$, $t = 2.40$, $p < .0.05$) (see Figure 12).

Figure 12. Standardized regression coefficients for the relationship between openness to experience and negative outgroup attitudes as mediated by intergroup anxiety. The standardized regression coefficient between openness to experience and negative outgroup attitudes, controlling for intergroup anxiety, is in parentheses.

P<.05*, p<.001**



Intergroup Anxiety as mediator of Right Wing Authoritarianism on negative outgroup attitudes

As in the previous analyses, we checked whether support for a mediational model was provided if: Right Wing Authoritarianism predicts (a) outgroup prejudice and (b) intergroup anxiety, and

subsequently does not remain a significant predictor of prejudice once intergroup anxiety (i.e., the mediator) is entered into the model.

The potential of multicollinearity between intergroup anxiety and personality dimensions was eliminated first by examining the correlation matrix; no correlations higher than .50 were observed. In addition to this criterion, the variance inflation factor (VIF) and tolerance statistic were examined in the following reported regression analyses. For VIF, none of the values were higher than 10. For tolerance statistic, none of the values were below .2. Therefore, multicollinearity should not be a concern.

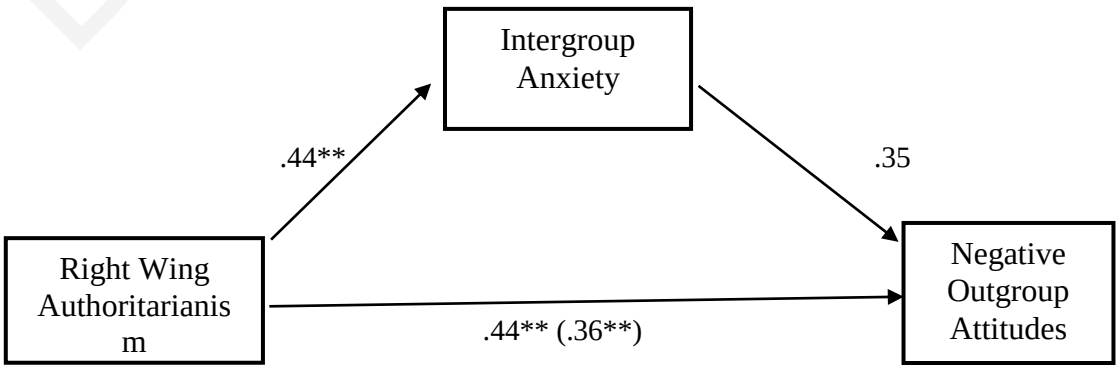
First, to examine whether Right Wing Authoritarianism significantly predicts outgroup prejudice, a linear regression analysis was conducted with Right Wing Authoritarianism entered as the independent variable and negative outgroup attitudes serving as the dependent variable.

A significant regression equation was found ($F(1, 91) = 21.20$, $\beta = .44$, $t = 4.60$, $p < .0.01$), with an R^2 of .19.

Next, a simple linear regression analysis was conducted to examine whether Right Wing Authoritarianism significantly predicts intergroup anxiety. A significant regression equation was found ($F(1, 90) = 20.75$, $\beta = .44$, $t = 4.60$, $p < .0.01$), with an R^2 of .19.

The final step of the mediational model was tested using a hierarchical regression analysis. Right Wing Authoritarianism was entered in the first step, and the proposed mediator, that is, intergroup anxiety, in the second step of the model. The proposed mediator did not significantly improve the model. The results indicated no mediation of the effects of Right Wing Authoritarianism by intergroup anxiety. Right Wing Authoritarianism remained a direct significant predictor of prejudice, ($\beta = .36$, $t = 3.45$.$p < .0.01$), even with the mediator entered in the model. Intergroup Anxiety was no longer a significant predictor of prejudice ($\beta = .12$, $t = 1.89$.$p = .06$) (see Figure 13)

Figure 13. Standardized regression coefficients for the relationship between right wing authoritarianism and negative outgroup attitudes as mediated by intergroup anxiety. The standardized regression coefficient between right wing authoritarianism and negative outgroup attitudes, controlling for intergroup anxiety, is in parentheses.
P<.05*, p<.001**



Intergroup Anxiety as mediator of Empathy subscales on prejudice: Empathic Concern & Perspective Taking

In order to probe the relationship of empathy, negative outgroup attitudes and intergroup anxiety further, we examined if intergroup anxiety mediates the facets of empathic concern and perspective taking, rather than empathy in total. Cognitive empathy is represented by the perspective taking subscale whereas emotional empathy is represented by the empathic concern subscale. We chose these two as they have been the most related to prejudice in previous studies Multicollinearity between intergroup anxiety and empathy was eliminated as described above.

Empathic Concern. As in the previous analyses, we checked whether support for a mediational model was provided if: empathic concern predicts (a) negative outgroup attitudes, (b) intergroup anxiety, and does not remain a significant predictor of negative outgroup attitudes once intergroup anxiety (i.e., the mediator) is entered into the model.

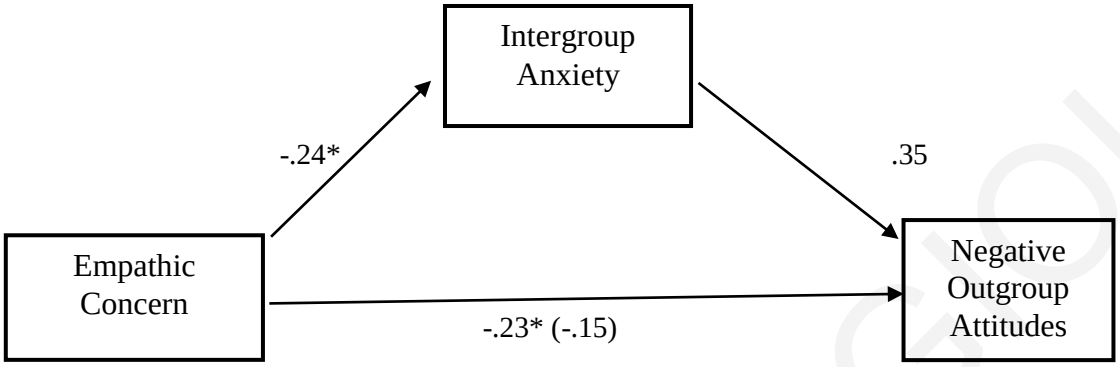
First, to examine whether the empathic concern facet of empathy significantly predicts outgroup prejudice, a regression analysis was conducted with empathic concern entered as the independent variable and negative outgroup attitudes serving as the dependent variable. The final model was significant, $F(1, 89) = 4.77$, $p < .05$, accounting for 5% of the variance in negative outgroup attitudes, $\beta = -.23$, $t = -2.16$, $p < .05$.

Next, to examine whether the empathic concern facet of empathy significantly predicts intergroup anxiety, a regression analysis was conducted with empathic concern entered as the independent variable and intergroup anxiety serving as the dependent variable. The final model was significant, $F(1, 90) = 5.42$, $p < .05$, accounting for 6% of the variance in intergroup anxiety, $\beta = -.24$, $t = -2.33$, $p < .05$.

The final step of the mediational model was tested using a hierarchical regression analysis. Empathic Concern was entered in the first step, and the proposed mediator, that is, intergroup anxiety, in the second step of the model. The proposed mediator significantly improved the model, accounting for an additional 0.9% of the variance in outgroup prejudice ($F(1, 87) = 9.18$, $p<.05$, Together, Empathic Concern and Intergroup Anxiety accounted for 14% of the variance in negative outgroup attitudes. However, empathic concern did not remain a significant predictor of negative outgroup attitudes, ($\beta = -.15$, $t = -1.50$.p =.14), with the mediator entered in the model. Intergroup Anxiety remained a direct significant predictor of negative outgroup attitudes ($\beta = .31$, $t = 3.03$.p <.0.05) (see Figure 14).

Figure 14. Standardized regression coefficients for the relationship between empathic concern and negative outgroup attitudes as mediated by intergroup anxiety. The standardized regression coefficient between empathic concern and negative outgroup attitudes, controlling for intergroup anxiety, is in parentheses.

P<.05*, p<.001**



Perspective Taking. As in the previous analyses, we checked whether support for a mediational model was provided if: perspective taking predicts (a) negative outgroup attitudes, (b) intergroup anxiety, and does not remain a significant predictor of negative outgroup attitudes once intergroup anxiety (i.e., the mediator) is entered into the model.

First, to examine whether perspective taking significantly predicts outgroup prejudice, a regression analysis was conducted with perspective taking entered as the independent variable and negative outgroup attitudes serving as the dependent variable. The final model was not significant, F (1, 88) = 2.30, p =.13.

Intergroup Anxiety as mediator of Social Identity on prejudice

As in the previous analyses, we checked whether support for a mediational model was provided if: social identity predicts (a) outgroup prejudice, (b) intergroup anxiety, (c) intergroup anxiety significantly predicts outgroup prejudice, and (d) social identity does not remain a significant predictor of prejudice once intergroup anxiety (i.e., the mediator) is entered into the model. The potential of multicollinearity between intergroup anxiety and social identity was eliminated as described in the previous analyses.

A simple linear regression was calculated to predict negative outgroup attitudes based on social identity. A significant regression equation was found (F (1, 91) = 10.53, p <.0.05), with an R^2 of .11. and β = .33, t = 3.25, p <.01

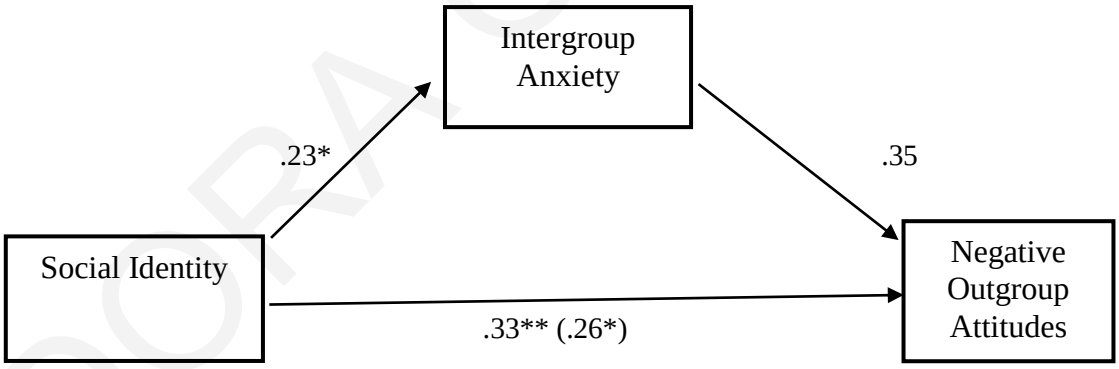
A simple linear regression was calculated to predict intergroup anxiety based on social identity. A significant regression equation was found (F (1, 91) = 4.92, p <.0.05), with an R^2 of .05, and β = .23, t = 2.22, p <.05.

As described in previous analyses, the proposed mediator (intergroup anxiety) significantly predicts prejudice (F (1, 91) = 12.11, p <.0.01), with intergroup anxiety accounting for 12% of the variance in outgroup prejudice.

The final step of the mediational model was tested using a hierarchical regression analysis. Social identity was entered in the first step, and the proposed mediator, that is, intergroup anxiety, in the second step of the model. The proposed mediator significantly improved the model, accounting for an additional 8% of the variance in outgroup prejudice (F (1, 91) = 9.98, p<.01, with an R^2 of .19. However, the results indicated no mediation of the effects of Social Identity by intergroup anxiety. Social Identity remained a direct significant predictor of prejudice, (β = .26, t = 2.65.p <.0.05), even with the mediator entered in the model. Intergroup Anxiety was also a direct significant predictor of prejudice (β = .28, t = 2.92.p <.0.05) (see Figure 15).

Figure 15. Standardized regression coefficients for the relationship between social identity and negative outgroup attitudes as mediated by intergroup anxiety. The standardized regression coefficient between social identity and negative outgroup attitudes, controlling for intergroup anxiety, is in parentheses.

P<.05*, p<.001**



Intergroup Anxiety as mediator of personality on Intergroup Contact

According to Baron and Kenny (1986), support for a mediational model will be provided if: personality significantly predicts of (a) intergroup contact, (b) intergroup anxiety, (c) intergroup anxiety significantly predicts intergroup contact, and (d) personality does not remain significant predictor of intergroup contact once intergroup anxiety (i.e., the mediator) is entered into the model. Step (b) of the model is the same as in the previous analyses in which we examined the mediating effect of intergroup anxiety on personality in relation to the outcome of prejudiced outgroup attitudes. Results of this analysis showed that only openness to experience predicted intergroup anxiety ($F (1, 91) = 8.41$, $p <.0.01$), with an R^2 of .09, $\beta = -.29$, $t = -2.90$.

The potential of multicollinearity between intergroup anxiety and personality dimensions was eliminated as described in previous analyses.

First, to examine whether personality significantly predicts intergroup contact, separate linear regression analyses were conducted with the five personality dimensions entered as independent variables and intergroup contact serving as the dependent variable.

A significant regression equation was found for neuroticism ($F (1, 90) = 4.59$, $\beta = .22$, $t = 2.14$, $p <.0.05$), with an R^2 of .05.

A non-significant regression equation was found for extraversion ($F (1, 91) = 0.14$, $p >.0.05$).

A non-significant regression equation was found for openness to experience ($F (1, 91) = 1.52$, $p >.0.05$).

A non-significant regression equation was found for agreeableness ($F (1, 91) = 3.22$, $p >.0.05$).

A non-significant regression equation was found for conscientiousness ($F (1, 91) = 0.25$, $p >.0.05$).

In the third step, a regression analysis was conducted to determine whether the proposed mediator (intergroup anxiety) significantly predicts intergroup contact, entering intergroup anxiety as the independent variable. A non-significant regression equation was found ($F (1, 91) = 1.09$, $p >.0.05$), with an R^2 of .01.

Intergroup Anxiety as mediator of Right Wing Authoritarianism on Intergroup Contact

First, to examine whether RWA significantly predicts intergroup contact, a linear regression analysis was conducted with RWA entered as the independent variable and intergroup contact serving as the dependent variable. A non-significant regression equation was found ($F (1, 91) = 1.93$, $p >.0.05$), with an R^2 of .02, therefore a mediation model was not run,

Additionally, in order to check the remainder of hypothesis 2, we conducted the following analyses:

We ran a simple linear regression to examine our prediction that empathy will not be associated with intergroup contact. A non-significant regression equation was found ($F(1, 91) = 0.67$, $p > .0.05$), with an R^2 of .01.

A simple linear regression was calculated to examine our prediction that social identity will be associated with intergroup contact. A non-significant regression equation was found ($F(1, 91) = 1.42$, $p > .0.05$), with an R^2 of .02.

Finally, we ran a simple linear regression to examine our prediction that outgroup prejudice will be negatively associated with intergroup contact. A significant regression equation was found ($F(1, 91) = 4.06$, $\beta = -.21$, $t = -2.01$, $p < .0.05$), with an R^2 of .04.

Discussion

We examined whether (and to what extent) intergroup anxiety was effective in mediating the effect of both contextual and personality measures on two different outcome variables: negative outgroup attitudes and intergroup contact. Our findings indicate direct effects of the personality factor openness to experience on negative outgroup attitudes but not on intergroup contact. These effects were not mediated by intergroup anxiety. In line with previous research (Sibley & Duckitt, 2008; Hodson, & Dhont, 2015), of the Big Five personality facets, openness to experience was most strongly related to negative outgroup attitudes; this facet alone explained up to 20% of the variance in respondents' reported prejudice towards Turkish Cypriots. Nonetheless, as we predicted, this effect was not evident for actual intergroup contact and therefore seems not to carry over into behaviour. Much research has discussed the disconnect that is often witnessed between attitudes and behaviour, especially in regards to prejudice (Mconahay, 1983; Fiske, 2000).

Maybe low openness to experience predicts negative attitudes but not actual contact because people with low openness have a cognitive motivation to use entrenched information (Jost et al., 2003) about intergroup relations and adhere to it (Kruglanski & Webster, 2018). Thus, low openness to experience may result in a particular amount of baseline prejudice that, in association with an adversity to change, exercise a stable effect of maintaining negative attitudes towards outgroup. These may even reduce motivation for intergroup contact, but, seem to alter enough from situation to situation so as not to be a defining factor for contact. This is suggestive of the rank order stability of personality variables in relation to the person, but their relative stability from situation to situation (Akrami et al., 2009). Perhaps the mediating effect of intergroup anxiety on personality was not apparent because we did use rank order relations of personality and prejudice, without taking into account conditional change in prejudice relative to personality from situational effects.

In terms of the other personality factors we examined, unlike previous research (Sibley & Duckitt, 2008), agreeableness was unrelated to negative outgroup attitudes or intergroup contact. In fact,

when examining the variable of actual intergroup contact (as opposed to intergroup attitudes), only neuroticism seemed to have an effect. This finding is a little surprising, both because it was not anticipated and because the relationship is positive in that higher neuroticism predicts about 10% of the variance in intergroup contact, keeping in mind that neuroticism had no association with negative outgroup attitudes. Based on previous research, neuroticism is usually unrelated to prejudice (Hodson, Hogg & MacInnis, 2009) whereas Openness and Agreeableness are robustly and consistently related (Sibley & Duckitt, 2008). However, a modest positive connection between neuroticism and prejudice/bigotry has been reported on occasion. Goldberg & Saucier (1998) found a positive correlation (.10) between neuroticism and prejudice/bigotry, as did Hebron & Ridley (1965). In addition, even though Sibley & Duckitt (2008) report a negligible association between the two, they identified that the relationship between neuroticism and prejudice changes across personality inventories and across cultures. According to these findings, regardless of culture, people with low openness to experience are more likely to have authoritarian and prejudiced attitudes wherever they are, but the degree of neuroticism they experience in relation to prejudice has to do with cultural and situational context.

One way to interpret our finding that neuroticism predicted actual intergroup contact, is in association with the demographic and cultural context in Cyprus. Many years of strict segregation (1974-2003) between the two communities in Cyprus meant that generations of Cypriots lived their whole lives on the island without ever meeting a member of the outgroup (with limited exceptions). Even though they were sharing a small piece of land and could visually see the goings on over the border, there was no actual meeting of the people. Understandably, this created a great lack of knowledge and high uncertainty around the outgroup. Beyond this, it also created a great lack of knowledge of an important aspect of the status of the ingroup, as Cypriots retain property (on both sides) that they hadn't seen since 1974. When the borders finally opened, people high in neuroticism may have been motivated to see the rest of their country, or the properties they thought they would never see again, something they'd been denied the opportunity to do. People who worry more, as neurotics tend to do, may have had more intergroup contact out of a need to reduce uncertainty. Findings indicate that individuals differ in how they handle uncertainty, and that to a certain degree this is dependent on context (Sorrentino & Roney, 2000). One study identified a weak correlation (.10) between neuroticism and social dominance orientation, tying neuroticism with a desire for superiority (Pratto, Sidanius, Stallworth, & Malle, 1994), creating an interesting proposition for further context specific examination.

Regarding the rest of the independent variables we examined in relation to negative outgroup attitudes, our findings indicate that all of the classes of antecedent variables that we included significantly predicted negative outgroup attitudes. As shown in Table 8, the greatest variance in negative attitudes was explained by openness to experience (21%), but coming in at a close second was

RWA (19%), followed by intergroup anxiety (12%), social identity (11%) and finally empathy (7%). The comparability in variance explained by RWA and openness is noteworthy, as personality is more closely considered a trait that developmentally predates the formation of political attitudes, and even though it has a stable relationship with the individual it does not stably impact the context. RWA then, may modulate prejudice in context even more than the numbers suggest. Because RWA is a conglomeration of socio-political attitudes, it is much more an outcrop of context than personality, and therefore likely varies with context more than personality ever could (Hooghe & Wilkenfeld, 2008). Finally, an important point to make regarding RWA on negative outgroup attitudes is that when we examined it in our mediation model with intergroup anxiety, intergroup anxiety was no longer significant. This suggests that rather than intergroup anxiety mediating the effect of RWA on negative outgroup attitudes, it may be RWA that mediates the effect of intergroup anxiety on negative outgroup attitudes. This is reminiscent of Sibley & Duckitt's (2013) model of ideology and prejudice wherein RWA mediates aspects of personality and other variables that have a common underlying motivation for security.

Unlike previous research, intergroup anxiety did not have a mediating effect on the variables examined, whether they were personality factors, or attitudes or social identity, on either outcomes. There was, however, one exception – empathic concern. In light of the lack of mediation effect that we found, it may be prudent to examine RWA as a better mediator of the antecedent variables we chose to examine. However, the potential of intergroup anxiety to mediate the effects of empathic concern, but not the rest of the variables, is an important finding because it points to an affective relationship. To explain further, intergroup anxiety, an affective state, is successful in mediating the effects of a variable that also has a distinctly affective quality – empathic concern. Since emotion is so important for successful contact and prejudice reduction (Pettigrew & Tropp, 2006), it may be that intergroup anxiety mediates the effects of emotionality on prejudice, but does not mediate the effects of cognitive or behavioural variables. The particulars of the mediated relationship shows a negative association between empathic concern and intergroup anxiety and a positive association between intergroup anxiety and prejudice, so that high empathy predicted low intergroup anxiety (and vice versa) and low intergroup anxiety predicted low prejudice and vice versa.

Regarding actual intergroup contact, the antecedent variables we included in our analyses had scarcely any association, unlike their association with negative intergroup attitudes. It seems much more difficult to predict actual behaviour rather than the predisposition to behaviour (attitudes), and even though we hypothesized that the more contextual variables such as social identity, RWA, intergroup anxiety and negative outgroup attitudes would predict actual contact, only the latter did. Our findings indicated that negative outgroup attitudes/prejudice predicted contact in inverse relationship, so that high prejudiced individuals had lower contact.

Conclusions

Using the umbrella of Stephan's (2014) model, we examined the extent to which intergroup anxiety mediated the relationship between the antecedent individual difference variables of personality, attitudes, empathy and social identity on two different outcomes - intergroup contact and negative outgroup attitudes. To our knowledge this is the first study that examines the potential of intergroup anxiety to mediate the effects of such an array of empirically validated individual difference constructs on both negative attitudes and intergroup behaviour, keeping the structure of Stephan's (2014) model. In addition, we have attempted to walk the tightrope between the individual and the social, by keeping a theoretical emphasis on both, and actually trying to index both, even though they have been quantified in measures that address the individual. This has been a difficult methodological feat, as representing aspects of the social context and aspects of the individual when they so often meld together is not a clearly delineated task. Despite this, we have attempted to contribute to the literature around prejudice in the current scientific vein, which advocates a spherical approach - inclusive of social and individual - and a degree of context specificity. According to Fiske (2000), 'trends for the future should entail more emphasis on behaviour, more sensitivity to cultural specificities and universals, as well as budding efforts on neural mechanisms of stereotyping, prejudice and discrimination'.

In sum, our findings largely supported hypothesis 1, in that openness to experience, social identity, RWA, empathic Concern and intergroup anxiety directly predicted negative outgroup attitudes, but we found no support for the predictive power of agreeableness and perspective taking on negative outgroup attitudes. In terms of our prediction that social identity, RWA, negative outgroup attitudes and intergroup anxiety would directly predict intergroup contact, whereas personality would not (hypothesis 2), our results are mixed. Only negative outgroup attitudes predicted intergroup contact as we expected, but, contrary to our expectations, so did the personality factor of neuroticism. Regarding our hypotheses (3 & 4) for the mediation models, intergroup anxiety successfully mediated the effect of empathic concern on negative outgroup attitudes, however, contrary to our expectations, no other mediation effect was found.

In conclusion, our study showed no effect of intergroup anxiety in mediating the Big 5 personality facets on intergroup contact and outgroup prejudice. Despite our expectations, neither were any of the other, more contextual, variables significantly mediated by intergroup anxiety to predict outcomes, except the distinctly affective variable of empathic concern. Our findings suggest that a small amount of the variance in outgroup prejudice and intergroup contact can be explained by personality, and that the majority impact comes from other variables, including potential mediators. The impact of these variables may alter but do not override the role of personality. We have either been unable to identify

these variables or have been unable to demonstrate the association of the ones we have included in our analyses with outcomes, based on our approach.

Limitations of current study

Firstly, our use of the construct of intergroup anxiety didn't account for differences between situational or trait intergroup anxiety. A more detailed measure of intergroup anxiety may have yielded different results. On a related note, a situational manipulation to distinguish rank from relative order in relation to prejudice and personality would provide better detail as to this association.

In addition, we used a small sample of college students (N = 93), so using a larger and more heterogeneous group is advisable. Especially in regards the neuroticism dimension and its association to prejudice, wherein culturally specific aspects of people's experience and neurotic idiosyncrasy need to be better explored. Perhaps using field studies and more specifically examining culturally specific social representations will better inform this aspect of the study.

One dimension of authoritarianism, social dominance orientation, was not used in this study, clearly limiting the generalizability of the results to the general personality framework developed by social psychologists and personality theorists.

And finally, we have not discussed partial mediation, as the unexplained direct path between variables that remains, can indicate an omitted mediator and should be speculated upon (Zhao, Lynch & Chen, 2010). And, we have not tried out alternative mediation models. One reasonable alternative is to modify our hypothetical model by reversing the causal order of RWA and Intergroup Anxiety on Prejudice and Contact. Another alternative model is to switch the order by putting RWA in the causal chain, followed by Big Five personality and, finally, the other variables.

Chapter 6. Discussion

Intergroup Anxiety and Prejudice.

Numerous theorists have identified the need to delve deeper into emotional aspects of intergroup bias, as they have been found to have a greater impact on crucial intergroup processes, such as discriminatory behavior, than cognitive aspects (Talaska et al., 2003; Cuddy, Fiske & Glick, 2007; Pettigrew & Tropp, 2006; Brewer, 2003). Responding to this need, we have made an in depth examination of an array of self-reported and physiological affective indices of emotional experience in relation to prejudice. We used a multidimensional approach to examine the potential role of face perception (face processing), cognitive systems (sociopolitical attitudes and social identity), emotional systems (psychophysiological and self-report), trait characteristics (personality) and gender, in relation to prejudice and intergroup contact.

A number of theories which highlight the importance of emotions in prejudice formation and reduction provided the basis for our inquiry, starting with social identification theory (SIT; Tajfel, 1974, 1981), which posits that individuals experience intense emotions as a result of social categorization and therefore, social categorization is motivated to some extent to meet emotional needs. Theorists have furthered the position of SIT by claiming that the emotions individuals experience converge based on group membership (IET; Mackie & Smith, 2004), and others have illustrated that people may feel a type of anxiety, 'intergroup anxiety' at the mere prospect of contact with outgroups (Stephan & Stephan, 1985). Moreover, theorists have demonstrated that despite the potential hindrance of intergroup anxiety, when intergroup contact does occur, especially when accompanied by positive affective characteristics, prejudice is reduced (Allport, 1954, 1979; Pettigrew & Tropp, 2003).

The existing theoretical and empirical evidence implicates intergroup contact in the reduction of prejudice, through other parameters, such as the distinctly affective construct of intergroup anxiety (Pettigrew & Tropp, 2006; Stephan & Stephan, 1985). Successful intergroup contact and emotional experience seem to be related, perhaps through positive and negative valence, which may be facilitated by decreases and increases in intergroup anxiety. Intergroup anxiety is thought to include a host of negative affect, such as fear and apprehension, however, the physiological experience of intergroup anxiety, and the mechanisms through which it maintains prejudice are still unclear.

Therefore, the primary purpose of our study was to extend previous findings that highlight the emotional experience of prejudice in the form of intergroup anxiety by identifying its psychophysiological correlates under different conditions of social identity activation relative to the social context. Furthermore, another primary concern was to better understand the degree of effectiveness of self-reported intergroup anxiety as a mediator of theoretically derived variables (Stephan, 2014) on prejudice and contact. Finally, another important consideration for us was to examine the association of self-reported face to face contact on group differences in psychophysiological defensive reactivity to perceived outgroup members, in order to measure the infiltration of intergroup contact into different types of autonomous affective responses.

Our primary hypotheses were:

Intergroup Anxiety (Stephan, 2014): participants given outgroup induction will exhibit increased psychophysiological fear reactivity than those given ingroup induction, particularly, acceleration of Heart Rate (HR) activity, increased skin conductance level (SCR), and greater fear potentiation in the eye-blink response (SR) (Bradley, 2000).

Self- reported Intergroup contact will be associated with reduced negative affect (EMG) and intergroup anxiety in the form of reduced defensive physiological reactivity (SR, HR, SCR) by those given outgroup induction (Pettigrew & Tropp, 2006) compared to in-group induction condition.

Intergroup Anxiety will mediate the effect of openness to experience, agreeableness, social identity, RWA, empathic concern and perspective taking on negative outgroup attitudes (Stephan & Stephan, 1985; Stephan, 2014; Pettigrew & Tropp, 2006; McFarland, 2010; Stephan et al., 2005; Turner et al., 2014)

Intergroup Anxiety will mediate the effect of social identity and RWA on intergroup contact (Stephan, 1987; Van Zomeren & Fischer, 2010; Stephan & Stephan, 1985; Hutchison et al., 2010).

Our hypotheses were examined in a normal sample of university students' population with average levels of right wing authoritarianism compared to other samples (Altmeyer, 2006) and a midpoint level of intergroup anxiety (M = 4.5 on a 10 point Likert scale, SD = 1.5), which is analogous to other findings with Greek Cypriot university students (Žeželj et al., 2017). Our student sample was analogous to the general population in terms of being characterized by low levels of face to face contact, as has been found to be the case for post conflict societies like Cyprus without many opportunities for contact (Ioannou, Jarraud & Louise, 2015). Also, our sample exhibited negative attitudes towards the outgroup that averaged slightly over the midpoint of the scale (M = 3 on a 5 point Likert scale, SD = 1), so that our sample, on average, had negative attitudes towards the outgroup, but they weren't extreme.

In highlighting our main findings, firstly, we note that we have corroborated that strong affective processes were implicitly activated in the intergroup context we induced, particularly, strong negative affect. Subjects reacted with greater defensive autonomic reactivity, with the belief they were viewing members of the Turkish Cypriot outgroup, than subjects who believed they were looking at a control group of Spaniards, or at the Greek Cypriot in-group. The same effect was not evident in reverse, in that subjects looking at in-group did not appear to experience more pleasant or positive emotions, but did show less defensive preparation. Moreover, the differential activation of defensive preparation between groups that we found, was unrelated to facial characteristics of pictures and gender of participants. Therefore, we assume that psychophysiological responding was driven by subjects' supposed knowledge of the face picture's ethnicity, and in parallel, saliency of subject's ethnic identity.

Information on the ethnic categorization of the pictures was verbally given to participants in one simple sentence two times during the experimental process, yet it carried such a great amount of impact on autonomic emotional responding, managing to impact millisecond reactivity. Viewing face pictures in a laboratory setting is not overtly threatening, especially when those faces provide no visual cues that overtly portray racial or ethnic differences and carry a neutral facial expression. In the absence of overt threat it seems that the defensive responding we found subjects exhibited was indicative of a symbolic threat (Integrated Threat Theory; Stephan & Stephan, 2000; Stephan, 2014). Symbolic threats include threats to social identity and self-esteem (Stephan & Stephan, 1985; Stephan & Stephan, 2000). Intergroup anxiety itself - a state of fear and/or anxious apprehension at contact with outgroup – has also

been conceptualized as a symbolic threat people may attribute to outgroup (Stephan & Stephan, 2000; Stephan et al., 2005). We interpret the responses we found to be indicative of intergroup anxiety.

It is generally suggested that intergroup anxiety activates defensive mobilization, and we have managed to illustrate fearful and distressing affective responses occurring at an autonomic level. Specifically, our findings showed that the group who believed they were looking at members of the outgroup elicited greater overall skin conductance, replicating findings from previous studies (Rankin & Campbell, 1955; Vidulich & Krevanick, 1966; Cooper & Siegel, 1956; Cooper & Singer, 1956; Dambrun et al., 2003), but also extending those findings as we showed that visual cues of difference (i.e. skin color) need not be apparent to elicit defensive reactivity if there is a facilitative pre-existing mental representation of outgroup. In addition, this same group exhibited specific defensive reactivity, indexed by startle amplitude, when they thought they were viewing pictures of male Turkish Cypriots. These results suggest that generalized intergroup anxiety as well as focal fear color autonomic reactivity to perceived outgroup stimuli as startle potentiation was specifically responsive to male pictures, whereas skin conductance responded more generally to both males and females. Specific potentiation of the startle response to the male sex is interpreted as a more focal fear because males may be more symbolic of intergroup conflict in Cyprus, as mandatory army service in Cyprus is obligatory only for males, and by and large, males have dominated the history and narrative of war and conflict. To sum up, the group who received outgroup induction exhibited greater general skin conductance across pictures, and exhibited greater fear potentiated startle responses to male pictures, compared to other groups. Our findings are clearly in support of the intergroup anxiety hypothesis.

Contrarily, this same group reported greater overall subjective positive valence compared to the other groups, that is, they said they felt more pleasant when viewing the pictures than the other groups. This is a discordant response when viewed in light of the defensive autonomic reactivity exhibited by this group. Our findings support previous studies that have consistently demonstrated that psychophysiological measures of affect and self-reported measures of affect in relation to prejudice are often discordant (Hass et al., 1991; Vanman et al., 1997). This discordance in emotional response systems may be illustrative of the implicit nature of contemporary prejudice in that we are unaware of our negative emotions and believe we feel positively towards the outgroup, or it could be due to uncoupled co-activation (Ito, Cacioppo & Lang, 1998) of both strong positive and strong negative feelings towards outgroup, in that we feel both, and we may even be unaware that we feel both. Other explanations that could account for this effect are social regulation of the self, in that we are concealing our prejudice for social desirability purposes. Social regulation of the self could also be involved in perceiving subjective affect as more pleasant than indicated in psychophysiological reactivity, as an

attempt to increase self-esteem. Further research is apparently needed to clarify the mechanism behind this discordance.

Our findings, relative to the Cyprus context, corroborates the idea that intergroup contact has beneficial effects (Psaltis, 2015; Husnu & Crisp, 2010; Ioannou, 2013). Through our study we provide evidence that intergroup contact is associated with group differences in reduced distress at an autonomic level. In our mind one of our most impressive findings was that self-reported intergroup contact, entered as a continuous covariate, removed entirely the statistically significant differences between groups in skin conductance response but not startle amplitude responding. Perhaps intergroup contact has a robust effect on certain biological markers of defensive psychophysiological reactivity (skin conductance) and hardly any effect on others (startle amplitude). Of all the psychophysiological measures we have examined, the startle response is the most rapid and reflexive, so that it may be the most impervious to any conscious control. Skin conductance however, a much slower autonomous system response, seemed to be more susceptible to the effects of intergroup contact. However, we must note that the aforementioned effect of intergroup contact on altering psychophysiological reactivity must be interpreted with caution given the low levels of contact registered in our study. Despite this, when examining the effect of intergroup contact as a categorical rather than continuous variable, the results indicate that intergroup contact still does impact psychophysiological reactivity but not in the same way as when viewed as a continuous variable. These findings indicate that the specifics of contact, such as quality and kind of intergroup, play a different and perhaps greater role on outcomes than contact alone, but, contact alone also has an effect. For a full report and discussion of results of intergroup contact as a categorical covariate see Appendix 2.

Finally, in examining our hypotheses on the capacity of self-reported intergroup anxiety to fully mediate the effect of other variables on prejudice and intergroup contact, our study showed that intergroup anxiety fully mediated the effect of the distinctly affective variable of empathic concern on prejudice but not intergroup contact. Intergroup anxiety did not fully mediate the relationship between any of the other variables examined. That is, the mediating effect of self-reported intergroup anxiety was much smaller than we expected, which leads us to conclude that partial mediation should be examined as well. However, the fact that we found that intergroup contact entirely eliminated group differences in skin conductance responding corroborates previous findings that implicate changes in physiological intergroup anxiety as the mechanism for prejudice reduction (Pettigrew & Tropp, 2006). This begs further research into the relationship between self-reported intergroup anxiety and physiological intergroup anxiety.

Gender

We streamlined an examination of gender throughout this study, because we thought that an understanding of its association from the initial stages of stimulus selection to the final stages of interpreting experimental data may help us understand our potential results on intergroup anxiety, social identity and prejudice better. Gender dynamics still play a central role in the organization and perception of the world around us, and gender is used as a heuristic to apply meaning to everyday phenomena (Robinson, Johnson, & Shields, 1998) therefore, we included a consideration of gender for its potential relevance in the interpretation of our findings. We examined gender of subjects and sex of stimuli in the initial studies we conducted, which were simply focused on processing of face pictures. Using independent samples we conducted two studies on face processing in relation to gender of respondents and sex of stimuli. Firstly, we looked at differences in social trait judgements of faces (i.e. how trustworthy the face appears). Secondly we looked at differences in subjective emotional responses to faces (i.e. how fearful subject feels in response to face). We examined social face trait judgements and subjective emotional responding between males and females, and between male and female picture stimuli. We also examined interactions.

Taken together, our results showed that female faces were rated with more positive valence in both studies (reported in Chapters 2 & 3). In effect, female faces were rated more positively on the dimensions of valence as an index of social trait judgements, and more positively on the dimension of valence as an index of subjective emotional responding towards pictures. Our results show that female faces are generally characterized as more positive and elicit more positive emotions than male faces. This effect is evident for both males and females, providing support for the idea that the sex of stimulus exercises effects on judgements of face traits and subjective emotional responding.

Both males and females responded to female faces more positively in our initial studies, evidencing that, in general, the similarity in responding by males and females outweighed the differences. Our findings indicate that overall, across discrete emotion categories, general amount of affect reported in response to the pictures by males and females was the same, but there were some exceptions. This is in line with previous findings wherein Oosterhov & Todorov found minute differences between males and females in ratings of face traits in comparison to similarities (2008). The overall pattern that becomes apparent is that sex of stimuli exercises far greater effects on responding than gender of respondents.

Where gender differences applied, women were rating particular pictures with more positive (i.e. attractiveness) and less negative face trait judgements (i.e. less mean) than men, but they were rating their subjective affect towards other pictures as more fearful, and less neutral than men. Overall, when rating characteristics of the faces women seemed to give certain faces more positive and less negative evaluations, but when rating their own affect, women seemed to feel more fearful and less neutral

towards particular pictures than males. Moreover, males and females differed in the amount of self – reported arousal across pictures, with females rating their subjective arousal higher than men. These findings indicate that women experienced selected emotions, particularly negative ones, more intensely than males, as well as more emotional arousal (Kring & Gordon, 1998; Kuehner, 2003). This may be an indication that women were experiencing more general emotionality and more intense specific negative emotions in response to pictures than men, even though they gave more positive face trait appraisals.

Important to note that the sex of the stimulus seemed to impact social face trait dimension ratings for women, not for men. .Particularly, men did not differ in their ratings of dominance between male and female pictures whereas women did. Does this indicate generally a homogenization effect, in that sex of stimulus differentiates responding for females much more than men? The above interactions suggest a gender-in-context dynamic (Deaux & Major, 1987) wherein aspects of social situations or stimuli interact with gender to enhance or attenuate observable sex-related differences in responding.

Finally, findings from our study on psychophysiological reactivity (Chapter 4) indicated that the sex of the stimuli (face pictures) differentiated psychophysiological reactivity across all of the significant measures, however, the gender of respondents did not. The effect of gender of face picture (but not of subjects) had a large impact on the results, either alone or in conjunction with the Group Induction. Interestingly, greater startle amplitude was elicited by female gendered face pictures across the sample. This seems to be indicative of particular picture effects, because the greatest startle responses across groups and across participants were elicited by the single most attractive female picture, previously categorized as the most attractive of the face pictures, while the same picture was also rated as having the most mean and dominant traits of all the faces (both males and females). This may effect aversive responding because this face seems to elicit mixed positive and negative, approach and avoidance responses. In terms of skin conductance, greater skin conductance responding was elicited by male pictures across the sample. This effect was not driven by a particular picture, which may suggest that SCR responding across sample indexed a sex of stimulus effect but startle amplitude responding across sample indexed a picture stimulus effect.

When sex of stimuli interacted with group induction, our results are divergent. On the one hand, male faces elicited a greater startle amplitude by those given outgroup induction, which we interpret as threat responding due to intergroup anxiety and perhaps the association of maleness with war and conflict. On the other hand female faces elicited significantly greater startle amplitude by those given in-group induction, which we interpret as a dissonance effect, We found that the same group, the group given in-group induction, reacted with greater corrugator activity to female faces as well, which indicates negative valence or a feeling of unpleasantness. We interpret the reactivity exhibited to female faces by those given in-group induction as a dissonance effect, in that portraying females in an intergroup context

threatens the concept subjects have of females, especially in-group females, who are ordinarily evaluated as positive figures, leading to unpleasant arousal. Previous studies have shown that females are less linked to expressions of anger and are considered more trustworthy than males (Wincenciak, Dzhelyova, Perrett & Barraclough, 2013; Lafrance & Hecht, 1999). Strengthening this position, results from our normative studies (reported in Chapters 2 & 3) corroborated that the female picture stimuli used in this study were generally judged as more positive and pleasant than the male stimuli. The subjects who received outgroup induction did not respond in the same negative way to female pictures. It is likely that females thought to be members of outgroup are not imbibed with the pleasant characteristics as females of the in-group, and therefore, do not elicit dissonance, but neither do they elicit threat responding.

Conclusions

We conducted this study with the hopes that, examining implicit emotionality to outgroup stimuli on a level of autonomous system reactivity, may help us understand how young Greek Cypriots have been impacted by the history of conflict and segregation in Cyprus, even if they hadn't experienced it in their lifetime and may be unaware of the impact it has on them. We hope to further attempts at reconciliation and unity of the people living in Cyprus, and we believe that a fruitful part of this process is recognizing that we, as an in-group, have been deeply emotionally affected by years of conflict and segregation, in ways that we are unaware of, and that this is not necessarily associated with conscious prejudice towards the outgroup. This may help us develop interventions for intergroup contact that account for the mutual emotional needs of all people.

In addition, learning the particulars of the Cyprus context, that is, how actual people live the experiences under the research microscope on a daily personal and social basis, has obvious benefits to attempts at intergroup contact in Cyprus. For example, in our study we registered low levels of contact, characteristic of post conflict societies without many opportunities for contact (Ioannou, Jarraud & Louise, 2015; Mckeown & Psaltis, 2017). Evidence suggests that in contexts of historical conflict where group segregation has been in place for a protracted period, face to face intergroup contact may be quite scarce (Stathi, Husnu & Pendleton, 2017). Recent research shows that both Greek Cypriots and Turkish Cypriots report 'rare' levels of contact; specifically, on a scale of 1 – 5, both communities average significantly lower quality and quantity of contact than the midpoint of the scale (Mckeown & Psaltis, 2017), which has been replicated in our results. However, evidence suggests that despite the scarcity and lack of opportunity for contact, positive intergroup contact is still associated with positive outcomes in the Cyprus context (Stathi, Husnu & Pendleton, 2017). This suggests that even though we registered low levels of contact in the current study, our results in regards contact are pertinent, nonetheless. Our findings, along with previous findings on contact in Cyprus, are encouraging, because it seems that a little bit of contact goes a long way.

Our findings add to the literature on Social Identity Theory. Our results corroborate that social categorization has a great impact on human behavior, both on how we perceive stimuli and how we respond emotionally to stimuli. Our findings suggest that the dynamics of social identity (which we elicited through the group induction) are associated with autonomic affective psychophysiological responding independently of gender of participants' and facial characteristics of pictures. Furthermore, autonomic responding with greater fear and distress was evidenced in the subjects exposed to supposed outgroup stimuli, suggesting that intergroup anxiety is occurring at an implicit physiological level, especially since this same group rated their conscious, subjective affect to supposed outgroup stimuli as more positive. Taken together, our results support previous findings that the function of socially categorizing people into groups activates affective states linked to ethnic and racial category (Fiske & Neuberg, 1990) at an autonomic and behavioural level (Phelps & Thomas, 2003; Phelps et al, 2000). Moreover, our findings support evidence that this process is attenuated by motivational and contextual factors (Wheeler & Fiske, 2005; Amodio, Harmon-Jones & Devine, 2003, Brewer & Silver, 1978), like sex of stimuli but, more importantly, intergroup contact (Allport, 1979).

In addition, current findings also add to the social psychophysiology literature on the utility of particular emotional biomarkers, such as the startle amplitude response, in indexing implicit prejudice and intergroup anxiety. Our findings help clarify previous mixed results regarding the affect modulated startle as an index of prejudice (Brown, Bradley, & Lang, 2006; Vanman et al., 2014; Amodio, Harmon-Jones, & Devine, 2003. Our findings lend credence to the position that, in contexts where contact with outgroup is characterized by strong emotions, stimuli representing the outgroup will likely elicit effects of affective modification of startle. Particularly, our findings indicated that under conditions in which actual, meaningful and salient social identity differentiation takes place, the startle amplitude response was sensitive to intergroup anxiety, but, this was differentiated by the sex of the picture stimulus. The specific reactivity of the startle response to sex of stimuli suggests that it is indexing focal fear cues with a high degree of sensitivity,

Finally, our findings suggest that the sex of stimulus material used impacts reactivity far more than the gender of respondents, and this is a consideration that theorists should take into account when conducting research.

Policy Implications relating to Cyprus context and ongoing conflict resolution efforts

Our results provide certain keys to future educational policy that may aid in efforts for reconciliation in Cyprus. Namely, this entire body of research implicates emotional processes that arise in conflict contexts as central for healing rifts. In regards educational policy and interventions, rather than teach the importance of tolerance and acceptance on a cognitive level, the provision of opportunities for contact through interventions that aim for emotional change through experience may be more helpful.

Such interventions may be more helpful for prejudice reduction than pedagogical methods aimed at cognitive change. Furthermore, contact interventions should not undermine ethnic differences but allow them to come to the fore, as this may aid in generalization of contact effects to entire outgroup. We show that social identity and accompanying affect is activated even in the most minimal paradigms, thus, undermining ethnic differences will hardly lead to a sense of overarching common identity, if differences are left unattended. To undermine the ethnic category of those involved is to undermine the physiological emotional experience of social identity, which we have shown is associated with intergroup anxiety. In order for intergroup anxiety to decrease, it must first be activated rather than avoided. Although the lack of direct contact and the negative contact norms in Cyprus promote avoidance of contact and therefore avoidance of intergroup anxiety, our research and that of others shows that even indirect contact is also effective in reducing intergroup anxiety, therefore contact interventions should be variable and creative. Finally, a gendered perspective is necessary, and suggestive of the involvement of more girls and women in the peace process.

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Appendices

Appendix 1. Factor Analysis of the Interpersonal Reactivity Index

Empathy, which in general describes responsivity to others' emotional experience, is made up of numerous components. It has both cognitive and emotional elements, and can be deliberate or spontaneous, making it a kind of disposition (reaction) and also a kind of action. In order to capture the complexity of empathy by accounting for its numerous components and their interrelationship, Davis (1980, 1983, 1996) developed the Interpersonal Reactivity Index (IRI). The IRI integrates the multidimensionality of empathy into four theoretical components:

1. Fantasy (the proclivity to identify with fictitious characters)
2. Perspective Taking (the ability to adopt the perspective of others in common life)
3. Empathic Concern (the tendency to experience feelings of compassion and sympathy from others' misfortune)
4. Personal Distress (the proneness to feel uncomfortable about the distress of others)

Each theoretical component corresponds with 7 of the total 28 items, rated on a 5-point Likert scale running from 0 (does not describe me well), to 4 (describes me very well). Validation studies of the IRI have been conducted in several contexts and different languages.

In Spain, research on the IRI has maintained its original four-factor structure (Mestre, Samper, Frías, & Tur, 2009) Replication yielded an appropriate confirmation of the multidimensional structure of the instrument in Chile (Fernández, Dufey, & Kramp, 2011) and with a French speaking sample (Gilet, Mella, Studer, Grühn, & Labouvie-Vief, 2013). In Sweden, however, findings indicate that a general empathy factor underlies three of the IRI scales (Cliffordson, 2002a, 2002b). Similarly, Siu and Shek (2005) arrived at a three factor Chinese model of the IRI in which the cognitive and affective domains are mixed.

We attempted to confirm the four-factor structure established in the original IRI (Davis, 1980) using Principal Component Analysis (PCA). The minimum amount of data for factor analysis was satisfied, with a final sample size of 257, providing a ratio of 9.2 cases per variable. The Kaiser-Meyer-Olkin measure of sampling adequacy was .82, well above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($\chi 2$ (378) = 2285.13, $p < .001$) indicating that correlations between items was sufficiently large for PCA.

Principal components analysis was used with orthogonal rotation (quartimax). Eigen values under .04 were suppressed. Initial eigen values indicated that the first four factors explained 20%, 11%, 8.5% and 6.5% of the variance respectively. The four factor solution, explained a total of 46.5% in variance.

Internal consistency for each of the factors, was examined using Cronbach's alpha. The alphas were moderate: .74 for PT (7 items), .74 for FS (7 items), .60 for EC (7 items) and .67 for PD (7 items). Scale score reliabilities of the F-IRI subscales were similar, albeit lower on average, to internal consistencies of the original version (from .72 to .78; Davis, 1980). Overall, these analyses support the assumption that the Greek version of the IRI validated in a

Greek Cypriot population assesses four facets of empathy. The fit of Davis's (1980) four-factor model was, however, moderate, as not all 7 items loaded onto the appropriate factor.Despite this, the loadings onto the original factor structure proposed by Davis (1980) were sufficient enough, therefore, the four factor structure was retained. Factor loadings are presented in Table 1.

Table 1.*Factor loadings after Quartimax rotation*

Denomination of Factors (Davis, 1980)	Components	Factor				Commonalities
		PT	PD	F	EC	
Perspective Taking (PT)						
	3		-.576			.42
	8	.684				.52
	11	.649				.45
	15					.33
	21	.707				.54
	25	.651				.47
	28	.667				.46
Personal Distress (PD)						
	6		.694			.53
	10		.692			.54
	13				.597	.36
	17		.588			.54
	19	-.462	.466			.49
	24		.658			.44
	27		.426			.36
Fantasy (F)						
	1					.26
	5			.714		.62
	7			.536		.39
	12			.651		.54
	16			.661		.65
	23	.490		.595		.62
	26	.515		.589		.64
Empathic Concern (EC)						
	2	.512				.37
	4				.595	.39
	9	.460				.26
	14				.739	.58
	18				.475	.23
	20	.622				.52
	22	.569				.49
Eigenvalues						
Variance Explained %						

Items Comprising the Four Empathy Scales

Below are listed the original items for each subscale (Davis, 1980) and in bold are highlighted the items that load onto the subscale from our sample.

Perspective-Taking Scale
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place.
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (-)
11. I sometimes try to understand my friends better by imagining how things look from their perspective.
21. I believe that there are two sides to every question and try to look at them both.
3. I sometimes find it difficult to see things from the "other guy's" point of view. (-)
8. I try to look at everybody's side of a disagreement before I make a decision.
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.

Empathic Concern Scale
9. When I see someone being taken advantage of, I feel kind of protective toward them.
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (-)
2. I often have tender, concerned feelings for people less fortunate than me.
22.I would describe myself as a pretty soft-hearted person.

Fantasy Scale
26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.
5. I really get involved with the feelings of the characters in a novel.
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (-)
16. After seeing a play or movie, I have felt as though I were one of the characters.
1. I daydream and fantasize, with some regularity, about things that might happen to me.
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (-)
23. When I watch a good movie, I can very easily put myself in the place of a leading character.
4. Sometimes I don't feel sorry for other people when they are having problems. (-)
14. Other people's misfortunes do not usually disturb me a great deal. (-)
20. I am often quite touched by things that I see happen.

Personal Distress Scale
27. When I see someone who badly needs help in an emergency, I go to pieces.
10. I sometimes feel helpless when I am in the middle of a very emotional situation.
6. In emergency situations, I feel apprehensive and ill-at-ease.

19. I am usually pretty effective in dealing with emergencies. (-)
17. Being in a tense emotional situation scares me.
13. When I see someone get hurt, I tend to remain calm. (-)
24. I tend to lose control during emergencies.

Appendix 2. Self report measure Intergroup Contact : descriptives, correlations, results of ANCOVA

In this part of the questionnaire we would like to learn the extent of your contact with Turkish Cypriots.

1. After the opening of the borders on the 23rd of April 2003, did you visit the other side (the occupied area)? If yes, how many times?

A	NEVER	1
B	ONE TIME	2
Γ	2-3 TIMES	3
Δ	4-6 TIMES	4
E	OVER 7 TIMES	5
Z	I DON'T KNOW	9

2. We would like to ask you about your personal experiences with Turkish Cypriots, regardless of whether you have crossed over the border. We are interested in communication and verbal exchange, not just seeing Turkish Cypriots.

1. How many Turkish Cypriots have you met in the past?

None	Few	Some	Many	Very Many
1	2	3	4	5

2. In general, how much contact would you say you have had with Turkish Cypriots?

None	A little	Some	Much	Very much
1	2	3	4	5

3. With how many Turkish Cypriots do you currently maintain a friendship?

None	1-2	3-5	6-10	Over 10
1	2	3	4	5

Table 1.
Descriptive Statistics

	Items	Mean	SD
1	How many times have you crossed the border (1 – 5)	2.37	1.18
2	How many TC have you met? (1 – 5)	1.77	.84
3	How much contact have you had with TC? (1-5)	1.66	.88
4	With how many TC are you currently friends? (1-5)	1.11	.35
5	Synthesized variable of contact items (4 – 20)	6.91	2.55

Table 2.
Correlations.

		1	2	3	4
1	How many times have you crossed the border?	-			
2	How many TC have you met?	.52**	-		
3	How much contact have you had with TC?	.38**	.59**	-	
4	With how many TC are you currently friends?	.33**	.39**	.52**	-

p.<0.01**.

Results of post hoc covariation analyses between psychophysiological reactivity to face pictures, group induction and categorical intergroup contact (ANCOVA).

Previous research indicates that despite low levels of contact, positive intergroup contact is still associated with positive outcomes in the Cyprus context (Stathi, Husnu & Pendleton, 2017), thus bolstering our results, even though we registered low contact as well. However, given the low levels of contact registered in our study, we proceeded to refine the 'intergroup contact' construct by transforming the scores from continuous (on a 5 point scale) to categorical (contact vs. no contact) and rerunning the covariation analyses, as a secondary check. Results are reported below.

To examine if mean differences remain in psychophysiological reactivity to face pictures after controlling for previous Intergroup Contact, we conducted a repeated-measures analysis of covariance (ANCOVA). In three separate analyses, we entered each of the measures that exhibited significant differences in our previous analyses – startle amplitude, skin conductance and corrugator activity – as dependent variables, while retaining the independent variables of PicGender, PicCategory and Group Induction, and controlling for the factor of Intergroup Contact as a covariate by dummy coding into 1 for contact vs. 0 for no contact. We used the same method in the previous analyses as we controlled for the continuous variable of intergroup contact as a covariate as well. We compared results from these analyses with our previous ones to determine if significant differences remain.

Startle Amplitude

Between Groups Comparison. After controlling for the effect of Intergroup Contact the non-significant main effect of Group Induction remained non-significant, $F(2, 89) = .35$, $p > .05$., indicating that Startle Amplitude responses were the same for all groups to the face pictures in general and that the covariate did not account for any group effects.

Within Groups Comparison. After controlling for the effect of Intergroup Contact, the main effect of PicGender continued to be significant, $F(1, 89) = 8.83$, $p = .01$ explaining 9% of the variance, but was reduced compared to before controlling for the covariate - in which case 11 % of the variance was explained. This indicates that responses in Startle Amplitude still differed across the sample according to the gender of the face depicted, regardless of Group Induction, but that this effect was in part accounted for by Intergroup Contact.

After controlling for the effect of Intergroup Contact, the main effect of PicCategory on Startle Amplitude became insignificant, $F(1, 89) = 3.23$, $\eta p^2 = .04$, $p > .05$. The differential responses in Startle Amplitude based on the ethnic categorization given to the pictures were eliminated when accounting for intergroup contact, suggesting that intergroup contact fully accounts for the effect.

Interaction Effects. After controlling for the effect of Intergroup Contact, the interaction between PicGender and Group Induction on Startle Amplitude continued to be significant, $F (2, 89) = 3.54$, $\eta p^2 = .08$, $p = .03$. Controlling for Intergroup Contact did not change results in a marked way compared to previous analysis ($F (2, 90) = 3.59$, $\eta p^2 = .07$, $p = .03$), and effect sizes remain almost identical.

After controlling for the effect of Intergroup Contact, the interaction between PicGender and PicCategory on Startle Amplitude was no longer significant, indicating that responses to gender of pictures no longer differed according to ethnic categorization given to the pictures, $F (1, 89) = 2.85$, $\eta p^2 = .03$, $p > .05$. Controlling for Intergroup Contact removed the interaction effect on Startle Amplitude entirely.

Skin Conductance

Between Groups Comparison: After controlling for the effect of Intergroup Contact, the significant main effect of Group Induction on Skin Conductance, $F (2,90) = 3.54$, $\eta p^2 = .07$, $p = .033$, remained significant and almost unchanged, $F (2,89) = 3.37$, $\eta p^2 = .07$, $p = .04$, suggesting that the between groups effect is not altered by intergroup contact.

Within Groups Comparison. After controlling for the effect of Intergroup Contact, the significant main effect of PicGenderDifferenceScore, $F(1, 90) = 11.32$, $p = .01$ on SCR was eliminated, $F(1, 89) = .39$, $p = .54$.

After controlling for the effect of Intergroup Contact, the significant interaction between PicGender and PicCategory, $F (1, 90) = 13.03$, $p = .01$, on SCR was eliminated, $F (1, 89) = .37$, $p = .54$. Findings suggest that all SCR effects are accounted for by contact.

Facial electromyography

Corrugator superciili. Between Groups Comparison. After controlling for the effect of Intergroup Contact the non- significant main effect of Group Induction $F(2, 90) = 2.34$ $p > .05$, remained almost without change, $F(4, 88) = 2.10$, $p = .15$.

Within Groups Comparison. After controlling for the effect of Intergroup Contact the non-significant main effects of PicGender, ($F (1, 89) = 2.10$, $p = .15$), and PicCategory, ($F (1, 89) = .01$, $p = .92$), remained.

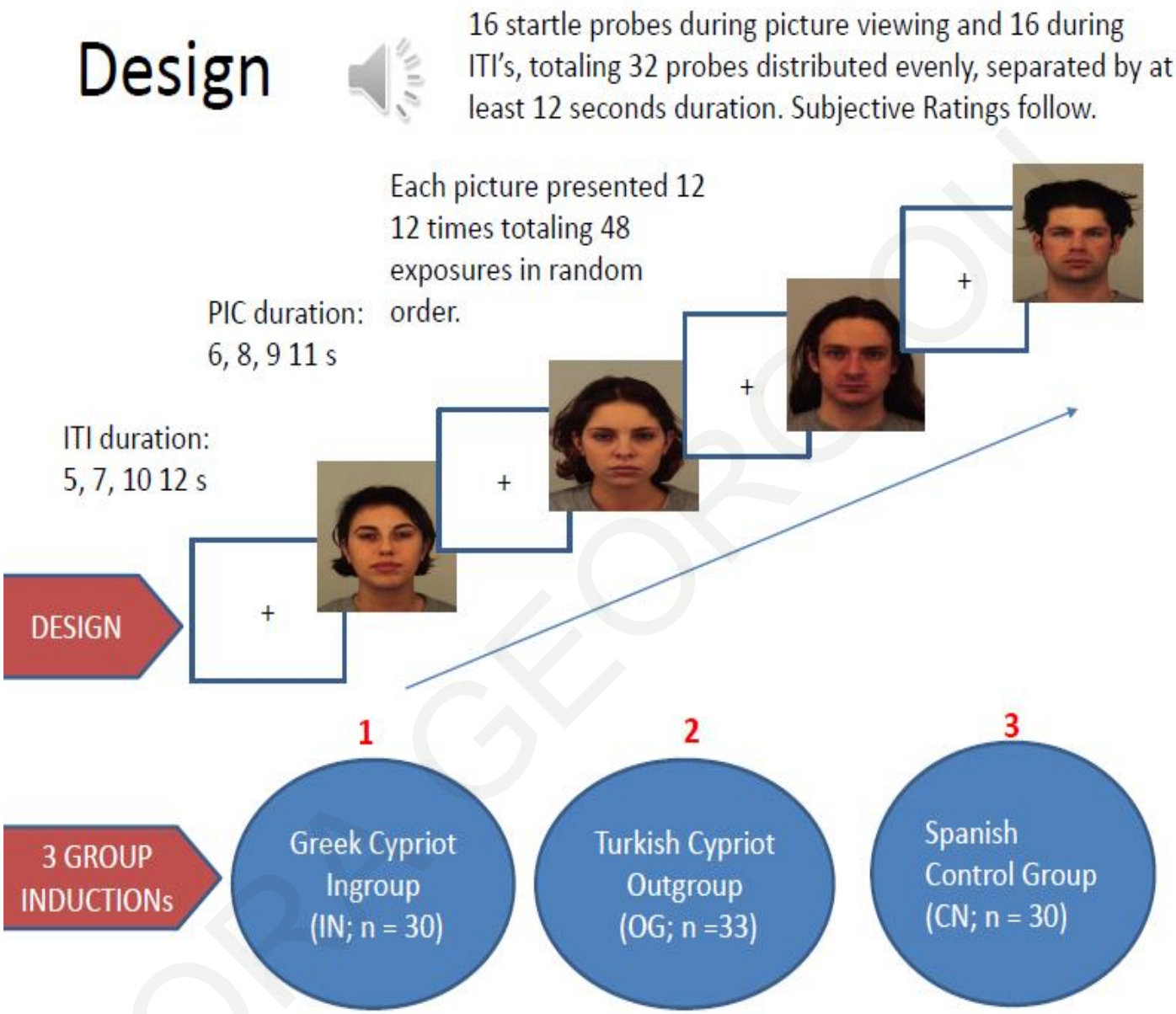
After controlling for the effect of Intergroup Contact, the significant interaction between PicGender and Group Induction on corrugator $F (2, 90) = 4.40$, $\eta p^2 = .09$, $p = .02$, remained unchanged, $F (2, 89) = 4.26$, $\eta p^2 = .09$, $p = .02$. This result indicates that responses to gender of pictures still differed according to group induction despite controlling for intergroup contact.

Discussion

Results of covariation analyses using intergroup contact as a categorical covariate are generally the same as when treating intergroup contact as a categorical variable except in two

important instances. On the one hand, the effect of group induction on SCR is not altered, and on the other hand the effect of Pic Category on startle reactivity was altered, as it became insignificant. Our results indicate that intergroup contact is effective in altering the relationship between aspects of the pictures that provide ethnic cues and startle reactivity and skin conductance reactivity. Finally we note that as in the previous analyses, the effect of the sex of the picture on physiological reactivity was not altered.

Appendix 3. Experimental design



Appendix 4. Consent Form

SN……………………………

ΕΝΤΥΠΟ ΣΥΓΚΑΤΑΘΕΣΗΣ για συμμετοχή σε πρόγραμμα έρευνας (Τα έντυπα αποτελούνται συνολικά από 2 σελίδες)

Αγαπητέ συμμετέχοντα,

Η παρούσα μελέτη διεξάγεται για να εξακριβωθεί ο τρόπος που οι άνθρωποι επεξεργάζονται πληροφορίες για την εθνική καταγωγή όταν βλέπουν πρόσωπα. Στόχος μας είναι να εξετάσουμε τον τρόπο που οι άνθρωποι κοιτάζουν πρόσωπα για να διαμορφώσουν μια εκτίμηση της εθνικότητας του προσώπου, σε επίπεδο αυτόματης αλλά και συνειδητής επεξεργασίας πληροφοριών.

Τι θα σας ζητηθεί να κάνετε αν αποφασίσετε να συμμετάσχετε;
Θα λάβετε μέρος σε μια διαδικασία που διαρκεί περίπου 60 λεπτά. Κατά τη διαδικασία αυτή θα σας ζητηθεί να συμπληρώσετε κάποια ερωτηματολόγια, και να παρακολουθήσετε σε οθόνη μια σειρά από εικόνες που απεικονίζουν πρόσωπα. Στη συνέχεια, θα σας ζητηθεί να βαθμολογήσετε τις αντιδράσεις σας προς τις εικόνες. Αφού σας εξηγηθούν οι διαδικασίες αναλυτικά, θα τοποθετηθούν στα χέρια και στο πρόσωπο σας αισθητήρες που θα καταμετρούν τις αντιδράσεις του σώματος σας στα σενάρια αυτά. Οι αισθητήρες είναι ακίνδυνοι και ανώδυνοι και τοποθετούνται στο δέρμα με κολλητική ταινία. Θέλουμε να σας διαβεβαιώσουμε ότι η διαδικασία στην οποία θα συμμετάσχετε εμπεριέχει ελάχιστους κινδύνους που δεν υπερβαίνουν αυτούς που αντιμετωπίζετε στην καθημερινή σας ζωή. Όμως για να είμαστε βέβαιοι ότι δεν θα αντιμετωπίσετε οποιαδήποτε αρνητική συνέπεια σας ζητούμε να δηλώσετε εάν πάσχετε από κάποιο ιατρικό πρόβλημα και εάν έχετε αξιολογηθεί ιατρικά πρόσφατα.

Έχετε το δικαίωμα να μη συμμετάσχετε εάν δεν το επιθυμείτε. Διατηρείτε το δικαίωμα να αποσύρετε τη συγκατάθεσή σας για συμμετοχή ανά πάσα στιγμή. Διατηρείται πλήρως η εχεμύθεια.

Έχετε το δικαίωμα να υποβάλετε τυχόν παράπονα ή καταγγελίες, που αφορούν το πρόγραμμα στο οποίο συμμετέχετε, προς την Επιτροπή Βιοηθικής που ενέκρινε το πρόγραμμα ή ακόμη και στην Εθνική Επιτροπή Βιοηθικής Κύπρου. Επίσης, για τυχόν υποβολή παραπόνων και καταγγελιών μπορείτε να αποταθείτε στον Αντιπρύτανη Ακαδημαϊκών Υποθέσεων του Πανεπιστημίου Κύπρου, 22 894002.

Σύντομος Τίτλος του Προγράμματος στο οποίο καλείστε να συμμετάσχετε
PIA
Υπεύθυνος του Προγράμματος στο οποίο καλείστε να συμμετάσχετε
Γεωργία Παναγιώτου, Ph.D.

Επίθετο:	……………………………………………………	Όνομα:	………………………………………
Υπογραφή:		Ημερομηνία:	

Πληροφορίες Η μελέτη διεξάγεται από το Τμήμα Ψυχολογίας του Πανεπιστήμιου Κύπρου με επιστημονική υπεύθυνη η Επίκουρη Καθηγήτρια Δρ. Γεωργία Παναγιώτου, Κλινική Ψυχολόγος και ομάδα ειδικών συνεργατών. Για περαιτέρω πληροφορίες μπορείτε να επικοινωνήσετε με την υπεύθυνη: **Δώρα Γεωργίου, georgiou.e.dora@ucy.ac.cy**

Appendix 5. List of Self report measures used in study in Chapter 5

List of Pre-experiment measures	
1	*NEO-Five Factor Inventory* (original; Costa & McRae, 1980; Greek version; Panayiotou, Kokkinos & Spanoudis, 2004)
List of Post experiment measures	
2	*Post Exposure Subjective Ratings Questionnaire* of conscious affect and discrete emotion.
3	*Intergroup Contact*: previous contact with outgroup probed
4	*Social Identity (*adaptation of Collective Self Esteem Scale; CSES, Luhtanen & Crocker, 1992)
5	*Negative Outgroup Attitudes* (short version of the General Evaluation Scale (GES; Wright et al., 1997; Swart, Hewstone, Christ, & Voci, 2011)
6	*The Right Wing Authoritarianism scale* (RWA; Altmeyer, 1981, 1998)
7	*Intergroup anxiety questionnaire*, adapted from Stephan and Stephan, 1985.
8	*Interpersonal Reactivity Index. (Davis, M. H., 1980).*

Appendix 6. Self report measures (Greek) used in study in Chapter 5

(NEO-Five Factor Inventory)

Πώς θα χαρακτηρίζατε σήμερα τον εαυτό σας όσον αφορά τα παρακάτω σημεία;

0 Δεν ισχύει **καθόλου**	**1** Ισχύει **λίγο**	**2** Ισχύει **αρκετά**	**3** Ισχύει **πολύ**	**4** Ισχύει **απόλυτα**

1. Δεν ανησυχώ γενικά……...……...	0	1	2	3	4
2. Μου αρέσει να έχω πολύ κόσμο γύρω μου……...……	0	1	2	3	4
3. Δε μου αρέσει να χάνω το χρόνο μου ονειροπολώντας…..……...……	0	1	2	3	4
4.Προσπαθώ να είμαι ευγενικός/ή με όλους……..……..	0	1	2	3	4
5. Κρατώ τα πράγματα μου καθαρά και τακτοποιημένα……...	0	1	2	3	4
6.Συχνά νιώθω κατώτερος/η από τους άλλους……..……	0	1	2	3	4
7.Γελώ εύκολα……....	0	1	2	3	4
8.Όταν βρω το σωστό τρόπο να κάνω κάτι, τον χρησιμοποιώ……..	0	1	2	3	4
9. Συχνά τσακώνομαι με την οικογένεια μου και τους συνεργάτες μου……....	0	1	2	3	4
10.Είμαι καλός/ή στο να ρυθμίζω τον εαυτό μου για να τηρώ τις προθεσμίες…….	0	1	2	3	4
11.Όταν βρίσκομαι κάτω από πολύ πίεση είναι φορές που νιώθω ότι θα διαλυθώ……..	0	1	2	3	4
12. Γενικά δε θεωρώ τον εαυτό μου ιδιαίτερα «ξένοιαστο»……..…..	0	1	2	3	4
13. Γοητεύομαι με τα μοτίβα που υπάρχουν στην τέχνη και στην φύση…….	0	1	2	3	4
14. Κάποιοι θεωρούν ότι είμαι εγωιστής/τρια και εγωκεντρικός/ή…..……...	0	1	2	3	4
15.Δεν είμαι πολύ μεθοδικό άτομο……	0	1	2	3	4
16.Σπάνια νιώθω μοναξιά ή θλίψη……....	0	1	2	3	4
17.Πραγματικά απολαμβάνω να μιλώ με κόσμο……...	0	1	2	3	4
18. Πιστεύω ότι με το να αφήνουμε τους μαθητές να ακούν ομιλητές που αμφισβητούν τις καθιερωμένες απόψεις νιώθουν πιο μπερδεμένοι και αποπροσανατολισμένοι……..……..…….	0	1	2	3	4
19.Προτιμώ να συνεργάζομαι με άλλους παρά να τους ανταγωνίζομαι...……	0	1	2	3	4
20. Προσπαθώ να εκπληρώνω ό,τι μου ανατίθεται με ευσυνειδησία…...……	0	1	2	3	4
21.Συχνά νιώθω ένταση και νευρικότητα……..…...……..……...	0	1	2	3	4
22.Μου αρέσει να βρίσκομαι όπου υπάρχει δράση……...	0	1	2	3	4
23. Η ποίηση με αγγίζει ελάχιστα ή καθόλου……...……	0	1	2	3	4
24. Έχω την τάση να είμαι κυνικός/ή και σκεπτικός/ή όσον αφορά την πρόθεση των άλλων……..….	0	1	2	3	4
25. Έχω ξεκάθαρους στόχους και προσπαθώ να τους επιτύχω δουλεύοντας συστηματικά……..	0	1	2	3	4

26.Κάποιες φορές νιώθω τελείως ανάξιος/α…..……..…….....	0	1	2	3	4
27.Συνήθως προτιμώ να κάνω πράγματα μόνος/η μου……..……..	0	1	2	3	4
28.Συχνά δοκιμάζω καινούρια και άγνωστα φαγητά……..…..…..	0	1	2	3	4
29. Πιστεύω ότι οι περισσότεροι άνθρωποι θα προσπαθήσουν να με εκμεταλλευτούν εάν τους αφήσω……...…….	0	1	2	3	4
30. Χάνω πολύ χρόνο προτού συγκεντρωθώ σε μια δουλειά……...……	0	1	2	3	4
31.Σπάνια νιώθω να είμαι φοβισμένος/η ή αγχωμένος/η……..……	0	1	2	3	4
32. Συχνά νιώθω να είμαι γεμάτος/η ενέργεια…..…….	0	1	2	3	4
33. Σπάνια προσέχω τη διάθεση που δημιουργούν «διαφορετικά» περιβάλλοντα…….	0	1	2	3	4
34. Οι περισσότεροι άνθρωποι που γνωρίζω με συμπαθούν…….	0	1	2	3	4
35. Δουλεύω σκληρά για να πετύχω τους στόχους μου……...….	0	1	2	3	4
36. Συχνά θυμώνω με τον τρόπο με τον οποίο οι άνθρωποι με αντιμετωπίζουν……..	0	1	2	3	4
37. Είμαι ένα χαρούμενο, αισιόδοξο άτομο……...……....	0	1	2	3	4
38. Πιστεύω ότι θα έπρεπε να στρεφόμαστε στη Θρησκευτική μας Ηγεσία όταν παίρνουμε αποφάσεις ή για θέματα ηθικής τάξης……..…..…….....	0	1	2	3	4
39. Κάποιοι με θεωρούν άτομο ψυχρό και υπολογιστικό……..……..	0	1	2	3	4
40. Όταν δεσμεύομαι προσωπικά για κάτι, αναλαμβάνω υπεύθυνα να το φέρω εις πέρας……...	0	1	2	3	4
41. Πολύ συχνά, όταν τα πράγματα πάνε στραβά, νιώθω απογοητευμένος/η και θέλω να τα παρατήσω…….	0	1	2	3	4
42.Δεν είμαι γενικά αισιόδοξος/η……..	0	1	2	3	4
43.Κάποιες φορές όταν βλέπω ένα έργο τέχνης ή διαβάζω ένα ποίημα νιώθω ένα ρίγος ενθουσιασμού να με διαπερνά……..……..	0	1	2	3	4
44. Είμαι πραγματιστής/τρια και διακατέχομαι από ψυχρή λογική στις θέσεις μου…….....	0	1	2	3	4
45. Κάποιες φορές δεν είμαι όσο σταθερός/ή και υπεύθυνος/η όσο θα έπρεπε	0	1	2	3	4
46. Σπάνια είμαι θλιμμένος/η ή λυπημένος./η……...	0	1	2	3	4
47. Η ζωή μου έχει γρήγορους ρυθμούς……	0	1	2	3	4
48. Δε με ενδιαφέρει ιδιαίτερα η ενασχόληση με την φύση του κόσμου ή τις συνθήκες του κόσμου……	0	1	2	3	4
49. Γενικά προσπαθώ να είμαι ευαίσθητος/η στις ανάγκες των άλλων…..….	0	1	2	3	4
50. Είμαι ένα παραγωγικό άτομο που ολοκληρώνει τη δουλειά που αναλαμβάνει……...……..	0	1	2	3	4
51. Συχνά νιώθω αβοήθητος/η και θέλω κάποιον άλλο να μου λύσει τα προβλήματα……...…	0	1	2	3	4
52. Είμαι πολύ δραστήριο άτομο……...	0	1	2	3	4

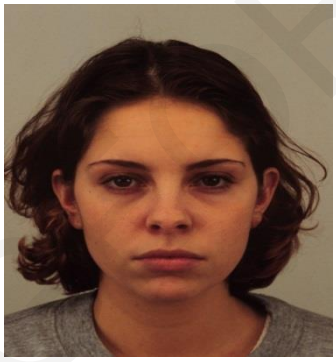
53. Έχω πολλά πνευματικά ενδιαφέροντα……...……	0	1	2	3	4
54. Εάν κάποιος/α δε μου είναι συμπαθής τον/την αφήνω να το καταλάβει…	0	1	2	3	4
55. Ποτέ δεν τα καταφέρνω να οργανωθώ……	0	1	2	3	4
56. Κατά καιρούς ένιωσα τόση ντροπή που θα ήθελα να εξαφανιστώ…..…..	0	1	2	3	4
57. Προτιμώ να κάνω γενικά το δικό μου, παρά να είμαι ο ηγέτης άλλων…..	0	1	2	3	4
58. Συχνά μου αρέσει να παίζω με ιδέες και με θεωρίες……...	0	1	2	3	4
59. Εάν είναι απαραίτητο είμαι διατεθειμένος/η να «μανουβράρω» τους άλλους προκειμένου να πετύχω αυτό που θέλω……	0	1	2	3	4
60. Προσπαθώ να κάνω τέλεια ό,τι κάνω……...	0	1	2	3	4

(Post Exposure Subjective Ratings Questionnaire of conscious affect and discrete emotion.)

Βαθμολογήστε πως αισθάνεσται καθώς βλέπετε την κάθε εικόνα. Για κάθε εικόνα θα δώσετε τη βαθμολογία σας σε διαστάσεις. Σε κάθε περίπτωση επιλέξτε την βαθμολογία σας από το 1-7 με βάση τις πιο κάτω κλίμακες:

Σθένος (πόσο δυσάρεστα ή πόσο ευχάριστα συναισθήματα σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Δυσάρεστα Ευχάριστα
Διέγερση (πόση διέγερση ή ένταση σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Ηρεμία/Χαλάρωση Διέγερση/Ένταση
Έλεγχος (σε ποιο βαθμό η εικόνα προκάλεσε το αίσθημα κυριαρχίας) 1 2 3 4 5 6 7 Υποταγή Κυριαρχία
Χαρά (σε ποιο βαθμό η εικόνα σας προκάλεσε χαρά) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Φόβος (σε ποιο βαθμό η εικόνα σας προκάλεσε φόβο) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Θυμός (σε ποιο βαθμό η εικόνα σας προκάλεσε θυμό) 1 2 3 4 5 6 7

Καθόλου	Μέτρια	Πάρα Πολύ
Λύπη (σε ποιο βαθμό η εικόνα σας προκάλεσε λύπη) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ		
Αηδία (σε ποιο βαθμό η εικόνα σας προκάλεσε αηδία) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ		
Έκπληξη (σε ποιο βαθμό η εικόνα σας προκάλεσε έκπληξη) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ		
Χαλάρωση (σε ποιο βαθμό η εικόνα σας προκάλεσε ευχάριστη χαλάρωση) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ		
Ουδέτερο Συναίσθημα (η εικόνα δεν μου προκάλεσε κανένα συναίσθημα) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ		



Σθένος (πόσο δυσάρεστα ή πόσο ευχάριστα συναισθήματα σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Δυσάρεστα Ευχάριστα
Διέγερση (πόση διέγερση ή ένταση σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Ηρεμία/Χαλάρωση Διέγερση/Ένταση
Έλεγχος (σε ποιο βαθμό η εικόνα προκάλεσε το αίσθημα κυριαρχίας) 1 2 3 4 5 6 7 Υποταγή Κυριαρχία
Χαρά (σε ποιο βαθμό η εικόνα σας προκάλεσε χαρά) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Φόβος (σε ποιο βαθμό η εικόνα σας προκάλεσε φόβο) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ

Θυμός (σε ποιο βαθμό η εικόνα σας προκάλεσε θυμό) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Λύπη (σε ποιο βαθμό η εικόνα σας προκάλεσε λύπη) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Αηδία (σε ποιο βαθμό η εικόνα σας προκάλεσε αηδία) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Έκπληξη (σε ποιο βαθμό η εικόνα σας προκάλεσε έκπληξη) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Χαλάρωση (σε ποιο βαθμό η εικόνα σας προκάλεσε ευχάριστη χαλάρωση) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Ουδέτερο Συναίσθημα (η εικόνα δεν μου προκάλεσε κανένα συναίσθημα) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ

Σθένος (πόσο δυσάρεστα ή πόσο ευχάριστα συναισθήματα σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Δυσάρεστα Ευχάριστα
Διέγερση (πόση διέγερση ή ένταση σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Ηρεμία/Χαλάρωση Διέγερση/Ένταση
Έλεγχος (σε ποιο βαθμό η εικόνα προκάλεσε το αίσθημα κυριαρχίας) 1 2 3 4 5 6 7 Υποταγή Κυριαρχία
Χαρά (σε ποιο βαθμό η εικόνα σας προκάλεσε χαρά) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Φόβος (σε ποιο βαθμό η εικόνα σας προκάλεσε φόβο) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Θυμός (σε ποιο βαθμό η εικόνα σας προκάλεσε θυμό) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Λύπη (σε ποιο βαθμό η εικόνα σας προκάλεσε λύπη)

1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Αηδία (σε ποιο βαθμό η εικόνα σας προκάλεσε αηδία) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Έκπληξη (σε ποιο βαθμό η εικόνα σας προκάλεσε έκπληξη) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Χαλάρωση (σε ποιο βαθμό η εικόνα σας προκάλεσε ευχάριστη χαλάρωση) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Ουδέτερο Συναίσθημα (η εικόνα δεν μου προκάλεσε κανένα συναίσθημα) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ

Σθένος (πόσο δυσάρεστα ή πόσο ευχάριστα συναισθήματα σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Δυσάρεστα Ευχάριστα
Διέγερση (πόση διέγερση ή ένταση σας προκάλεσε η εικόνα) 1 2 3 4 5 6 7 Ηρεμία/Χαλάρωση Διέγερση/Ένταση
Έλεγχος (σε ποιο βαθμό η εικόνα προκάλεσε το αίσθημα κυριαρχίας) 1 2 3 4 5 6 7 Υποταγή Κυριαρχία
Χαρά (σε ποιο βαθμό η εικόνα σας προκάλεσε χαρά) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Φόβος (σε ποιο βαθμό η εικόνα σας προκάλεσε φόβο) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Θυμός (σε ποιο βαθμό η εικόνα σας προκάλεσε θυμό) 1 2 3 4 5 6 7 Καθόλου Μέτρια Πάρα Πολύ
Λύπη (σε ποιο βαθμό η εικόνα σας προκάλεσε λύπη) 1 2 3 4 5 6 7

Καθόλου			Μέτρια			Πάρα Πολύ
Αηδία (σε ποιο βαθμό η εικόνα σας προκάλεσε αηδία)						
1	2	3	4	5	6	7
Καθόλου			Μέτρια			Πάρα Πολύ
Έκπληξη (σε ποιο βαθμό η εικόνα σας προκάλεσε έκπληξη)						
1	2	3	4	5	6	7
Καθόλου			Μέτρια			Πάρα Πολύ
Χαλάρωση (σε ποιο βαθμό η εικόνα σας προκάλεσε ευχάριστη χαλάρωση)						
1	2	3	4	5	6	7
Καθόλου			Μέτρια			Πάρα Πολύ
Ουδέτερο Συναίσθημα (η εικόνα δεν μου προκάλεσε κανένα συναίσθημα)						
1	2	3	4	5	6	7
Καθόλου			Μέτρια			Πάρα Πολύ

(Intergroup Contact)

Σε αυτό το μέρος του ερωτηματολογίου θα θέλαμε να μάθουμε το βαθμό της επαφής σου με τους Τουρκοκύπριους

1. Μετά το άνοιγμα των οδοφραγμάτων, στις 23 Απριλίου 2003, επισκέφτηκες την άλλη πλευρά (τα κατεχόμενα); Εάν ναι, πόσες φορές;

Α	ΠΟΤΕ	1
Β	ΜΙΑ ΦΟΡΑ	2
Γ	2-3 ΦΟΡΕΣ	3
Δ	4-6 ΦΟΡΕΣ	4
Ε	ΠΑΝΩ ΑΠΌ 7 ΦΟΡΕΣ	5
Ζ	ΔΑ	9

2. Θα θέλαμε τώρα να σε ρωτήσουμε για τις προσωπικές σας εμπειρίες με τους Τουρκοκύπριους – ασχέτως από το αν έχεις περάσει τα οδοφράγματα. Μας ενδιαφέρει εδώ η επικοινωνία, συνομιλία, <u>όχι απλά να βλέπεις Τουρκοκύπριους</u>/ες.

1. **Πόσους Τουρκοκύπριους έτυχε να γνωρίσεις στο παρελθόν;**

Κανένα	Λίγους	Αρκετούς	Πολλούς	Πάρα πολλούς
1	2	3	4	5

2. **Γενικά πόση επαφή θα έλεγες ότι είχες με τους Τουρκοκύπριους;**

Καθόλου	Λίγη	Αρκετή	Πολλή	Πάρα πολλή
1	2	3	4	5

3. **Με πόσους Τουρκοκύπριους/ες διατηρείς αυτή την στιγμή κάποια φιλία;**

Κανένα	1-2	3-5	6-10	Πάνω από 10	ΔΑ
1	2	3	4	5	9

(Social Identity)

Πες μου σε παρακαλώ πόσο συμφωνείς ή διαφωνείς με καθεμία από τις παρακάτω προτάσεις.

	Διαφωνώ απόλυτα	**Διαφωνώ**	**Ούτε διαφωνώ ούτε συμφωνώ**	**Συμφωνώ**	**Συμφωνώ απόλυτα**	**ΔΑ/ ΔΓ**
1. Γενικά είμαι χαρούμενος που είμαι Ελληνοκύπριος/α	1	2	3	4	5	9
2. Συχνά εύχομαι να μην ήμουν Ελληνοκύπριος/α	1	2	3	4	5	9
3. Είμαι περήφανος που είμαι Ελληνοκύπριος/α	1	2	3	4	5	9
4. Το ότι είμαι Ελληνοκύπριος/α είναι σημαντικό μέρος της εικόνας που έχω για τον εαυτό μου	1	2	3	4	5	9
5. Το ότι είμαι Ελληνοκύπριος/α είναι το πιο σημαντικό μέρος του ποιος/ ποια είμαι	1	2	3	4	5	9
6. Το ότι είμαι Ελληνοκύπριος/α **ΔΕΝ** είναι σημαντικό μέρος της ταυτότητάς μου	1	2	3	4	5	9

Θα έλεγες ότι νιώθεις …

ΜΟΝΟ ΕΛΛΗΝΑΣ/ΔΑ ΚΑΙ ΚΑΘΟΛΟΥ ΚΥΠΡΙΟΣ/Α	ΕΛΛΗΝΑΣ/ΔΑ ΚΑΙ ΛΙΓΟ ΚΥΠΡΙΑ/ΟΣ	ΣΤΟΝ ΙΔΙΟ ΒΑΘΜΟ ΕΛΛΗΝΑΣ/ΔΑ ΚΑΙ ΚΥΠΡΙΟΣ/Α	ΚΥΠΡΙΟΣ/Α ΚΑΙ ΛΙΓΟ ΕΛΛΗΝΑΣ/ΔΑ	ΜΟΝΟ ΚΥΠΡΙΟΣ./Α ΚΑΙ ΚΑΘΟΛΟΥ ΕΛΛΗΝΑΣ/ΔΑ	ΔΑ
1	2	3	4	5	9

(Negative Outgroup Attitudes)

Οι ακόλουθες ερωτήσεις αφορούν τα αισθήματα σας απέναντι σε διάφορες ομάδες γενικά.

Παρακαλώ βαθμολογήστε την ομάδα σε ένα θερμόμετρο που μετρά από το μηδέν (0) μέχρι τους εκατό (100) βαθμούς. Όσο πιο ψηλός ο αριθμός τόσο πιο θερμά ή θετικά νιώθετε απέναντι στην ομάδα αυτή. Όσο πιο χαμηλός ο αριθμός τόσο ψυχρότερα ή αρνητικά νιώθετε. Αν δεν νιώθετε ούτε θερμά ούτε ψυχρά απέναντι στην ομάδα αυτή βαθμολογήστε την με 50.

Πως νιώθετε απέναντι στους **Ισπανούς/Ισπανίδες γενικά**;

0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
Πολύ Ψυχρά ή Αρνητικά										**Πολύ Θερμά ή Θετικά**

Πως νιώθετε απέναντι στους **Τουρκοκυπρίους/Τουρκοκύπριες γενικά**;

0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
Πολύ Ψυχρά ή Αρνητικά										**Πολύ Θερμά ή Θετικά**

Προσπαθήστε να περιγράψετε πώς αισθάνεστε για την Τουρκοκυπριακή κοινότητα τοποθετώντας τη θέση σας στα ζεύγη αντίθετων συναισθημάτων στην παρακάτω κλίμακα.

							ΔΑ/ΔΓ
αρνητικά	1	2	3	4	5	θετικά	9
ψυχρά	1	2	3	4	5	ζεστά	9
εχθρικά	1	2	3	4	5	φιλικά	9
περιφρόνηση	1	2	3	4	5	σεβασμό	9

(The Right Wing Authoritarianism scale)

Η παρούσα επισκόπηση στοχεύει να καταγράψει την άποψη του κόσμου για διάφορα κοινωνικά θέματα. Θα βρείτε ότι συμφωνείτε με κάποιοες δηλώσεις και με άλλες δε συμφωνείτε, σε διάφορους βαθμούς. Παρακαλώ συμπληρώστε τη δική σας αντίδραση σε κάθε δήλωση, χρησιμοποιώντας την πιο κάτω κλίμακα:

Γράψε -4 αν διαφωνείς πάρα πολύ
Γράψε -3 αν διαφωνείς πολύ
Γράψε -2 αν διαφωνείς κάπως
Γράψε -1 αν διαφωνείς λίγο

Γράψε 4 αν συμφωνείς πάρα πολύ
Γράψε 3 αν συμφωνείς πολύ
Γράψε 2 αν συμφωνείς κάπως
Γράψε 1 αν συμφωνείς λίγο

Αν νιώθετε εντελώς ουδέτερα για κάποια δήλωση, συμπλήρωσε 0.
Σημαντικό: Πιθανόν να βρείτε ότι έχετε διαφορετικές αντιδράσεις σε διάφορα κομμάτια της δήλωσης. Για παράδειγμα, πιθανόν να διαφωνείτε πολύ (π.χ. -4) με μια ιδέα μέσα στην πρόταση αλλά να συμφωνείτε λίγο (π.χ. 1) με μια άλλη. Όταν συμβεί αυτό, παρακαλώ συνδυάστε τις απαντήσεις σας και γράψετε τον τελικό αριθμό (π.χ. -3).

-4	-3	-2	-1	0	1	2	3	4
ΔΙΑΦΩΝΩ ΠΑΡΑ ΠΟΛΥ								ΣΥΜΦΩΝΩ ΠΑΡΑ ΠΟΛΥ

___ 1.
Στο τέλος της ημέρας οι κατεστημένες αρχές συνήθως έχουν δίκαιο γενικά, ενώ οι ριζοσπάστες και διαδηλωτές συνήθως είναι απλά «φωνακλάδες» που επιδεικνύουν την αγνοια τους

___ 2.
Οι γυνάικες θα έπρεπε να υπόσχονται να υπακούν του συζύγου τους όταν πατρευτούν

___ 3.
Το κράτος μας χρειάζεται ένα ισχυρό ηγέτη, ο οποίος θα κάνει αυτά που πρέπει να γίνουν για να πατάξει τους νέους φιλελευθερους τρόπους και την αμαρτία που μας καταστρέφει

___ 4.
Οι γκεϊ και λεσβίες είναι όσο ηθικοί και υγιείς όσο οποιονδήποτε άλλο

___ 5.
Είναι πάντα καλύτερα να εμπιστεύεσαι την κρίση των αρμόδιων αρχών τη κυβέρνησης και της θρησκείας, παρά να δίνεις σημασία στους ταραξίες της κοινωνίας που προσπαθούν να βάλουν την αμφιβολία στο μυαλό του κόσμου

___ 6. Οι άθεοι και άλλοι που έχουν επαναστατήσει εναντίον της θρησκείας είναι τόσο καλοί και ενάρετοι όσο οι άνθρωποι που πηγαίνουν στην εκκλησία τακτικά

___ 7. Ο μονος τρόπος για τη χώρα μας να ξεπεράσει την ερχόμενη κρίση είναι η επιστροφή στις παραδοσιακές αξίες, η τοποθέτηση σκληρών ηγέτων στην εξουσία, και η φίμωση των ταραχοποιών που μεταδίδουν κακές ιδέες

___ 8. Δεν υπάρχει απολύτως τίποτα λάθος με χώρους γυμνιστών.

___ 9. Η χώρα μας χρειάζεται ελεύθερα σκεπτόμενους ανθρώπους οι οποίοι έχουν το κουράγιο να εναντιωθούν στους παραδοσιακούς τρόπους, έστω και αν αυτό στεναχωρήσει πολύ κόσμο

___ 10. Η χώρα μας θα καταστραφεί μια μέρα αν δεν πατάξουμε τις διαστροφές που κατατρώνε τα παραδοσιακά πιστεύω και την ηθική μας υπόσταση.

___ 11. Όλοι πρέπει να έχουν το δικό τους τρόπο ζωής, θρησκευτικές πεποιθήσεις και σεξουαλικό προσανατολισμό, έστω και αν αυτά μας διαφοροποιούν από τους άλλους.

___ 12. Οι «παλιές αρχές» και οι «παλιές αξίες» ακόμη υποδεικνύουν τον καλύτερο τρόπο να ζει κανείς

___ 13.Ο καθένας θα έπρεπε να θαυμάζει τους ανθρώπους που προκάλεσαν τους νομοθέτες και την πλειοψηφία με το να παλέψουν για: το δικαίωμα έκτρωσης για γυναίκες, τα δικαιώματα των ζωών, ή την κατάργηση της προσευχής στο σχολείο.

___ 14. Αυτό που χρειάζεται η χώρα μας είναι ένα δυνατό, αποφασιστικό ηγέτη που θα τσακίσει το κακό και θα μας φέρει πίσω στο αληθινό μας μονοπάτι

___ 15. Κάποιοι από τους καλύτερους ανθρώπους στην χώρα μας είναι από αυτούς που προκαλούν την κυβέρνηση, κριτικάρουν τη θρησκεία και αγνοούν «τον φυσιολογικό τρόπο που πρέπει να είναι τα πράγματα»

___ 16. Οι νόμοι του Θεού για την έκτρωση, τον γάμο και την πορνογραφία πρέπει να ακολουθούνται αυστηρώς πριν είναι πολύ αργά, και αυτοί που παραβιάζουν τους νόμους αυτούς πρέπει να τιμωρούνται βαριά

___ 17. Υπάρχουν πολλοί ανήθικοι, ακραίοι άνθρωποι στην χώρα μας σήμερα, οι οποίοι προσπαθούν να τη χαλάσουν για τους δικούς τους σκοπούς, και θα έπρεπε να τεθούν εκτός δράσης από τις αρχές

___ 18. Η «θέση της γυναίκας» θα έπρεπε να είναι όπου θέλει αυτή να είναι. Οι μέρες όπου οι γυναίκες υποτάσσονται στους άνδρες τους και στις κοινωνικές συμβάσεις ανήκουν μόνο στο παρελθόν

___ 19. Η χώρα μας θα γίνει πάλι αξιοθαύμαστη αν τιμάμε τους τρόπους των προγόνων, κάνουμε αυτά που μας λένε οι Αρχές, και απαλλαγούμε από τα «σάπια μήλα» που τα χαλάνε όλα.

___ 20. Δεν υπάρχει «ΕΝΑΣ σωστός τρόπος» για να ζεί κανείς. Όλοι πρέπει να δημιουργήσουν τον δικό τους τρόπο.

___ 21. Θα έπρεπε να δίνεται έπαινο στους γκεϊ ακτιβιστές και στις φεμινίστριες επειδή ήταν αρκετά θαρραλέοι να εναντιωθούν στις «παραδοσιακές οικογενειακές αξίες»

___ 22. Αυτή η χώρα θα λειτουργούσε πολύ καλύτερα αν κάποιες ομάδες ταραχοποιών έκλειναν το στόμα τους και δέχονταν τη παραδοσιακή τους θέση στην κοινωνία

(Intergroup Anxiety questionnaire)

Για κάθε μια από τις πιο κάτω δηλώσεις, υπέδειξε πώς θα ένιωθες εάν αλληλοεπιδρούσες με άγνωστα μέλη άλλων φυλετικών, εθνικών ή πολιτισμικών ομάδων.

Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου άνετα									Πάρα πολύ άνετα
Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου αβέβαια									Πάρα πολύ αβέβαια
Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου αυτοπεποίθηση									Πάρα πολύ αυτοπεποίθηση
Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου άβολα									Πάρα πολύ άβολα
Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου χαλαρά									Πάρα πολύ χαλαρά
Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ
Καθόλου άγχος									Παρα πολύ άγχος

(Interpersonal Reactivity Index)

Οι ακόλουθες δηλώσεις αφορούν τις σκέψεις και τα συναισθήματα σας σε μία ποικιλία καταστάσεων. Για κάθε δήλωση, υπέδειξε πόσο καλά σε περιγράφει με το να επιλέξεις το κατάλληλο γράμμα από την ακόλουθη κλίμακα (είτε Α, Β, Γ, Δ ή Ε, όπως αναγράφεται πιο κάτω). Όταν αποφασίσεις την απάντηση σου, συμπλήρωσε το γράμμα δίπλα από τον αριθμό κάθε δήλωσης. ΔΙΑΒΑΣΕ ΚΑΘΕ ΔΗΛΩΣΗ ΠΡΟΣΕΚΤΙΚΑ ΠΡΙΝ ΑΠΑΝΤΗΣΕΙΣ. Απάντησε όσο πιο ειλικρινά μπορείς. Ευχαριστώ.

ΚΛΙΜΑΚΑ ΑΠΑΝΤΗΣΗΣ:

Α	**Β**	**Γ**	**Δ**	**Ε**
ΔΕΝ ΜΕ ΠΕΡΙΓΡΑΦΕΙ ΚΑΛΑ				*ΜΕ ΠΕΡΙΓΡΑΦΕΙ ΠΟΛΥ ΚΑΛΑ*

	1. Ονειροπολώ και φαντασιώνομαι τακτικά για πράγματα που μπορεί να συμβούν σε μένα.
	2. Συχνά νιώθω τρυφερά συναισθήματα ανησυχίας για άτομα λιγότερο τυχερά από μένα.
	3. Κάποιες φορές το βρίσκω δύσκολο να δω τα πράγματα από την οπτική γωνιά ‘του άλλου’
	4. Κάποιες φορές δεν νιώθω ότι λυπάμαι για άλλα άτομα όταν έχουν προβλήματα.
	5. Πραγματικά εμπλέκομαι με τα συναισθήματα των χαρακτήρων σε ένα μυθιστόρημα.
	6. Σε καταστάσεις έκτακτης ανάγκης, νιώθω σύγχυση και άβολα.
	7. Είμαι συνήθως αντικειμενικός/ή όταν βλέπω μία ταινία ή θέατρο, και σπάνια χάνομαι ολοκληρωτικά σε αυτό.
	8. Προσπαθώ να κοιτάζω την πλευρά διαφωνίας του καθενός πριν πάρω μία απόφαση.
	9. Όταν βλέπω ότι κάποιος εκμεταλλεύεται, νιώθω κάπως προστατευτικός/ή απέναντι του.
	10. Κάποιες φορές νιώθω αβοήθητος/η όταν είμαι στην μέση μιας πολύ συναισθηματικής κατάστασης.
	11. Κάποιες φορές προσπαθώ να καταλάβω τους φίλους μου καλύτερα με το να φανταστώ πώς τα πράγματα μοιάζουν από την δική τους πλευρά.
	12. Είναι αρκετά σπάνιο για μένα να εμπλακώ σε μεγάλο βαθμό σε ένα καλό βιβλίο ή ταινία
	13. Όταν δω κάποιο να πληγώνεται, τείνω να παραμένω ήρεμος/η.
	14. Οι ατυχίες που περνούν οι άλλοι άνθρωποι συνήθως δεν με ενοχλούν σε σημαντικό βαθμό.
	15. Εάν είμαι σίγουρος/η ότι είμαι σωστός/ή για κάτι, δεν σπαταλώ πολύ χρόνο να ακούω τα επιχειρήματα άλλων ατόμων.
	16. Βλέποντας ένα ένα έργο ή ταινία, έχω νιώσει σαν να ήμουν ένα από τους χαρακτήρες.
	17. Το να είμαι σε τεταμένη συναισθηματική κατάσταση με τρομάζει.

	18. Όταν δω κάποιο να τον μεταχειρίζονται άδικα, κάποιες φορές δεν νιώθω πολύ οίκτο για αυτό
	19. Είμαι συνήθως πολύ αποτελεσματική/ός στο να αντιμετωπίζω επείγουσες καταστάσεις.
	20. Συχνά με αγγίζουν τα πράγματα που βλέπω να συμβαίνουν.
	21. Πιστεύω ότι υπάρχουν δύο πλευρές σε κάθε ερώτημα και προσπαθώ να βλέπω και τις δύο.
	22. Θα περιέγραφα τον εαυτό μου σαν αρκετά πονόψυχο άτομο.
	23. Όταν βλέπω μία καλή ταινία, μπορώ εύκολα να βάλω τον εαυτό μου στην θέση του πρωταγωνιστικού χαρακτήρα.
	24. Τείνω να χάνω τον έλεγχο σε επείγουσες καταστάσεις.
	25. Όταν είμαι αναστατωμένος/η με κάποιο άτομο, συνήθως προσπαθώ να βάλω τον εαυτό μου «στα δικά του παπούτσια» για λίγο.
	26. Όταν διαβάζω μία ενδιαφέρουσα ιστορία ή μυθιστόρημα, φαντάζομαι πώς θα ένιωθα εάν τα γεγονότα στην ιστορία συμβαίναν σε μένα.
	27. Όταν δω κάποιο να χρειάζεται άμεσα βοήθεια σε κατάσταση έκτακτης ανάγκης, γίνομαι ράκος
	28. Πριν κριτικάρω κάποιον, προσπαθώ να φανταστώ πώς θα ένιωθα αν ήμουν στην θέση του.

Appendix 7. Self report measures (original versions, English) used in study in Chapter 5

(Post Exposure Subjective Ratings Questionnaire of conscious affect and discrete emotion in response to each picture stimulus)

Valence (how much pleasure or displeasure did you feel when viewing the picture?) 1 2 3 4 5 6 7 Unpleasant Pleasant
Arousal (how much arousal did you feel when viewing the picture?) 1 2 3 4 5 6 7 Low Arousal High Arousal
Control (how much control did you feel when viewing the picture?) 1 2 3 4 5 6 7 Low Control High Control
J**oy** (how much joy did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Fear (how much fear did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Anger (how much anger did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Sadness (how much sadness did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Disgust (how much disgust did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Surprise (how much sadness did you feel when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Relaxation (how much joy did you feel pleasant relaxation when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much
Neutral (how much did you feel nothing when viewing the picture?) 1 2 3 4 5 6 7 None Some Very Much

(Social Identity)

Please not how much you agree or disagree with the following statements.

	Totally Disagree	**Disagree**	**Neither Agree or Disagree**	**Agree**	**Totally Agree**	**N/A**
1. I am generally glad to be Greek Cypriot	1	2	3	4	5	9
2. I often wish that I wasn't Greek Cypriot	1	2	3	4	5	9
3. I am proud to be Greek Cypriot	1	2	3	4	5	9
4. Being Greek Cypriot is a significant part of the image I have of myself	1	2	3	4	5	9
5. Being Greek Cypriot is the most important part of myself	1	2	3	4	5	9
6. Being Greek Cypriot is not an important part of my identity	1	2	3	4	5	9

Would you say that you feel……..

ONLY GREEK AND NOT CYPRIOT AT ALL	GREEK AND A LITTLE CYPRIOT	GREEK AND CYPRIOT TO THE SAME DEGREE	CYPRIOT AND A LITTLE GFREEK	ONLY CYPRIOT AND NOT AT ALL GREEK	N/A
1	2	3	4	5	9

(Negative Outgroup Attitudes)

The following questions are in regards to your feelings about different groups in general.

Please rate the group on a thermometer from zero (0) to a hundred (100) degrees. The higher the rating the warmer or more positive you feel towards the group in question. The lower the rating the colder or more negative you feel towards the group in question. If you feel neither warm nor cold towards the group, give a rating of 50.

How do you feel towards **Spanish people** in general?

0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
Very cold										**Very warm**

How do you feel towards **Turkish Cypriot** people in general?

0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
Very cold										**Very warm**

Try to describe how you feel towards the Turkish Cypriot community by positioning yourself on the pairs of opposite emotions on the scale below.

							ΔΑ/ΔΓ
negative	1	2	3	4	5	positive	9
cold	1	2	3	4	5	warm	9
hostile	1	2	3	4	5	friendly	9
contempt	1	2	3	4	5	respect	9

(Right Wing Authoritarianism Scale)

This survey is part of an investigation of general public opinion concerning a variety of social issues. You will probably find that you agree with some of the statements, and disagree with others, to varying extents. Please indicate your reaction to each statement on the line to the left of each item according to the following scale:

Write down a -4 if you very strongly disagree with the statement.
Write down a -3 if you strongly disagree with the statement.
Write down a -2 if you moderately disagree with the statement.
Write down a -1 if you slightly disagree with the statement.

Write down a +1 if you slightly agree with the statement.
Write down a +2 if you moderately agree with the statement.
Write down a +3 if you strongly agree with the statement.
Write down a +4 if you very strongly agree with the statement.

If you feel exactly and precisely neutral about an item, write down a "0."

Important: You may find that you sometimes have different reactions to different parts of a statement. For example, you might very strongly disagree ("-4") with one idea in a statement, but slightly agree ("+1") with another idea in the same item. When this happens, please combine your reactions, and write down how you feel on balance (a "-3" in this case).

___ 1. The established authorities generally turn out to be right about things, while the radicals and protestors are usually just "loud mouths" showing off their ignorance.

___ 2. Women should have to promise to obey their husbands when they get married.

___ 3. Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.

___ 4. Gays and lesbians are just as healthy and moral as anybody else.

___ 5. It is always better to trust the judgment 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

___ 6. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.

___ 7. The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.

___ 8. There is absolutely nothing wrong with nudist camps.

___ 9. Our country needs free thinkers who have the courage to defy traditional ways, even if this upsets many people.

___ 10. Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.

___ 11. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.

___ 12. The "old-fashioned ways" and the "old-fashioned values" still show the best way to live.

___ 13. You have to admire those who challenged the law and the majority's view by protesting for women's abortion rights, for animal rights, or to abolish school prayer.

___ 14. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

___ 15. Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the "normal way things are supposed to be done."

___ 16. God's laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

___ 17. There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

___ 18. A "woman's place" should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past.

___ 19. Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the "rotten apples" who are ruining everything.

___ 20. There is no "ONE right way" to live life; everybody has to create their own way.

___ 21. Homosexuals and feminists should be praised for being brave enough to defy "traditional family values.

___ 22. This country would work a lot better if certain groups of troublemakers would just shut up and accept their group's traditional place in society.

(Intergroup Anxiety Scale)

For each of the items listed below, indicate how you would feel when interacting with members of other racial, ethnic or cultural groups who you did not know.

A	B	C	D	E	F	G	H	I	J
Not at all comfortable							Extremely Comfortable		
A	B	C	D	E	F	G	H	I	J
Not at all uncertain							Extremely uncertain		
A	B	C	D	E	F	G	H	I	J
Not at all confident							Extremely Confident		
A	B	C	D	E	F	G	H	I	J
Not at all awkward							Extremely Awkward		
A	B	C	D	E	F	G	H	I	J
Not at all at ease							Extremely at ease		
A	B	C	D	E	F	G	H	I	J
Not at all anxious							Extremely anxious		

The intergroup anxiety scale was adapted from: Stephan, W. G & Stephan, C. (1985). Intergroup anxiety. Journal of Social Issues, 41, 157-176.

(Interpersonal Reactivity Index)

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. When you have decided on your answer, fill in the letter next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE:

A	B	C	D	E
DOES NOT DESCRIBE ME WELL				DESCRIBES ME VERY WELL

1. I daydream and fantasize, with some regularity, about things that might happen to me.
2. I often have tender, concerned feelings for people less fortunate than me.
3. I sometimes find it difficult to see things from the "other guy's" point of view.
4. Sometimes I don't feel very sorry for other people when they are having problems.
5. I really get involved with the feelings of the characters in a novel.
6. In emergency situations, I feel apprehensive and ill-at-ease.
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.
8. I try to look at everybody's side of a disagreement before I make a decision.
9. When I see someone being taken advantage of, I feel kind of protective towards them.
10. I sometimes feel helpless when I am in the middle of a very emotional situation.
11. I sometimes try to understand my friends better by imagining how things look from their perspective.
12. Becoming extremely involved in a good book or movie is somewhat rare for me.

13. When I see someone get hurt, I tend to remain calm.
14. Other people's misfortunes do not usually disturb me a great deal.
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.
16. After seeing a play or movie, I have felt as though I were one of the characters.
17. Being in a tense emotional situation scares me.
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them.
19. I am usually pretty effective in dealing with emergencies.
20. I am often quite touched by things that I see happen.
21. I believe that there are two sides to every question and try to look at them both.
22. I would describe myself as a pretty soft-hearted person.
23. When I watch a good movie, I can very easily put myself in the place of a leading character.
24. I tend to lose control during emergencies.
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.
26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.
27. When I see someone who badly needs help in an emergency, I go to pieces.
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place