TEXT IT OUT: AN EXPERIMENTAL COMPARISON OF ROMANTIC CONFLICT ACROSS COMMUNICATION CHANNELS

By

Taj Wanda Makki

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Information and Media - Doctor of Philosophy

2020

ABSTRACT

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Given the abundance of recent research pointing to the role of computer-mediated platforms in facilitating favorable communication outcomes between romantic partners, the present research examines differences in conflict communication outcomes across channels (i.e., face-to-face, video, voice, text), focusing on the role of negative emotional arousal in predicting these differences. Literature in the conflict communication domain is considered alongside two communication theories – the Limited Capacity Model of Motivated Mediated Message Processing (LC4MP; Lang, 2009) and the Dynamic Human-Centered Communication Systems Theory (DHCCST; Lang, 2014) – to inform predictions pertaining to negative affect and perceived threat during conflict as they each (a) vary across channels and (b) relate to conflict outcomes between partners. Following a preliminary online survey (N = 242), an experiment (N = 128) with four experimental conditions – text message, voice call, video chat, face-to-face – was conducted. Dyads were recruited and asked to discuss a recurring conflict with high relational relevance in the lab. Physiological arousal was monitored throughout, and negative affect, perceived threat, and conflict outcomes were assessed following the interaction. Conflict outcomes were found to be most favorable following text-based interactions. Findings from the present study advance our ability to explain and predict the role of mediated channels in conflict communication, while extending applications of the LC4MP and DHCCST into the realm of interpersonal conflict communication.

ACKNOWLEDGMENTS

It takes a village. Many hearts and minds have touched the life of this work. To each of them, I extend my sincerest gratitude. To the following superhumans, I extend a little more:

Hassan, my husband and best friend, for living each of these pages with me.

Robby Ratan, my committee chair, for his belief in me as a scholar, his contagious brilliance, and his round-the-clock, round-the-world commitment to the success of this work.

My committee members – Sandi Smith, Brandon Van Der Heide, and Dar Meshi – for holding me to high standards, asking the right questions, and being spectacular mentors.

Annie Lang and Dave Ewoldsen, for their input and guidance since the inception of this work.

The College of Communication Arts & Sciences and the Graduate School at Michigan State University, for funding this research and housing my intellectual playground.

My beloved parents, Shadia and Mustapha, for their unconditional confidence in me, their timely words of encouragement, and for listening wholeheartedly as I wrestled with these ideas.

My grandparents, Wanda and Allie, and my mother- and father-in-law, Maude and Hassan, for their endless love, support, and wisdom.

Thank you. This work would not exist without you.

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INTRODUCTION

Interpersonal conflict is a "dynamic process that occurs between interdependent parties as they experience negative emotional reactions to perceived disagreements and interference with the attainment of their goals" (Barki & Hartwick, 2004, p. 216). Gottman & Levenson (1988) contend that, in the context of romantic partners specifically, relationship stability and longevity depend on the extent to which partners are able to manage the negative affect that arises during conflict. Although conflict is typically regarded as having negative implications for interpersonal relationships, when managed effectively, conflict may be beneficial to relationships, specifically in conditions where conflict facilitates open communication between partners (Deutsch, 1969; Ting-Toomey & Oetzel, 2013). Conflict resolution is a process contingent upon mutual understanding and the ability of interpersonal partners to reach integrative solutions (Pruitt & Rubin, 1986). However, communication partners are not always able to see eye-to-eye.

As information and communication technologies have become more pervasive, couples have turned to these channels to fulfill a range of relational goals and processes, including conflict management. Existing research suggests that turning to computer-mediated channels during conflict communication can serve to promote desirable relational outcomes between partners. Specifically, findings have revealed that shifting from face-to-face to computer-mediated platforms can enhance the couple's chances of reaching a solution (Perry & Werner-Wilson, 2011) and increase relationship satisfaction (Scissors & Gergle, 2013). What is yet to be explored are the underlying physiological and emotional processes responsible for these outcomes, and more specifically how these processes may vary across communication channels. Thus, the present study is concerned with pinpointing how varying communication channels

such as text message, voice call, video chat, and face-to-face (a) relate to negative affect between romantic partners during conflict, and (b) influence conflict outcomes accordingly.

While existing theoretical models speak to the general suitability of computer-mediated communication (CMC) for interpersonal communication and relationship development, these models do not account for differences in conflict resolution outcomes across communication channels. Furthermore, we are still unable to predict which communication media are most (or least) suitable for conflict communication, and under which circumstances this suitability might vary. The present paper thus outlines two theoretical approaches that may potentially advance our understanding of conflict communication outcomes across communication channels and allow us to predict modality-based differences in conflict communication: the *limited capacity model of motivated mediated message processing* (LC4MP; Lang, 2009) and the *dynamic human-centered communication systems theory* (DHCCST; Lang, 2014). Drawing from each of these theories, the present research focuses on potential differences in motivational activation (i.e., physiological and emotional arousal) across communication channels as it relates to conflict resolution outcomes between partners.

The present paper is organized as follows. First, existing literature comparing conflict in computer-mediated versus face-to-face communication is introduced. Next, theories of computer-mediated communication are discussed for their relevance to our understanding of computer-mediated versus face-to-face conflict communication. The paper then segues into a discussion of information processing and arousal as they each relate to conflict communication outcomes, emphasizing the role of arousal in influencing cognitive capacity and communication outcomes accordingly. The LC4MP and DHCCST are then presented for their relevance to our understanding of arousal and information processing across channels, and the study's hypotheses

and research questions are introduced. The methodology applied to inform the study's hypotheses is then presented in detail, and justification for each methodological decision is provided. Results are described in detail, followed by a thorough discussion of the research findings, informing the study's guiding hypotheses and outlining directions for future work.

LITERATURE REVIEW AND HYPOTHESES

Computer-Mediated Conflict Communication

Several studies to date have examined romantic conflict management through CMC, outlining the potential benefits of mediated conflict communication for romantic partners. In the broad context of online communication, using CMC for conflict management has been found to positively predict relationship satisfaction (Sidelinger et al., 2009). Studies show that CMC assists partners in managing emotions and reaching a solution (Scissors & Gergle, 2013) by giving partners more time for idea construction and conflict de-escalation (Perry & Werner-Wilson, 2011). These studies, which have been largely retrospective or qualitative in nature, point to CMC as a relatively new platform for the management of conflict in romantic relationships.

Channel choice, which refers to the deliberate decision to discuss interpersonal issues in computer-mediated versus physically co-present environments, has also been examined for its relevance to various motivations and outcomes related to conflict communication. Channel choice during couple conflict has been found to have no impact on relationship satisfaction (Perry & Werner-Wilson, 2011; Frisby & Westerman, 2010), suggesting that CMC may provide an equally effective problem-solving environment. The literature further indicates that CMC use during conflict may serve different purposes for different individuals. Specifically, partners who are less satisfied in their relationships prefer to communicate through CMC during conflict, as opposed to communicating face-to-face (Scissors et al., 2014). This finding suggests that despite existing relational tensions, CMC may provide a 'safe' environment for the expression of one's thoughts and emotions. Furthermore, many individuals express a general preference for turning

to CMC for conflict management, and scholars speculate that communicating via CMC may offer users a stronger sense of control over the interaction (Frisby & Westerman, 2010). Therefore, the existing literature points to CMC as a platform with the potential to promote positive conflict resolution outcomes and help individuals achieve their relational goals.

Conflict in Computer-Mediated versus Face-to-Face Communication

In addition to examining outcomes and motivations associated with computer-mediated conflict management, researchers have attempted to compare communication outcomes between computer-mediated and face-to-face channels. Findings in this domain vary in the extent to which they directly inform our understanding of conflict communication across media, with some studies presenting more concrete implications than others. Nevertheless, these endeavors have helped set the foundation for further inquiry by pointing to key differences in communication between CMC and FtF encounters. For instance, Van der Kleij et al. (2009) found that individuals are generally more patient and polite in CMC than in FtF, pointing to CMC-related behaviors that may in turn facilitate positive conflict communication outcomes. Similarly, a recent study comparing misunderstandings in face-to-face versus computer-mediated communication found that misunderstandings in face-to-face interactions are more serious and cause more relational damage than those occurring in CMC (Edwards et al., 2017).

In discussing the role of emotion in computer-mediated communication, Derks, Fischer, & Bos (2008) note several characteristics of the CMC environment that may be of further benefit to conflict communication. First, interactants in CMC are significantly less likely to make negative social appraisals (Manstead & Fischer, 2001) in response to both positive and negative emotional expressions from a partner. Furthermore, partners interacting through CMC exhibit less spontaneity and more control over emotional expression due to the time lags characteristic of

computer-mediated interactions. In CMC, interactants are afforded the choice of how and how much emotion to convey to a partner – resulting in impulse inhibition, more regulated emotional expression, and fewer emotional outbursts (Derks et al., 2008).

Most closely aligned with the research direction proposed in the present paper, Shin et al. (2017) compared face-to-face and video chat encounters for differences in emotional arousal, partner assessments, and communication satisfaction in conflict-laden interactions. The researchers brought unacquainted participants into the lab, paired them up, and randomly assigned them to one of two channel conditions – FtF or video chat. The participants were instructed to engage in a scenario-based role-playing task, where they were each given information relevant to 'their' side of an existing conflict and were asked to solve the conflict with their assigned communication partner. A primary finding from this study was the difference in self-reported arousal between those who interacted face-to-face versus those who used video chat, with face-to-face interactants reporting significantly higher levels of arousal than their CMC counterparts. This suggests that face-to-face environments may contain more opportunities and stimuli for arousal than virtual spaces.

Shin et al. (2017) also found that communicating via video chat ultimately produced more favorable partner ratings and more favorable overall communication ratings, indicating that feelings of positivity were heightened in video-based encounters. They further found that in addition to having more favorable communication outcomes and more positive evaluations in CMC, partners' evaluations of each other's emotional states were more accurate in CMC encounters. This finding suggests that reduced visual cues allow partners to focus more accurately on information relevant to the interaction itself. Existing theoretical perspectives are discussed next for their relevance to the findings presented thus far.

Existing Theoretical Explanations

The absence of traditional non-verbal cues in interpersonal communication is characteristic of the computer-mediated environment (Culnan & Markus, 1987), and scholars have posited that the CMC environment does not afford users with the cues necessary for effective interpersonal communication. More specifically, scholars have proposed the *cues-filtered-out approach*, which argues that in the absence of non-verbal cues, communication between two parties is ultimately less successful (Culnan & Markus, 1987). Similar to the cues-filtered-out approach is *media richness theory* (Daft & Lengel, 1986), which argues that 'richer' mediums, such as face-to-face, allow us to convey information more effectively than 'leaner' mediums, such as email or text. According to both of these approaches, conflict outcomes in CMC should be less favorable than those ensuing from FtF encounters. However, existing research findings do not support these claims. For example, when people anticipate a high interpersonal risk, they prefer to communicate via email (Joinson, 2004). People also prefer to communicate through mediated channels when they are faced with sharing embarrassing or unattractive information (O'Sullivan, 2000). Furthermore, considering Shin et al.'s (2017) finding that participants' evaluations of their communication partners in CMC were less accurate despite having more favorable conflict outcomes, one may argue that the absence of non-verbal cues may actually serve to boost online communication quality (i.e., more information is not always better).

In response to early claims and concerns regarding the speculated inadequacy of communication outcomes associated with CMC (Kiesler et al., 1984), Walther (1992) developed the social information processing theory (SIPT), which posits that computer-mediated interactions can be just as effective for relational communication as those occurring face-to-face,

as long as partners are afforded enough time during CMC interactions (Walther, 1992). Walther (1996) later proposed that interactions occurring through CMC could potentially be more intense than those occurring face-to-face – that is, CMC may facilitate a *hyperpersonal* influence on interpersonal interaction. The hyperpersonal model proposes that even in the absence of non-verbal cues in mediated spaces, individuals are afforded the time and resources to exchange elaborate verbal information that may help to build richer encounters than those occurring face-to-face. This theoretical model soundly suggests that computer-mediated spaces may promote more intimacy between communication partners by affording users a heightened focus on the construction and perception of exchanged messages. The model further posits that interactants perceive each other more favorably and engage in more strategic message construction in online spaces. The interpersonal implications of computer-mediated interaction posited by the hyperpersonal model are closely in line with the antecedents of effective conflict resolution. The model thus allows us to speculate that interacting in computer-mediated spaces during conflict may hold positive implications for conflict communication. Nonetheless, the model does not directly explain discrepancies in existing research regarding the role of communication channels in conflict resolution between romantic partners. Moreover, and despite the abundance of theoretical approaches speaking to the general effectiveness of communication in computer-mediated versus face-to-face channels, we are still unable to consistently predict which channels are most effective for resolving conflict. The present paper aims to address this gap in the literature by focusing on a key variable known to play a crucial role in conflict communication – negative emotional arousal – while considering how this variable may manifest differently across channels and highlighting its role in information processing. A discussion of arousal and

information processing as they each relate to conflict communication processes and outcomes is presented next.

Deconstructing Conflict Communication: The Roles of Arousal & Information Processing

Based on definitions of interpersonal conflict and its resolution (Deutsch, 1969; Gottman & Levenson, 1988; Zillman, 1988; Barki & Hartwick, 2004; Ting-Toomey & Oetzel, 2013), medium *effectiveness* in conflict communication refers to the extent to which a medium facilitates or inhibits partners' abilities to (1) manage interpersonal arousal (Zillman, 1988), and (2) reach a mutual understanding (Pruitt & Rubin, 1986). Because conflict commonly produces interpersonal hostility, especially when pertaining to interpersonal relationships (Bell & Song, 2005), focusing on the role of arousal and finding ways to minimize arousal between partners is crucial to the success of relationships. Additionally, because successful conflict resolution relies on various cognitive processes (e.g., empathic accuracy, perspective taking, issue appraisal), ensuring that individuals maintain enough cognitive resources to attend to these processes is of further importance.

Arousal in conflict communication. Individuals often experience heightened arousal (emotional and physiological) when engaged in conflict (Newton & Sanford, 2003), and this arousal is associated with less effective conflict outcomes (Zillman, 1988). Specifically, negative arousal during conflict leads partners to avoid engaging in problem solving, ultimately harming overall relationship quality (Levenson & Gottman, 1985). At the physiological level, cardiovascular reactivity during marital conflict has been linked to increases in relational distress (Nealey-Moore et al., 2007) and eventual divorce (Gottman, 1994). At the emotional level, the importance of down-regulating negative affect for effective conflict management has been repeatedly emphasized in the literature (Costa et al., 2018; Gottman & Levenson, 2000). The

presence of negative emotions not only leads to conflict escalation, but also incites a snowball effect of increased negative emotion between partners (Anderson & Pearson, 1999).

Emotional arousal, such as feelings of anger and irritation, can often arise during conflict when one partner feels that the other is trying to assert power and control over the interaction (Sanford, 2007). The feeling of being overpowered or controlled during interpersonal conflict has been described in the literature as *threat perception,* which refers to the perception that one's partner is being hostile, critical, blaming, or controlling (Sanford, 2010). Threat perception has been identified as an especially salient underlying concern in romantic conflict, and has been found to increase the likelihood that partners will engage in impulsive and emotionally charged behavior, often resulting in conflict escalation (Sanford, 2010).

In addition to its short- and long-term emotional and relational effects, arousal during conflict also holds negative implications for one's cognitive abilities during conflict-laden interactions. Stress and arousal during conflict serve to hamper information processing by reducing the complexity of one's thinking (Sillars & Parry, 1982). Information processing and arousal during conflict go hand-in-hand: In the presence of strong emotional arousal, one's ability to complete the cognitive task of solving an interpersonal problem is significantly reduced (Zillman, 1988).

Information processing in conflict communication. Information processing and the availability of cognitive resources during conflict influence conflict resolution in several critical ways. Conflict resolution is a process contingent upon mutual understanding and the ability to reach integrative solutions, which requires considerable cognitive effort (Pruitt & Rubin, 1986). More specifically, effective conflict resolution relies on cognitive processes such as empathic accuracy (Ickes, 1993; Perrone et al., 2014), issue appraisal (Knudson et al., 1980), and partners'

ability to bridge their divergent perspectives (Sillars, 1998). Couples who are able to engage in positive problem solving – which involves understanding each other's feelings and viewpoints – experience more relationship satisfaction (Hanzal & Segrin, 2009; Perrone et al., 2014), while dissatisfied relationships are characterized by lower understanding and incongruent perspectives between partners (Ickes & Simpson, 1997). When partners are unable to cope with the demanding cognitive environment characteristic of conflict communication, and attend only to a fraction of the information presented by their partner, divergence of perspectives increases and the likelihood of reaching a solution drops significantly (Sillars et al., 2000).

Conflict communication is not only cognitively demanding at the emotional and interpersonal level, but also tends to be more fast-paced than other forms of communication (Kellermann, 1992), which considerably limits the information one is able to attend to and process within the interaction. The gestures and words exchanged during interpersonal interactions are ambiguous symbols that demand interpretation (Sillars et al., 2000), and interactants are tasked with identifying and encoding those symbols quickly and efficiently. The inferences made during conflict – such as appraisals about a partner's intentions – are often impulsive reactions that are immediately processed as truths and rarely re-appraised (Bavelas & Coates, 1992). Once a negative interpretation has been supplied by the cognitive system, the pressure to keep pace with the interaction limits the possibility of that interpretation being changed (Scott, Fuhrman, & Wyer, 1991). Such dynamics compromise one's ability to maintain empathic accuracy and engage in reasonable perspective taking – two necessary components of flexible and effective conflict communication (Ickes, 1993; Sillars et al., 2000).

When partners focus their cognitive and communicative efforts on the problem at hand, they experience more favorable communication and relationship outcomes. Partners who are able

to analyze and appraise the issue itself – rather than focusing on blame attributions – exhibit less anger and frustration (Sillars et al., 2000). Similarly, issue appraisal is positively associated with relationship satisfaction, pointing to the importance of constructive thought patterns in relational conflict (Sillars et al., 2000). Couples who focus on issue appraisal to solve their conflicts subsequently experience increases in intimacy and a heightened understanding of one another's interpersonal perceptions, which further enhances overall relationship strength and communication quality (Knudson, Sommers, & Golding, 1980).

Given the discussions of arousal and information processing presented thus far, we may conclude that each of these variables relates to conflict resolution outcomes in important ways. Fostering the most positive conflict communication outcomes between partners relies substantially on decreasing negative arousal during the interaction, thereby increasing partners' accuracy of information processing and problem-solving abilities. Accordingly, and in efforts to advance our understanding of mediated communication as it relates to conflict management, the present research applies the LC4MP and the DHCCST toward discerning modality-based differences in arousal and information processing during conflict. The LC4MP is introduced next and discussed for its relevance to the processes and findings outlined thus far.

A Limited Capacity Approach: The LC4MP

The LC4MP is a model of information processing (Lang, 2009) traditionally concerned with the processing of mediated messages. The LC4MP rests on two key assumptions. First, the model assumes that as humans, we are actively and consistently processing information within our cognitive system. Second, the model assumes that our ability to process incoming information is also limited by our cognitive system, as we can only attend to a limited amount of information at any given point in time (Lang, 2009). Information processing can be discussed in

terms of three distinct processes – *encoding, storage,* and *retrieval,* which refer to (a) bringing information into the cognitive system, (b) translating incoming information into mental representations (i.e., memories), and (c) drawing upon information that has already been stored in memory, respectively. The LC4MP's first assumption thus posits that these three processes occur dynamically and simultaneously in our interactions with the environment.

The second assumption of the LC4MP is concerned with resource allocation and our capacity as humans to attend only to a limited amount of information in the environment. The model holds that there is a single, finite pool of cognitive resources that we draw upon to process information. Resource allocation in the LC4MP is discussed in terms of two distinct processes – *controlled* resource allocation and *automatic* resource allocation. Controlled resource allocation refers to resource allocation that is under one's control. This includes the cognitive resources we exert toward achieving our conscious goals, such as paying attention to a movie or figuring out a brain teaser. In the context of interpersonal conflict, it is likely that one's controlled resource allocation would be geared toward explaining one's own point of view while also attending to and understanding the thoughts and concerns of one's partner. However, as the LC4MP posits, we do not maintain full control over resource allocation. Automatic resource allocation refers to the resources we allocate unconsciously to encoding various stimuli in the environment. One common type of automatic resource allocation is the *orienting response,* where our cognitive system automatically attends to (a) new information in the environment, and (b) information that appears to be inherently important or relevant to previously stored information or one's current goals.

In addition to the orienting response, our cognitive system also automatically allocates resources to *motivationally relevant stimuli.* The LC4MP posits that our motivational and

cognitive systems constantly interact to influence the processing of incoming stimuli (Lang, 2009). The motivational system is comprised of the appetitive (i.e., approach) system, and the aversive (i.e., avoid) system, and these two systems are believed to function separately and independently (Lang, 2009). Stimuli relevant to each system serve to activate that system such that positive stimuli activate the appetitive system, while negative stimuli activate the aversive system (Lang, 2009). The aversive system specifically has evolved to respond to threats in the environment. The LC4MP proposes that the level of activation in these systems dictates the allocation of cognitive resources to a given stimulus or stimuli. The model also proposes that activation in each of these systems functions differently – that is, at low levels of activation, the appetitive system is more activated than the aversive system (i.e., *positivity offset)*, while at high levels of activation, the aversive system responds more quickly to attend to potential threats in the environment (i.e., *negativity bias;* Cacioppo et al., 1997). In measuring the LC4MP's key constructs, motivational activation is traditionally assessed via (a) self-reported valence, with positive feelings indicating appetitive activation and negative feelings indicating aversive activation, and (b) self-reported arousal, with the extent of arousal indicating the level of activation in the motivational system.

Cognitive overload. Within the LC4MP, our resource pool is discussed in terms of five key concepts: *total resources, resources required, resources allocated, resources remaining,* and *resources available* (Lang et al., 2007). *Total resources* represent the entire resource pool – this is the 'capacity' of the cognitive system. The amount of resources needed to complete a task is referred to as *resources required*, which can vary based on the cognitive abilities of the message receiver *and* based on the cognitive complexity of the message. On the other hand, *resources allocated* refer to the resources allotted to message processing by the cognitive system. While

resources allocated can sometimes be equal to resources required, they can also exceed resources required in cases where the cognitive system is overworking itself for a number of possible reasons beyond the scope of the present discussion. *Resources remaining* are calculated by subtracting resources allocated from total resources, and *resources available* refer to the difference between resources allocated and resources required (Lang et al., 2007). When there are *negative* available resources, or when the resources required by the task exceed our available resources, we are said to be in a state of *cognitive overload,* which can last anywhere from one second to one hour (Lang, 2009).

During cognitive overload, we have insufficient resources available to continue performing a given task (Lang et al., 2007). As a result, our performance on the task suffers. Cognitive overload is marked by a significant drop in encoding performance specifically (Lang et al., 2007). However, and despite its detrimental effects on our ability to perform certain tasks (e.g., processing an incoming message), cognitive overload is not a mental state that we are consciously aware of while it is happening. That is, we do not recognize that our performance on the task has plummeted, nor do we realize that our processing of incoming messages has shifted in any way (Lang et al., 2007). Nonetheless, we may continue to perform the task poorly, thereby failing to achieve our goals related to the task at hand. This can have important implications for the success or failure of conflict communication between romantic partners. These implications are outlined next.

Linking the LC4MP to Conflict Communication

The LC4MP is traditionally a model of mediated message processing and has yet to be applied to explaining interpersonal processes. Nonetheless, Lang (2009) notes that the LC4MP does not distinguish between mediated and interpersonal communication. In fact, Lang (2009)

suggests that when applying the LC4MP to message processing, interpersonal face-to-face communication is simply the case where a human is co-located with the message recipient. Therefore, the LC4MP is discussed in the present research for its potential value in explaining and predicting differences in conflict resolution outcomes between computer-mediated and face-to-face encounters. In doing so, the present research theoretically advances the LC4MP by extending its application to interpersonal contexts and processes. Furthermore, it advances our understanding of modality effects in conflict communication by focusing primarily on modality-based differences in aversive activation (via threat perception) and arousal during conflict. Shin et al.'s (2017) findings indicate that conflict resolution outcomes are ultimately more favorable in CMC. The following discussion of motivational activation and arousal leads to a series of predictions that aim to (1) explain the discrepancy in conflict outcomes across communication channels, and (2) employ the LC4MP to pinpoint which channels are most suitable for conflict resolution outcomes at heightened levels of arousal.

Motivational activation and arousal. Individuals experience heightened arousal when engaged in conflict communication (Newton & Sanford, 2003), and this arousal is often a result of threat perception (Sanford, 2007). The LC4MP proposes that activation in the motivational systems leads to automatic resource allocation that may reduce the cognitive resources available for message processing. Given that the aversive system responds to perceived threats in the environment, we may speculate that as threat perception increases, the availability of cognitive resources for information processing decreases. A deficit in cognitive resources may in turn serve to hamper conflict resolution outcomes (Pruitt & Rubin, 1986; Zillman, 1988). Therefore, the proposed application of the LC4MP to conflict communication is based on the premise that

having more resources available for information processing leads to more favorable conflict resolution outcomes.

Considering Shin et al.'s (2017) findings alongside the LC4MP's key constructs and assumptions, we may draw several connections that warrant a formal investigation of the LC4MP in this domain. First and foremost, self-reported arousal during conflict varies between computer-mediated and face-to-face encounters, with FtF interactions eliciting more arousal. In LC4MP terms, this finding indicates that participants experienced greater levels of motivational activation in face-to-face encounters than in CMC encounters (specifically video-based CMC encounters). Considering that the aversive system responds to threats in the environment, it stands to reason that *closer* stimuli will engender a more aversive response, while mediation through technology, for instance, may serve to lessen such responses. The authors also found that partner ratings *and* communication ratings were more positive in CMC than in FtF encounters. Considering the LC4MP's use of valence as an indication of motivational system activation, we may interpret this finding as an indication of less pronounced aversive activation in CMC encounters.

Shin et al. (2017) also found that when communicating via video chat, participants were more accurate in evaluating their partner's emotional states, and were more satisfied with their communication outcomes. This finding suggests that the absence (or reduction) of nonverbal cues may actually promote more positive conflict resolution outcomes. Discussed in terms of the LC4MP, this finding suggests that the abundance of cues characteristic of the FtF environment may deplete our resource pool, thus preventing an effective exchange of messages between two communicators. Visual cues such as body language and facial expressions are precisely the sorts of stimuli that the motivational systems evolved to respond to, hard-wiring us (a) to avoid stimuli

that appear to be a threat (e.g., an angry grimace or a controlling partner) and (b) to approach stimuli that appear to be pleasant (e.g., an inviting smile). These responses are naturally active to varying extents in all interactions. When engaged in a conflict-laden interaction and afforded visual access to a partner's "threatening" behavioral displays, our aversive system responds automatically to these displays. Gottman (1994) describes this response in terms of "emotional flooding," which he conceptualizes as the phenomenon of individuals becoming "surprised, overwhelmed, and disorganized" by their partner's negative behavior. Gottman (1994) proposes that this leads to a state of "diffused physiological arousal," typically characterized by heightened blood pressure and an increase in perspiration, heart rate, and body temperature (p. 21). However, when visual access is thwarted, we are less in touch with visual indications that a conflict is occurring. Indeed, researchers have proposed that although many individuals prefer to argue FtF due to the abundance of contextual and nonverbal cues, the reduced-cue environment characteristic of CMC may be preferable as it eliminates perceptions of threats (Scissors & Gergle, 2013). Therefore, the automatic activation of the aversive motivational system (or "emotional flooding," as Gottman describes it) will be reduced when visual cues are reduced.

The LC4MP therefore allows us to predict that during conflict-laden interactions, (a) motivational activation in the aversive system will be higher in face-to-face than computer-mediated interactions, (b) interactants will reach cognitive overload more quickly in face-to-face interactions than in CMC, and accordingly, (c) interactants will have more available resources in CMC than in face-to-face conflict interactions.

While the LC4MP allows us to construct predictions regarding the onset of cognitive overload based on an understanding of aversive activation as it relates to physiological arousal, the DHCCST explicitly allows us to predict modality-based differences in conflict

communication based on elements of the communicative process that vary across media, including the *imminence* of a communication threat and the *presentation* of message content. In the next section, Lang's (2014) dynamic human-centered communication systems theory (DHCCST) is explicated in detail and its theoretical assumptions are then applied to our understanding of modality differences in conflict communication. A test of each of these theories in this domain is warranted both for its value in advancing our ability to explain and predict the role of communication channels in conflict communication and resolution, and for its potential to extend these two communication theories into the realm of interpersonal conflict communication.

A Dynamic Systems Approach: The DHCCST

The DHCCST (Lang, 2014) conceptualizes communication as a dynamic system and is mainly concerned with explaining how various components of the communicative process relate to cognition, perception, and motivational activation in humans. The theory was developed with the goal of explaining and predicting a broad range of communication behaviors and outcomes at a level of generality that persists across location, medium, and content. To this end, the DHCCST reconceptualizes all key elements of the communication process, offering a new (and extensive) definition of what it means to be *human,* as well as what it means to *communicate.* Although it is presented as a theory generalizable to all communicative contexts, the DHCCST has yet to be applied to interpersonal communication (or to conflict communication more specifically). The present paper therefore presents a series of testable hypotheses of the DHCCST in this domain, based on a reconceptualization of communication from a human-centered perspective.

Defining the human. The DHCCST is human-centered in the sense that it generates its key concepts and predictions based on what we know to be constant about humans. The theory

posits nine assumptions regarding the defining characteristics of humanness, and then reconceptualizes communication based on these assumptions. The DHCCST first assumes that (1) *humans are dynamic* and our existence as humans, including our thoughts, interactions, and communication, occurs over time. It next assumes that (2) *interaction is a property of humans, not media,* and (3) *humans exist* ***embedded*** *in the world,* and nothing relating to humans has ever occurred outside of the world we live in. The DHCCST further assumes that (4) *humans* ***evolved*** *over millions of years,* and in doing so, have developed mechanisms to ensure our survival, and (5) *humans are* ***embodied*** – that is, human consciousness exists within the human body itself in the form of a human brain. Taken together, these assumptions constitute the DHCCST's definition of humans as *embedded, evolved, embodied brains (EEEBS).*

The DHCCST further assumes that (6) *humans are made up of a number of nested dynamic systems* (Kelso, 1995), and concerns itself with a subset of those systems – namely, the physiological, motivational, perceptual, cognitive, and experiential systems. These nested systems can be viewed along an evolutionary spectrum ranging from *younger* to *older,* with older systems (e.g., the motivational system) linked more closely to biological survival and thus being activated more automatically than younger systems (e.g., the experiential system; Lang, 2014). The DHCCST further assumes that (7) *some of these systems function voluntarily while others function involuntarily*, with individual systems sometimes undergoing direct and single activation, and at other times activating or inhibiting other systems. The ways that these systems interact to activate and inhibit each other can be partially understood through the assumption that (8) *humans evolved to save energy* (Matthews, 2011). Through this assumption, we may regard the physiological, motivational, perceptual, and cognitive systems as a team working to maximize the efficiency of producing human experience, with one system sometimes activating

more strongly in order to minimize or eliminate the work required of other systems. This leads us to the ninth and final assumption about humans proposed by the DHCCST, which holds that (9) *human behavior can be both directed by and limited by biological imperatives,* where biological imperatives refer to the automatic responses of a nested system to environmental stimuli.

Defining communication. According to these nine assumptions of humanness, the DHCCST then defines communication as interactions occurring over time between one EEEB and another, between one EEEB and a brain-like creature (BLC; e.g., a computer), or between EEEBs through BLCs (Lang, 2014). The theory contends that in conceptualizing communication, we must be cognizant of several variables in the communicative context, including characteristics of (a) the communicators (or EEEBs); (b) the BLCs; (c) the location within which communication is occurring; and (d) the content of the communication itself. A fundamental assumption of the DHCCST is that each of these components (i.e., the human, the message, the medium, and the location) can vary within a communicative interaction to produce widely different outcomes. Thus, communication is seen as a *nonlinear* process based on variations in each of these components and the responses generated by those variations in each of the nested systems over time.

The number of possible outcomes ensuing from a communicative interaction is equal to the sum of all possible states of each of the four elements in the communication system. This is also referred to as the *state space* (Lang, 2014). However, there are conditions that may facilitate or inhibit the nested systems from self-organizing into some states over others, thereby limiting the state space of a given interaction. The DHCCST conceptualizes these conditions as either *order* parameters or *control* parameters. *Order* parameters limit the potential outcomes of an interaction (i.e., the state space) by inhibiting some of the nested systems, while *control*

parameters can cause the nested systems to fluctuate within the state space to produce varying qualitative states. Lang (2014) discusses the imposition of order parameters on human nested systems in terms of one element of the system *slaving* other elements of the system. For example, in our interactions with various forms of media, the message and the medium are potential order parameters whose structure and content together may slave aspects of the nested systems (i.e., perceptual, motivational, cognitive, behavioral) to alter the possible outcomes of an interaction. The DHCCST therefore proposes that in communicative interactions, either between EEEBs, between EEEBs and BLCs, or between EEEBs through BLCs, motivational activation and cognitive load are two fundamental control parameters that may serve to produce qualitatively different states by either inhibiting or activating varying elements of the communication system.

Re-conceptualizing communication channels in DHCCST terms

Based on the DHCCST, Lang & Bailey (2014) conceptualize four characteristics of information (such as the information contained in a communication message) that predict how that information is encoded and stored in the cognitive system. Recall that encoding is crucial to conflict resolution outcomes, as these outcomes vary based on interactants' abilities to focus on issue appraisal (Knudson et al., 1989), accurately interpret each other's emotions (Sillars et al., 2000), and reach a mutual understanding (Pruitt & Rubin, 1986). Each of the four characteristics of information proposed in the DHCCST was developed from a human-centric perspective and is conceptualized in terms of its spatial and temporal relationship to the human. The four characteristics – *stability, imminence, motivational relevance,* and *task relevance* – are next outlined and discussed for their relevance to interpersonal conflict communication. Because each of these characteristics may vary based on the communication environment (i.e., the medium

through which messages are being sent and received), the DHCCST speaks more clearly than the LC4MP to the specific differences between communication channels as they relate to conflict.

Stability. Stability refers to "the likelihood that the information will remain in the human's immediate perceptual environment" (Lang & Bailey, 2014, p. 3). This follows from Gibson's ecological perception theory, which contends that our perceptual organs have evolved to pick up certain information from our environments – some more automatically and more consciously than others. Humans attend to animate and unstable elements of the environment (i.e., animals) more keenly than to those elements of the environment that are inanimate and stable (i.e., objects, surfaces). That is, we are more concerned with perceiving things that are changing in our environments because they are fleeting, and less concerned with perceiving stable elements of the environment because we rely on the environment to store that information on our behalf. The DHCCST therefore allows us to speculate that perceived stability may vary across channels based on medium recordability (i.e., whether a channel records exchanged information to be reviewed at a later time).

Imminence. Imminence refers to the extent to which incoming information is within close proximity to the human. Information that is near the human is more imminent than information that is farther away from the human (Lang & Bailey, 2014). The discussion and predictions drawn from the LC4MP regarding channel differences in evoking arousal are conceptually derived from the notion of imminence, though not explicitly referred to as imminence within the LC4MP. In other words, the LC4MP allows us to speculate that *closer* stimuli will elicit more aversive responses while *farther* stimuli (e.g., those that are mediated) will produce weaker aversive responses. However, the DHCCST specifically conceptualizes this distinction through the informational characteristic of *imminence.*

Lang & Bailey (2014) derive their definition of imminence from three distinct propositions concerning the role of stimulus distance and human perception. First, motivational models specify that motivationally relevant stimuli that are *closer* to an animal (or human in this case) lead us to perceive greater levels of opportunities or threats when interacting with those stimuli. Second, from an embedded cognition perspective, we tend to pay closer attention to elements of our environment that are closer to us as they are more relevant to our behavior on a moment-to-moment basis. Third, zeroing in on the role of sensory pathways in creating human experience, elements of the environment that are closer to those pathways are perceived more richly and acutely than more distant information.

Motivational relevance. Motivational relevance refers to "the extent to which the things in the environment always signal a threat or opportunity and thereby automatically activate the human's appetitive or aversive motivational systems" (Lang & Bailey, 2014, p. 3). Like the LC4MP, the DHCCST conceptualizes motivational responses using Cacioppo's dual motivational system model (Cacioppo & Berntson, 1994), which posits that two independent motivational systems – the appetitive and the aversive systems – react to environmental stimuli to guide our behavior. The DHCCST also posits that motivationally relevant information in the environment automatically activates biologically imperative responses, presumably before that information is processed by the brain itself (i.e., before it reaches the cognitive system).

Task relevance. Task relevance refers to "information that can help or hinder task completion" (Lang & Bailey, 2014, p. 5). According to the DHCCST, we are naturally inclined to pay attention to information that will help us in achieving our goals. Therefore, as mentioned in our discussion of the LC4MP, when such information is encountered in the environment it facilitates an *orienting response* whereby one's attention is automatically directed toward the

task-relevant stimulus. This leads to more effective and accurate encoding of the message that produced the orienting response. Accordingly, incoming messages that are task-relevant are more likely to be encoded than messages that are task-irrelevant (Lang & Bailey, 2014). Considered in the context of conflict communication, task relevance may vary based on the interactants' goals. If one's goal is to prove or validate a specific point in an argument (e.g., my partner does not respect me), he or she may attend more automatically to information that coincides with that goal (e.g., indicators of disrespect during the interaction). On the other hand, if one's goal is to get along with his or her partner and avoid conflict, he or she may be more attuned to positive partner behaviors.

We may note that task relevance and motivational relevance vary based on the content of the message itself and at the individual level, while stability and imminence vary based on the channel through which the message is transported. Perceived stability may also vary individually, contextually, and depending on one's habits – if an individual has a high tendency to refer back to exchanged messages after an interaction has ended (e.g., via text message or email), medium recordability will be more salient to that individual in comparison to someone who does not typically refer back to those messages. Due to the individual and circumstantial variations in task relevance, motivational relevance, and perceived medium stability, the proposed study conceptualizes communication channels only in terms of perceived imminence. As displayed in Figure 1 below, medium *imminence* varies along a continuum such that face-to-face communication is characterized by the *most* imminent information as it is physically located in the human's environment, followed by video chat where a human is partially visible but not co-present, and voice call, where visual stimuli are absent but auditory stimuli are still present. Farther along the imminence continuum are text and instant message, though these differ from

email in that they are synchronous and still provide a reciprocal encounter that engenders a sense of mental co-presence (Zhao, 2003) between partners in real time. Email is conceptualized as carrying the least imminent information due to its asynchronous nature, where an EEEB stores a message with a BLC to be shared with another EEEB at a later time.

Implications for understanding conflict communication. We may now refer back to Shin et al.'s (2017) findings and discuss those findings in DHCCST terms. Because Shin et al. (2017) assessed differences between video and FtF channels, information *stability* did not vary across encounters. However, the *imminence* of communication information did vary, with several implications. Recall that Shin et al. (2017) report that although physiological arousal was not found to vary between FtF and video conditions, *perceived* self-arousal was found to vary such that partners communicating FtF perceived themselves to be more aroused during their interaction than those communicating via video chat. The DHCCST allows us to speculate that partners likely reported greater levels of arousal during FtF conditions due to the *imminence* of incoming information and more salient threat perceptions in FtF versus CMC encounters. We may also speculate that physiological arousal perhaps did not vary between FtF and CMC conditions due to the nature of the conflict-laden interaction observed in the study. First, participants had no existing relationship prior to their participation in the study. Second, and more importantly, the topic of conflict was predetermined by the researchers and presumably carried little personal relevance to the participants beyond them being tasked with advocating one side of the argument over another. In DHCCST terms, we may speculate that the topic of conflict held low levels of task relevance and motivational relevance to the participants, thus providing a potential explanation for why physiological arousal did not vary significantly between FtF and video encounters.

Shin et al.'s (2017) findings also revealed that individuals who interacted via video chat judged their partner's arousal level more accurately than those who interacted FtF. The ability to assess another's emotional state (i.e., empathic accuracy) is known to be a crucial contributor to successful conflict resolution (Papp et al., 2010). Accurately assessing a communication partner's emotional state relies on one's ability to accurately encode the visual cues produced by the partner (such as body language and facial expression) while simultaneously encoding the verbal messages produced by the partner. During face-to-face encounters, there is an abundance of visual stimuli that may serve to obstruct one's ability to accurately encode information relevant to the task of understanding one's partner and resolving the conflict at hand. In DHCCST terms, the body may react physiologically to extraneous stimuli in the environment before the brain has the ability to cognitively process that information. *Imminence* can also be speculated to play a role here, where the perception of an imminent threat slaves the perceptual system, thereby reducing its ability to encode task-relevant information.

Shin et al. (2017) also found that partner evaluations ensuing from video-based interactions were more favorable than those ensuing from FtF interactions. This relates directly to variations in threat perception as a function of information *imminence,* with individuals feeling more threatened by partners who are closer to them in the environment and therefore evaluating them less favorably. Lastly, individuals also reported feeling greater levels of communication satisfaction following video-based encounters, suggesting that they were better able to reach a mutual understanding when communicating via video chat than when communicating FtF. Such a mutual understanding presumably relies on the accurate encoding of messages in a reciprocal fashion by both partners. Therefore, we may generally deduce that message encoding is more accurate in mediated versus unmediated conditions, possibly due to a decreased activation of the

motivational and physiological systems in CMC, allowing for the perceptual and cognitive systems to function at their full (or near full) capacities. Shin et al.'s (2017) findings thus provide supporting evidence for the role of imminence in predicting conflict communication outcomes.

Further Speculation

Lang et al. (2015) lay out several propositions that are additionally relevant to the present study. First, pictures produce biologically imperative responses more quickly and more intensely than do words. Second, based on the notion that the aversive system activates more quickly than the appetitive system, our biologically imperative responses to unpleasant stimuli are larger than our responses to pleasant stimuli. Third, biologically imperative responses occur quickly and unstoppably, occur over time, and influence both the timing and the trajectories of other behavior – serving to facilitate certain behaviors while inhibiting others. Fourth, and perhaps most relevant to the present research, these biologically imperative responses may be modified or altered depending on how they are triggered. Activation of the appetitive and aversive system can occur directly or indirectly depending on the systemic routes traveled by the environmental stimulus. For example, a response elicited automatically by the biological system (e.g., reacting to a collocated person's facial expression) will presumably be more difficult to inhibit than a delayed response triggered by the cognitive processing of the words in an email.

Visual cues. Much of the earlier CMC research focused on the presence and absence of visual cues across different communication environments (e.g., Culnan & Markus, 1987; Daft & Lengel, 1986). Researchers have proposed that the reduced-cue environment characteristic of CMC may be preferable to the cue-rich FtF environment as it eliminates perceptions of threats (Scissors & Gergle, 2013). The DHCCST proposes distinctions between different types of visual cues that may further inform our understanding of perceptual differences between various modes

of CMC versus FtF communication. Ensuing from ecological perception theory, the DHCCST contends that as organisms evolving over time, humans have developed hard-wired responses to certain stimuli in the environment. The systems that produce these responses are referred to as evolved communication encoding systems, allowing humans to make sense of communication cues such as facial expressions or body language (Lang et al., 2015). Such cues slave the perceptual system by automatically reacting to the visual information produced by a communication partner. Further, when encountered, motivationally relevant information may elicit different responses depending on the form in which it is presented (i.e., a representation versus a symbol; Lang, Bailey, & Connolly, 2015). The body directly perceives visual communication cues (before the eyes produce the sensation of seeing), whereas *symbolic* communication (e.g., in the form of words) must first travel up to the brain where these words are translated into meaning. In cases characterized by the latter, motivational and biological responses overpower cognitive processing and accordingly hamper one's encoding abilities.

Therefore, we may propose that visual stimuli (and especially those stimuli present within the human's 'action space'), will elicit a stronger and quicker response in the motivational system than symbolic stimuli. Text-based CMC allows exclusively for symbolic communication, where there is no directly perceivable information at all – instead, all incoming information is processed symbolically in the brain where meaning is activated and the words are thereby perceived. Therefore, in text-based CMC, the brain and the body simultaneously receive all incoming information, leading the aversive system to activate more slowly than when visual forms of communication are present.

The LC4MP and DHCCST both allow us to predict less aversive activation in CMC conditions than in face-to-face conditions. The LC4MP predicts this as a function of motivational

activation and arousal, while the DHCCST predicts this through functions of imminence and message presentation (i.e., picture versus text). The DHCCST further predicts that aversive activation from text-based perceptions will increase more slowly than aversive activation ensuing from picture-based perceptions, because text-based content passes through the cognitive and perceptual systems, while picture-based perceptions elicit an immediate reaction in the motivational and physiological systems. In this sense, the DHCCST allows us to outline differences between communication channels as they relate to message processing at a level of specificity greater than that afforded by the LC4MP. The DHCCST does this by conceptualizing characteristics of information (i.e., imminence) that allow us to draw predictions regarding the differential roles of communication channels in helping couples achieve a mutual understanding during conflict. Thus, while both theoretical models point to computer-mediated channels as beneficial to couples in times of conflict, the DHCCST allows us to differentiate between channel implications more intricately than the LC4MP.

Hypotheses & Research Questions

The present research has been motivated, in part, by an abundance of literature pointing to the detrimental role of negative emotional arousal in couple conflict communication (e.g., Costa et al., 2018; Gottman & Levenson, 2000). This negative emotional arousal includes physiological arousal (Gottman & Levenson, 2000), negative affect (Levenson & Gottman, 1985) and perceived threat (Sanford, 2010), which, combined, are conceptually equivalent to aversive activation. To confirm this guiding assumption, the following hypothesis (H1) is proposed:

Hypothesis 1: Aversive activation (i.e., negative emotional arousal) will be negatively associated with conflict communication outcomes.

The present study is guided by the prediction that aversive activation (i.e., negative emotional arousal) varies between face-to-face and mediated communication, and varies further across mediated channels depending on the form of visual and nonverbal cues carried through the channel. Shin et al.'s (2017) findings provide initial evidence of variations in aversive activation between face-to-face and mediated platforms. Face-to-face communication is most abundant in visual and nonverbal cues, and takes place directly within the interactants' action space. Accordingly, aversive activation in face-to-face communication should be strongest. Video-based communication presents a similar amount of visual and nonverbal cues, although the extent of body language perceived by a partner may vary depending on the frame and angle of the camera. Furthermore, video-based communication separates a communication partner from one's action space, further lessening the strength of aversive activation in video-based encounters. Communication through text-based channels relies entirely on symbolic communication, which produces a weaker and slower response from the motivational system than visual and nonverbal stimuli. Following this line of reasoning, and in hopes of expanding Shin et al.'s (2017) work to additionally evaluate text-based communication in the context of romantic conflict specifically, the following hypothesis is proposed:

Hypothesis 2: Aversive activation (i.e., negative emotional arousal) during conflict-laden interactions varies across channels such that face-to-face communication is associated with the highest levels of aversive activation, followed by lower levels in video-based channels, and ultimately the lowest levels in text-based communication.

Voice-based communication is primarily symbolic as it relies on the exchange of words, but nonverbal stimuli may still be present in the form of voice inflection, tone, breathing patterns, and other forms of auditory stimuli. The complete absence of visual cues in voice-based communication may also serve to heighten auditory alertness and one's sensitivity to auditory stimuli. The theoretical arguments presented thus far allow us to draw predictions concerning differences in conflict communication across platforms where visual stimuli are present in various forms. However, it is possible that the motivational system responds differently (and perhaps unpredictably based on the line of reasoning presented here) to information presented solely in auditory form. Accordingly, the following research question is proposed:

> ***Research Question 1***: How does aversive activation (i.e., physiological arousal, negative affect, and threat perception) during voice-based conflict communication differ from aversive activation during other forms of conflict communication (i.e., face-to-face, video-based, text-based)?

Understanding channel differences in negative emotional arousal in the present study is only as valuable as the conclusions it allows us to draw about conflict outcomes across channels. As emphasized in the present paper, existing literature firmly suggests that successful conflict resolution relies on a couple's ability to manage negative arousal and maintain cognitive complexity during conflict. Given the negative association between negative emotional arousal and conflict resolution outcomes demonstrated in existing literature, it is predicted that conflict outcomes vary across communication channels such that channels associated with higher levels of aversive activation will elicit less favorable conflict outcomes, while those associated with lower levels of aversive activation will lead to more favorable conflict outcomes. Following the predictions outlined in H2, the following hypothesis is proposed:

Hypothesis 3: Conflict outcomes ensuing from text-based communication will be most favorable, followed by less favorable outcomes ensuing from video-based communication, and least favorable outcomes ensuing from face-to-face communication.

Furthermore, due to insufficient evidence to inform predictions regarding the relationship between voice-based communication and aversive activation, the following research question is proposed:

Research Question 2: How do conflict outcomes ensuing from voice-based conflict communication differ from conflict outcomes ensuing from other forms of conflict communication (i.e., face-to-face, video-based, text-based)?

Conceptual Model

The hypotheses and research questions outlined thus far are presented in *Figure 1* below.

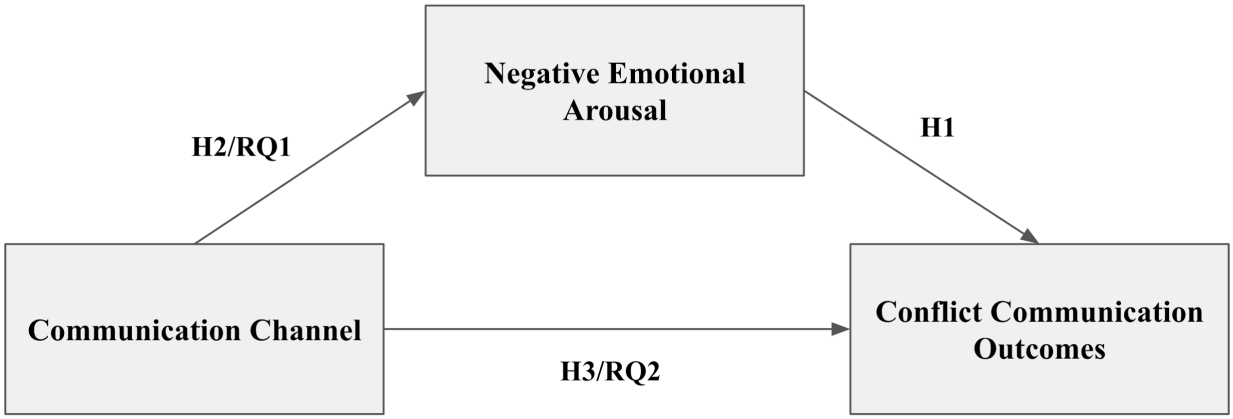

Figure 1. Conceptual Model

METHODS

Study 1

To test the hypotheses and research questions outlined in the present paper, a pilot study was conducted via an online survey ($N = 242$). The online survey was created and distributed through Qualtrics Research Services and data was collected in July 2018.

Sample

A total of 242 individuals (126 females) participated in the online survey. The sample was predominantly White (78.51%). Individuals who identified as being (a) between the ages of 18 and 35, who (b) were in a serious relationship (i.e., *committed*), where (b) partners can see each other every day if they so desire (i.e., not in a long distance relationship; Dellmann-Jenkins, Bernard-Paolucci, & Rushing, 1994) were deemed eligible to participate. One further stipulation regarding channel use was also applied to the inclusion criteria: only individuals who reported using three or more channels (e.g., face-to-face plus two mediated channels) to communicate with a current romantic partner during conflict were eligible to participate. Individuals reported on behalf of their relationship.

Research design

At the onset of the survey, participants were asked to indicate which channels they typically use to communicate with a current romantic partner during conflict, including which channels they *prefer* to communicate through and which channels they communicate through *most frequently*. Responses to these initial items were used to generate channel-specific prompts later in the survey for each participant. Each participant responded to an identical series of

questions for each channel they reported using for conflict communication. Each series of questions asked participants to recall their most recent conflict through a specific channel, and to report on their perceived arousal levels and overall communication outcomes for that interaction. Participants were also asked to reflect on their dyadic conflict habits for each channel.

Measures

To test *Hypothesis 1***,** participants were asked to recall the last conflict they engaged in via each of the channels they reported using at the onset of the survey. For each channel, they were asked to recall and indicate the extent to which they felt angry, sad, emotional, provoked, or threatened during the interaction. Each item was rated on a scale of 1 (Strongly disagree) to 7 (Strongly agree). Similar self-reports of emotional states during conflict have been incorporated in previous studies as measures of self-perceived arousal (e.g., Shin et al., 2017). Responses to these items were used to construct negative emotional arousal scores for each channel described by the participant, to enable comparisons of negative emotional arousal across channels (Cronbach's $\alpha = .76$).

Similarly, to test *Hypothesis 2*, participants were asked to recall the last conflict-laden interaction they engaged in via each of the channels they reported using at the onset of the survey. For each interaction, they were asked to recall the extent to which they were *satisfied with the outcome of the interaction* and the extent to which they *felt the conflict was resolved during the course of the interaction* (e.g., Shin et al., 2017). Each of these items was rated on a scale of 1 (Strongly disagree) to 7 (Strongly agree). Responses to these items were used to construct conflict outcome scores for each participant across channels (Cronbach's $\alpha = .841$).

Study 2

To test the role of communication channels in predicting arousal and conflict resolution outcomes, a laboratory experiment with four experimental conditions (face-to-face, video chat, voice call, text message) was conducted. The experiment was conducted at Michigan State University from January 2019 through May 2019.

Sample

The CMC literature points to the role of interpersonal history in influencing the communication outcomes observed between partners (e.g., Walther, 1992). Many experimental and quantitative comparisons of conflict resolution outcomes have involved participants meeting for the first time (e.g., Van der Kleij et al., 2009; Hobman et al., 2012; Shin et al., 2017). These participants are often asked to complete a situation-based role-playing task where each participant is asked to advocate for his or her ostensible 'side' of a hypothetical argument (e.g., Shin et al., 2017; Cropanzo et al., 1999). Such methodological choices limit our ability to detect the kind of arousal that exists between true relational partners arguing over issues that are personally relevant to them.

The extent to which participants are acquainted with one another can also play a confounding role in experimental outcomes. In comparing group communication in text-based versus face-to-face settings, Hobman et al. (2012) found that initially, the text-based group engaged in more conflict than the face-to-face group. However, these differences disappeared with time - the longer participants engaged in text-based communication with one other, the less conflict they experienced as a group. This suggests that the benefits of CMC for conflict resolution are more pronounced between individuals who are more acquainted with one another

than between strangers. Findings from Hobman et al. (2012) also serve as a warning against drawing conclusions about relationship processes from interactions observed amongst strangers in the lab. Therefore, Study 2 recruited dyads who share a pre-existing, ongoing romantic relationship.

Soloman et al. (2010) suggest that relational turbulence – including doubts about one's relationship and goal interference – may peak at moderate levels of intimacy, particularly in the pre-marital phase of relational development. In a survey of approximately 21,000 undergraduate students by the National Center for Educational Statistics, only 18% of students reported being married (CNN, 2011). Therefore, students at the undergraduate level, whose relationships are typically at the premarital stage and likely characterized by greater levels of relational turbulence, provided a reasonable sample for examining conflict communication.

A total of 64 couples who indicated that they were in a co-located premarital romantic relationship participated in the study – 16 couples per experimental condition. This sample size was determined appropriate following an a priori sample size computation with power $(1 - \beta)$ set at 0.95 and $\alpha = 0.05$ (G*Power; Erdfelder, Faul, & Buchner, 1996). Participants were initially recruited through SONA systems and were compensated in course credit. Following low turnout rates with course-credit recruits, the researcher transitioned to the Paid Research Pool and participants were compensated $25 each for their participation.

Research design

Upon reporting to the lab, participants were escorted to separate rooms. They were given a paper-based informed consent form. All participants who reported to the lab provided informed consent. Participants were then given a paper-based questionnaire where they reviewed a list of common pre-marital conflict issues and indicated how frequently each of the issues arises in their

relationship (1 = *All the time;* 5 = *Never*). Responses were compared by the researcher and mutually identified conflict issues were extracted to develop a list of five common conflict issues for each dyad.

Participants then completed an online pre-survey on their mobile phones. After completing the online pre-survey, participants were escorted to the same room. Each dyad was instructed to review the list of conflict issues curated by the researcher and to identify an issue that (a) was recurring in their relationship and (b) they felt they could engage in a discussion about for the duration of their session. The chosen issue remained unknown to the researcher. While many studies to date have simulated conflict in the lab by asking participants to role play a pre-determined conflict scenario (Andrew & Meligrana, 2012), engage in bargaining and negotiation tasks (Gordon, Schmitt, & Schneider, 1984), or attempt to solve an unsolvable problem (e.g., Shin et al., 2017), the present study was more concerned with eliciting representative conflict interactions. As suggested by Glick and Gross (1975) in their critique of relational conflict research, couples in the lab should be asked to discuss issues of personal relevance that require little guidance or interference from the researcher. Accordingly, and in line with the methodology employed by Knudson, Sommers, & Golding (1980), the present study focused on a conflict issue that each couple considered to be representative of recurrent interactions in their relationship. The goal was to simulate conflict communication between partners as it would normally occur outside the lab, and to assess how that communication might vary based on the medium through which it takes place.

After choosing a topic to discuss during their interaction, participants were asked to communicate about the issue via their randomly assigned communication channel (face-to-face, video chat, voice call, and text message). Dyads assigned to the face-to-face condition were

escorted to an isolated room to discuss their conflict. Dyads assigned to the video chat, voice call, and text message conditions were escorted to separate rooms where they used their mobile phones to communicate via their assigned channel condition. Each room was equipped with a desk, desk chair, and two armless chairs. Each dyad was instructed to attempt to resolve the issue and to reach a mutual understanding.

Participants communicating synchronously (i.e., face-to-face, video chat, and voice call conditions) were allowed less time to discuss their conflict than participants communicating asynchronously (i.e., text message) due to the additional time needed to construct messages and reach similar communication outcomes in text-based settings (Walther & Burgoon, 1992). Specifically, participants interacting face-to-face and through voice call were instructed to interact for 10 minutes, while those in the text message condition were instructed to interact for 20 minutes.

Following their discussions, each participant completed an online post-survey (on their mobile phones). Participants in the face-to-face condition were escorted to separate rooms to complete the post-survey. Participants were compensated following their completion of the post-survey.

Measures

Data was collected through two surveys administered immediately before and after the interaction. The pre-survey (see Appendix A) measured ***relationship satisfaction*** via Hendrick's (1988) seven-item Relationship Assessment Scale (RAS; Cronbach's $\alpha = .77$). Items in the RAS (*e.g. My partner meets my needs)* were rated along a five-point Likert scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

The post-survey measured conflict outcomes, negative affect, and perceived threat (see Appendix B). Overall communication satisfaction and perceived conflict resolution were combined to form a composite measure of ***conflict outcomes***. Participants were asked to recall the extent to which they were *satisfied with the outcome of the interaction* and the extent to which they *felt the conflict was resolved during the course of the interaction* (e.g., Shin et al., 2017). Each of these items was rated on a scale of 1 (Strongly disagree) to 7 (Strongly agree). Responses to these items were used to construct conflict outcome scores for each participant across channels (Cronbach's $\alpha = .85$).

Measuring Aversive Activation

The LC4MP uses self-reports of emotional experience and physiological measures to tap into motivational activation (Lang, 2009). Specifically, self-reports of positive feelings are used to indicate appetitive activation, while self-reports of negative feelings are used to indicate aversive activation (Lang, 2009). ***Negative affect*** was assessed via the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). The negative affect measure was found to have adequate internal consistency (Cronbach's $\alpha = .74$). ***Threat perception*** was measured via Sanford's (2010) eight-item Couples Underlying Concerns Inventory (Cronbach's $\alpha = .89$). Hendrick's (1988) measure of relationship satisfaction was also included in the post-survey (Cronbach's $\alpha = .77$).

Electrodermal activity (EDA) was measured via two bio feedback devices (Empatica E4 wristbands; McCarthy, Pradhan, Redpath, & Adler, 2016) to construct a measure of ***physiological arousal.*** EDA measures the electrical conductance of the skin caused by sweating. Each participant was equipped with a wristband at the onset of their session and data was collected throughout. A baseline physiological arousal score was calculated for each participant

using tonic EDA during the two minutes prior to the conflict discussion. A tonic EDA score was then calculated for each participant representing physiological arousal during the conflict discussion. EDA amplitude scores were calculated by subtracting baseline scores from conflict discussion scores. Amplitude scores were normalized for analysis using a log transformation in SPSS.

RESULTS

Study 1

A total of 242 individuals (126 females) participated in the online survey. The sample was predominantly White (78.51%). Mean age of participants was 31 years old. While the online survey was designed to collect data for six channels (i.e., face-to-face, text message, instant message, phone call, video chat, and email), response rates for instant message (52 responses), video (36 responses) and email (23 responses) were relatively low. In other words, only a fraction of the sample indicated that they used each of these channels for conflict communication, resulting in a low completion rate for the series of questions pertaining to each of these channels. Accordingly, only face-to-face (176 responses), text message (156 responses) and voice call (107 responses) were included in the analyses.

Hypothesis 1

To test Hypothesis 1, which sought to confirm the assumption that negative emotional arousal is negatively associated with conflict communication outcomes, three separate correlation analyses were conducted. The first analysis tested the relationship between negative emotional arousal and conflict outcomes in text-based communication, revealing a significant and negative correlation (r = -1.18, $p < .05$). The second analysis tested the relationship between negative emotional arousal and conflict outcomes in voice-based communication, revealing a significant and negative correlation (r = -.25, $p < .01$). The third analysis tested the relationship between negative emotional arousal and conflict outcomes in face-to-face communication,

revealing a significant and negative correlation (r = -.26, p < .001). Together, these results provide support for H1.

Hypothesis 2 & Research Question 1

To test the relationship between communication channel and negative emotional arousal (H2 & RQ1), a repeated measures ANOVA with a Greenhouse-Geisser correction was conducted with three factors: recalled negative affect during conflict communication via (1) text message, (2) voice call, and (3) face-to-face. Results indicated that negative affect varied significantly across communication channels, $F(1.793, 116.536)=16.397$, $p < .001$, $p\eta^2 = .201$, such that face-to-face communication was associated with the highest levels of negative affect, followed by voice call and text. As depicted in *Figure 2*, post hoc tests using the Bonferroni correction revealed that participants recalled significantly higher levels of negative affect for face-to-face conflict communication (M = 4.39, SE = .164) than voice-based conflict communication (M = 3.98; SD = .191; $p < .01$, MD = .418, SE = .115; CI = [.136, .700]), significantly higher levels of negative affect for face-to-face conflict communication than text-based conflict communication (M = 3.72, SE = .195; $p < .001$, MD = .676, SE = .137; CI = [.339, 1.012]), and significantly higher levels of negative affect for voice-based communication than text-based communication ($p < .05$, MD = .258, SE = .103; CI = [.004, .511]). This finding provides partial support for H2 and informs RQ1.

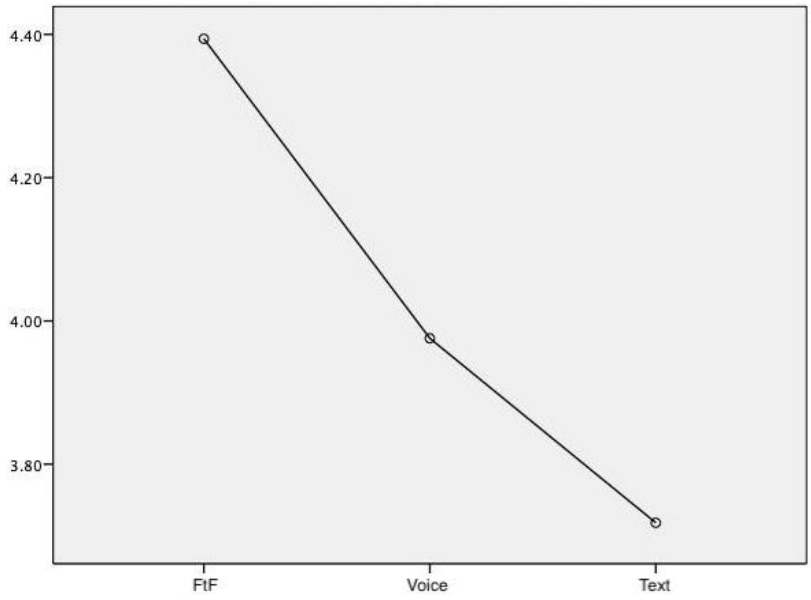

Figure 2. Estimated marginal means of recalled negative emotional arousal

Hypothesis 3 & Research Question 2

To test the relationship between communication channels and conflict outcomes (H3), a repeated measures ANOVA with a Greenhouse-Geisser correction was conducted with three factors: recalled conflict outcomes following communication via (1) text message, (2) voice call, and (3) face-to-face. Results indicated that conflict outcomes varied significantly across communication channels, $F(1.562, 101.509)=13.037$, $p < .001$, $p\eta^2 = .167$, such that face-to-face communication was associated with the most favorable conflict outcomes, followed by voice call and text. As depicted in *Figure 3*, post hoc tests using the Bonferroni correction revealed that participants reported significantly more favorable conflict outcomes for face-to-face conflict communication ($M = 5.71$, $SD = .174$) than voice-based conflict communication ($M = 5.39$; $SD = .190$; $p < .05$, $MD = .318$, $SE = .132$; $CI = [.006, 1.355]$), significantly more favorable conflict outcomes for face-to-face conflict communication than text-based conflict communication ($M =$

4.86, *SD* = .210; $p < .001$, *MD* = .848, *SE* = .206; *CI* = [.342, 1.355]), and significantly more favorable conflict outcomes for voice-based communication than text-based communication ($p < .01$, *MD* = .530, *SE* = .157; *CI* = [-1.355, -.342]). This finding contradicts H3.

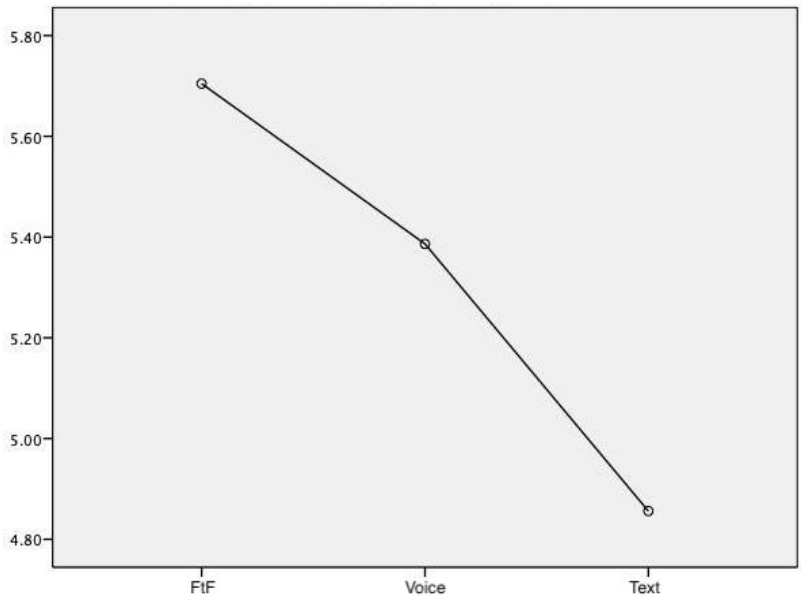

Figure 3. Estimated marginal means of recalled conflict outcomes.

Summary of Findings

A summary of findings from Study 1 is provided in *Table 1* below.

	Test	Relationship Tested (IV & DV)	Finding	Sig. Level	Statistics	Hypothesis Inference
H1	Correlation	Negative emotional arousal & text-based conflict outcomes	Significant correlation	$p < .05$	$r = -1.18$	Support
		Negative emotional arousal & voice-based conflict outcomes	Significant correlation	$p < .01$	$r = -.25$	Support
		Negative emotional arousal & face-to-face	Significant correlation	$p < .001$	$r = -.26$	Support

		conflict outcomes				

Table 1. Summary of Study 1 findings.

Table 1 (cont'd)

H2 / RQ1	Repeated measures ANOVA	Communication channel (text, voice, FtF) & negative affect	Main effect found	$p < .001$	$F(1.793, 116.536) = 16.397$; $p\eta^2 = .201$	Support
			Higher in FtF than voice	$p < .01$	$MD = .418$, $SE = .115$; $CI = [.136, .700]$	Support
			Higher in FtF than text	$p < .001$	$MD = .676$, $SE = .137$; $CI = [.339, 1.012]$	Support
			Higher in voice than text	$p < .05$	$MD = .258$, $SE = .103$; $CI = [.004, .511]$	Support
H3 / RQ2	Repeated measures ANOVA	Communication channel (text, voice, FtF) & conflict outcomes	Main effect found	$p < .001$	$F(1.562, 101.509) = 13.037$ $p\eta^2 = .167$	Contradict
			Better in FtF than voice	$p < .05$	$MD = .318$, $SE = .132$; $CI = [.006, 1.355]$	Contradict
			Better in FtF than text	$p < .001$	$MD = .848$, $SE = .206$; $CI = [.342, 1.355]$	Contradict
			Better in voice than text	$p < .01$	$MD = .530$, $SE = .157$; $CI = [-1.355, -.342]$	Contradict

Study 2

A total of sixty-three couples (N = 130) participated in the study. Gender distribution was relatively balanced, with females constituting 51.59% of the sample. The mean age of participants was 21.5 (SD = 1.63). The sample was moderately racially diverse, with 67% identifying as White, 16.5% as Black, 11.3% as Asian, 1.7% as American Indian, and 3.5% as 'other'. Random assignment to conditions resulted in sixteen couples in the face-to-face condition (N = 32), sixteen couples in the video chat condition (N = 32), sixteen couples in the voice call condition (N = *32),* and sixteen couples in the text message condition (N = 32).

Hypothesis 1

To confirm the guiding assumption that aversive activation (i.e., negative emotional arousal) is negatively related to conflict communication outcomes (H1), three separate regression analyses were conducted. The analyses tested the roles of physiological arousal, negative affect, and threat perception in predicting conflict communication outcomes.

Physiological Arousal. In the first regression analysis, tonic electrodermal activity was included as the independent variable and conflict outcomes was included as the dependent variable. Age, race, gender, and relationship status (post-survey) were included as controls. Results indicated that physiological arousal was significantly and negatively associated with conflict outcomes ($\beta = -.210$, $p < .05$). For every one-unit increase in negative affect, conflict outcomes declined by 0.210 points. This model accounted for 31.5% of the variance in conflict outcomes.

Negative Affect. In the second regression analysis, negative affect was included as the independent variable and conflict outcomes was included as the dependent variable. Age, race, gender, and relationship status (post-survey) were included as controls. Results indicated that negative affect was significantly and negatively associated with conflict outcomes ($\beta = -.328$, $p < .01$). For every one-unit increase in negative affect, conflict outcomes declined by 0.328 points. This model accounted for 25.7% of the variance in conflict outcomes.

Perceived Threat. In the third regression analysis, perceived threat was included as the independent variable and conflict outcomes was included as the dependent variable. Age, race, gender, and relationship status (post-survey) were included as controls. Results indicated that perceived threat also had a significant and negative effect on conflict outcomes ($\beta = -.464$, $p < .001$). For every one-unit increase in perceived threat, conflict outcomes declined by 0.464 points. This model accounted for 30.1% of the variance in conflict outcomes.

Hypothesis 2

Hypothesis 2 predicted that aversive activation (i.e., negative emotional arousal) scores would be highest in the face-to-face condition, followed by the video chat and text message conditions. To test the effect of communication channel on aversive activation (H2), three separate analyses of covariance (ANCOVAs) were conducted. The first analysis tested differences in physiological arousal, the second tested differences in negative affect, and the third tested differences in perceived threat.

Physiological Arousal. In the first analysis, tonic electrodermal activity was set as the dependent variable and channel condition (face-to-face, video call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction (post-survey) were included as control variables. Results revealed a significant main effect communication channel

on physiological arousal $F(2, 54)=4.450$, $p < .01$, $p\eta^2= .156$. As depicted in *Figure 4,* post hoc tests using the Bonferroni correction revealed that physiological arousal was significantly higher in the face-to-face condition (M = -.48, SD = .57) than in the text message condition (M = -1.00, SD = .71; $p < .05$, MD = .587, SE = .221, CI = [.038, 1.136]) and video chat condition (M = -1.03, SD = .15; $p < .05$, MD = .562, SE = .218, CI = [.022, 1.102]). These findings provide support for H2.

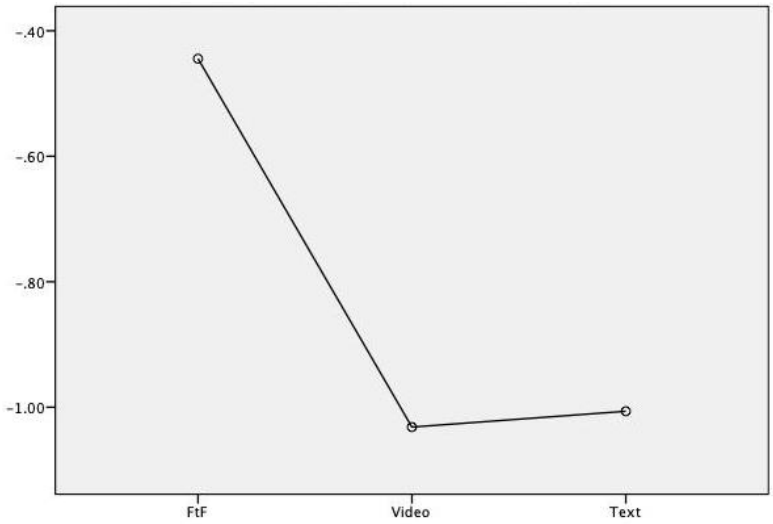

Figure 4. Estimated marginal means of physiological arousal.

Negative Affect. In the second analysis, negative affect (from the post-survey) was set as the dependent variable and channel condition (face-to-face, video call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction (post-survey) were included as control variables. Results revealed a significant main effect of communication channel on negative affect $F(2, 74)=4.234$, $p < .01$, $p\eta^2= .103$. As depicted in *Figure 5,* post hoc tests using the Bonferroni correction revealed that negative affect was significantly higher in the text message condition (M =3.32, SD = 1.02) than in the face-to-face condition (M = 2.68, SD = .98; $p < .01$, MD = .752, SE = .266; CI = [.222, 1.282]) and video chat condition (M = 2.88, SD = .93; $p < .05$, MD = .499, SE = .251, CI = [.002, .999]). The pairwise comparison of the face-to-

face condition with the video chat condition was not found to be significant. These findings directly contradict H2.

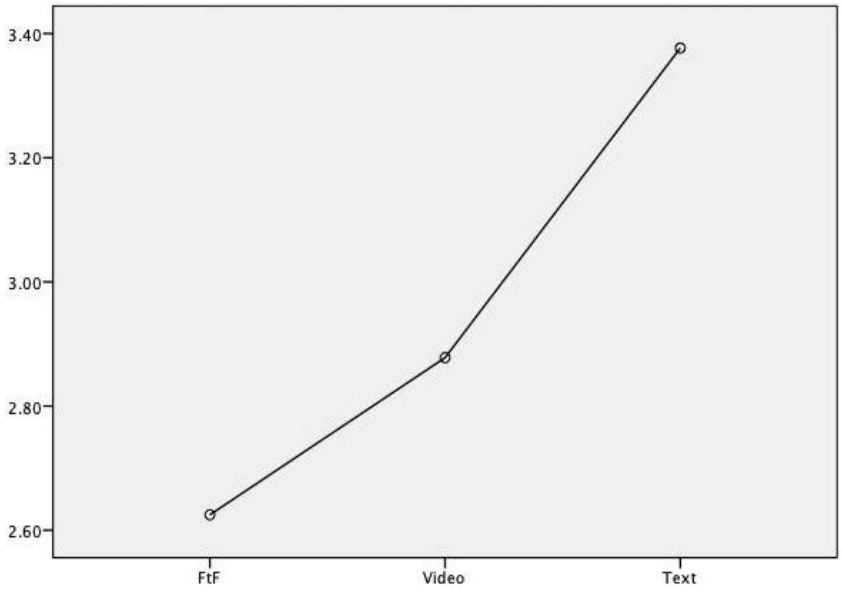

Figure 5. Estimated marginal means of negative affect.

Perceived Threat. In the third analysis, perceived threat (from the post-survey) was set as the dependent variable and channel condition (face-to-face, video call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction were included as control variables. Results indicated that the relationship between communication channel and perceived threat was not found to be significant, $F(2, 75)=1.135$, $p=.899$, $\eta^2=.003$.

Research Question 1

Research Question 1 was concerned with comparing aversive activation in voice-based communication to that in face-to-face, video-based, and text-based communication. To inform RQ1, three separate between-subjects ANCOVAs were conducted. The first analysis tested differences in physiological arousal, the second tested differences in negative affect, and the third tested differences in perceived threat.

Physiological Arousal. In the first analysis, tonic electrodermal activity was set as the dependent variable and channel condition (face-to-face, video call, voice call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction (post-survey) were included as control variables. Consistent with findings for H2, results revealed a significant main effect for communication channel on physiological arousal, $F(3, 73)=1.267$, $p < .05$, $p\eta^2= .100$. However, pairwise comparisons of the voice call condition with the face-to-face, video chat, and text message conditions were not found to be significant.

Negative Affect. In the second analysis, negative affect (from the post-survey) was set as the dependent variable and channel condition (face-to-face, video call, voice call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction (post-survey) were included as control variables. Consistent with findings for H2, results revealed a significant main effect for channel condition on negative affect, $F(3, 107)=2.808$, $p < .05$, $p\eta^2 = .073$. However, pairwise comparisons of the voice call condition with the face-to-face, video chat, and text message conditions were not found to be significant.

Perceived Threat. In the third analysis, perceived threat (from the post-survey) was set as the dependent variable and channel condition (face-to-face, video call, voice call, and text message) was set as the independent variable. Age, gender, race, and relationship satisfaction were included as control variables. Consistent with findings for H2, results indicated that the relationship between communication channel and perceived threat was not significant $F(3, 106)=.453$, $p=.715$, $p\eta^2=.013$.

Hypothesis 3 & Research Question 2

Hypothesis 3 predicted that conflict outcomes would vary such that text-based communication would be associated with the most favorable conflict outcomes, followed by

video-based communication and face-to-face communication. Research Question 2 was concerned with the comparison of voice-based conflict communication outcomes to those ensuing from other channels. To test H3 & RQ2, an ACOVA model was tested with conflict outcomes as the dependent variable and channel condition (face-to-face, video chat, voice call, and text message) as the independent variable. Age, gender, race, and relationship satisfaction (post-survey) were included as control variables, and negative affect and perceived threat were included as covariates. Results indicated a significant main effect of communication channel on conflict outcomes $F(3, 105)=4.042$, $p<.01$, $p\eta^2= .104$. As depicted in *Figure 6,* post hoc tests using the Bonferroni correction revealed that conflict outcomes were significantly more favorable in the text message condition (M =5.97, SD = .86) than in the face-to-face condition (M = 5.45, SD = 1.40; $p < .05$, MD = .613, SE = .316, CI = [.014, 1.240]) and video chat condition (M = 5.08, SD = 1.30; $p < 0.001$, MD = 1.049, SE = .289, CI = [.476, 1.622]), and significantly more favorable in the voice call condition (M = 5.45, SD = 1.50) than in the video chat condition (M = 5.08, SD = 1.30; $p < 0.05$, MD = .634, SE = .278, CI = [.083, 1.186]). These findings partially support H3.

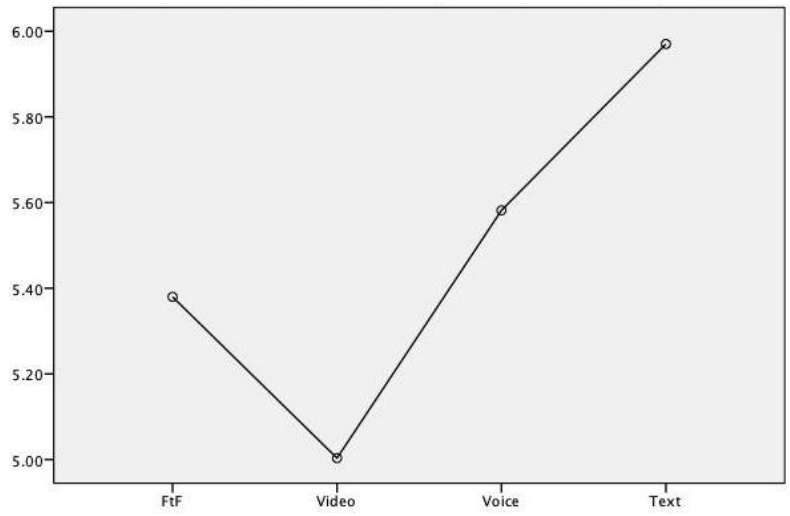

Figure 6. Estimated marginal means of conflict outcomes.

Mediation & Moderation Analyses

To further inform H3, a series of mediation analyses were conducted using Hayes (2018) PROCESS (Model 4) to test the roles of physiological arousal and negative affect in the relationship between communication channel and conflict outcomes. Channel condition (text message, video chat, face-to-face) was dummy coded into three separate dichotomous variables (Text = 0, FtF = 1; Text = 0, Video = 1; FtF = 0, Video = 1). Using these variables, a total of three models were conducted to test the mediation effect of physiological arousal, and an additional three models were conducted to test the mediation effect of negative affect. Neither physiological arousal nor negative affect were found to mediate the relationship between channel and conflict outcomes in any of the tested models.

Two linear regression analyses were also conducted to test (1) negative affect and (2) physiological arousal as moderators of the relationship between channel condition and conflict outcomes. In the first regression analysis, Model 1 included conflict outcomes as the dependent variable, channel condition and negative arousal as independent variables, and age, gender, race, and relationship satisfaction as controls, and Model 2 included an added interaction term (channel condition x negative affect). Model 2 accounted for less variance than Model 1, and the interaction term was not found to be significant, indicating that negative affect was not a significant moderator of the relationship between channel condition and conflict outcomes. Findings from the analysis are depicted in *Table 2* below.

	Model 1			**Model 2**		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Negative Affect	-.412	0.115	.219***	-.262	.297	-.197

Channel	.267	.102	.219**	.439	.329	.360

Table 2. Summary of first regression analysis for variables predicting conflict outcomes.

Table 2 (cont'd)

Age	-.059	.066	-.073	-.069	.068	-.085
Race	.047	.083	.046	.055	.084	.053
Gender	.078	.204	.030	.068	.206	.027
Relationship Satisfaction	.678	.147	.386***	.689	.149	.392***
Negative Affect x Channel				-.057	.104	-.204
R2	.296			.291		
F	8.846** *			7.576***		
*(N = 112); p< .01**, p < .001****						

In the second regression analysis, Model 1 included conflict outcomes as the dependent variable, channel condition and physiological arousal as independent variables, and age, gender, race, and relationship satisfaction as controls, and Model 2 included an added interaction term (channel condition x physiological arousal). Model 2 accounted for less variance than Model 1, and the interaction term was not found to be significant, indicating that physiological arousal was not a significant moderator of the relationship between channel condition and conflict outcomes. Findings from the analysis are depicted in *Table 3* below.

	Model 1			**Model 2**		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Physiological Arousal	-.304	.173	-.175	.049	.491	.028
Channel	.168	.113	.149	.075	.166	.066
Age	-.044	.07	-.061	-.043	.070	-.059
Race	.153	.089	.165	.145	.090	.157
Gender	.161	.217	.072	.142	.219	.064

Relationship Satisfaction	.883	.16	.533***	.882	.161	.533
Physiological Arousal x Channel				-.128	.167	-.245
R2	.334			.277		
F	6.199***			5.368***		
*(N = 80); p < .001****						

Table 3. Summary of second regression analysis for variables predicting conflict outcomes.

Summary of Findings

A summary of findings from Study 2 is provided in *Table 4* below.

	Test	**Relationship Tested (IV & DV)**	**Finding**	**Sig. Level**	**Statistics**	**Supports Hypothesis**
H1	Linear Regression	Physiological arousal & conflict outcomes	Model significant	$p < .05$	β = -.210; R2 = .315	Yes
		Negative affect & conflict outcomes	Model significant	$p < .01$	β = -.328; R2 = .257	Yes
		Perceived threat & conflict outcomes	Model significant	$p < .001$	β = -.464; R2 = .301	Yes
H2	ANCOVA	Communication channel (text, video, FtF) & physiological arousal	Main effect found	$p < .01$	$F(2, 54)$ = 4.450; ηp2 = .156	Yes
			Higher in FtF than text	$p < .05$	*MD* = .587, *SE* = .221; *CI* = [.038, 1.136]	Yes
			Higher in FtF than video	$p < .05$	*MD* = .562, *SE* = .218; *CI* = [.022, 1.102]	Yes
		Communication channel (text, video, FtF) &	Main effect found	$p < .01$	$F(2, 74)$ = 4.234; ηp2 = .103	No

		negative affect	Higher in text than FtF	$p < .01$	$MD = .752$, $SE = .266$; $CI = [.222, 1.282]$	No
			Higher in text than video	$p < .05$	MD = .499, SE = .251; $CI = [.002, .999]$	No
		Communication channel (text, video, FtF) & perceived threat	No effect found	-	-	No

Table 4. Summary of Study 2 findings.

Table 4 (cont'd)

RQ1	ANCOVA	Communication channel (text, voice, video, FtF) & physiological arousal	Main effect found	$p < .05$	$F(3, 73) = 1.267$; $\eta p2 = .100$	N/A
			Pairwise comparisons non-significant	-	-	
		Communication channel (text, voice, video, FtF) & negative affect	Main effect found	$p < .05$	$F(3, 107) = 2.808$; $p\eta2 = .073$	N/A
			Pairwise comparisons non-significant	-	-	
		Communication channel (text, voice, video, FtF) & perceived threat	No effect found	-	-	N/A

H3 / RQ2	ANCOVA	Communication channel (text, voice, video, FtF) & conflict outcomes	Main effect found	$p < .01$	$F(3, 105) = 4.042$; $p\eta 2 = .104$	Yes
			Better in text than FtF	$p < .05$	$MD = .613$, $SE = .316$; $CI = [.014, 1.240]$	Yes
			Better in text than video	$p < .001$	$MD = 1.049$, $SE = .289$; $CI = [.476, 1.622]$	Yes
			Better in voice than video	$p < .01$	$MD = .634$, $SE = .278$; $CI = [.083, 1.186]$	Yes

DISCUSSION

Interpretation of Results

The present research informs our understanding of conflict communication across channels in several ways. The online survey conducted in Study 1 revealed retrospective perceptions of conflict-based arousal and communication outcomes across channels, while the experiment conducted in Study 2 provided more granular real-time evidence of the same phenomena. Findings from each study are summarized and compared below, followed by a discussion of their implications for and consistency with existing theory and research.

Study 1. Findings from the online survey served as preliminary confirmation that differences in emotional arousal do indeed exist across communication channels during conflict. First, findings were consistent with the extensive body of literature pointing to the negative association between conflict outcomes and negative emotional arousal, thereby providing support for Hypothesis 1. For each medium reported on (i.e., text message, face-to-face, voice call), participants' recalled negative emotional arousal was significantly and negatively correlated with conflict communication outcomes. Second, and consistent with Hypothesis 2, recalled negative emotional arousal was found to be highest for face-to-face conflict, followed by lower levels in voice-based conflict and the lowest levels in text-based conflict. This finding also informs Research Question 1, which was concerned with arousal in voice-based communication in comparison with other channels. Third, and inconsistent with Hypothesis 3, recalled conflict outcomes were found to be most favorable for face-to-face conflict, followed by less favorable outcomes for voice-based conflict and the least favorable outcomes for text-based conflict. This

finding also informs Research Question 2, which was concerned with how outcomes ensuing from voice-based communication vary from those ensuing from other channels.

Study 2. Findings from the experiment conducted in Study 2 again confirmed the negative association between negative emotional arousal and conflict communication outcomes, identifying physiological arousal, negative affect, and perceived threat as negative predictors of conflict outcomes - thereby providing support for Hypothesis 1. In comparing physiological arousal across channels, and consistent with Hypothesis 2, arousal levels were found to be highest in the face-to-face condition, lower in the video-based condition, and lowest in the text-based condition. However, inconsistent with Hypothesis 2, negative affect was found to be highest during the text-based condition, lower in the video-based condition, and lowest in the face-to-face condition. No significant difference was found for perceived threat across conditions. Additionally, in exploring Research Question 1, no significant difference was found between voice-based physiological arousal, negative affect, or perceived threat in comparison to other conditions. Finally, in addressing Hypothesis 3 and Research Question 2, conflict outcomes were found to be more favorable in the text message condition than in both face-to-face and video chat conditions, and more favorable in the voice call condition than in the video chat condition. These findings partially support Hypothesis 3.

Comparing Findings. Although negative affect and conflict outcomes were measured for video-based communication in Study 1, response rates for this channel were insufficient for statistical analysis, thereby limiting the scope of direct comparisons between studies. Nonetheless, comparisons between findings are discussed here to the greatest extent possible considering this limitation.

Findings from Study 1 and Study 2 are consistent in some aspects and divergent in others. Findings from both studies point to a significant and negative relationship between negative affect and conflict outcomes, providing consistent support for Hypothesis 1. Study 2 extended this support for H1 by also confirming the negative association between physiological arousal and conflict outcomes.

Findings meant to inform Hypothesis 2 and Research Question 1 were less conclusive, both between studies and within Study 2. Study 1 found that negative affect was highest in face-to-face, followed by voice-based and text-based communication, while Study 2 found that negative affect was highest in text-based communication, followed by video-based and face-to-face communication. Study 2 further found that physiological arousal was highest during face-to-face communication, followed by video-based and text-based communication.

Findings meant to inform Hypothesis 3 and Research Question 2 diverged entirely, with Study 1 pointing to most favorable conflict outcomes in face-to-face communication, followed by voice-based and text-based communication, and Study 2 pointing to most favorable outcomes in text-based communication, followed by voice-based, video-based, and face-to-face communication. Findings from Study 2 support Hypothesis 3 while findings from Study 1 directly contradict it.

Exploring Inconsistencies. When participants self-reported negative affect for a recent conflict-laden interaction, negative affect scores were highest in face-to-face and lowest in text. Experimental findings pointed to the exact opposite phenomenon, revealing highest negative affect in text and lowest negative affect in face-to-face encounters. This inconsistency adds a level of complexity to the conclusions we may draw toward informing Hypothesis 2, but is not entirely unexpected. Many studies to date have highlighted differences in real-time versus

retrospective recall of events (e.g., Redelmeier & Kahneman, 1996), pointing specifically to the tendency of participants to overestimate negative affect when asked to recall an event (Shiffman, Hufford, Hickcox, et al., 1997). Together, findings from Study 1 and Study 2 provide further confirmation for this known tendency.

Despite the possible inaccuracy of recalled affect, the discrepancy between recalled and real-time affect points to a potentially false belief that may influence partners' channel choices during conflict. If partners develop the belief that they felt worse during their most recent face-to-face argument than they did during their most recent text-based argument, they may actively turn to a mediated channel when their next conflict arises. Although the contradictory findings from Study 2 provide a more accurate account of partners' emotions in real-time, it is equally important to understand partners' recalled emotions as they are reflective of beliefs that may in turn dictate future behavior.

Additionally important to address here is the discrepancy in findings for physiological arousal versus negative affect across conditions in Study 2. While physiological arousal was found to be highest in the face-to-face condition and lowest in the text message condition, the opposite was found for self-reported negative affect - that is, negative affect was highest in the text message condition and lowest in the face-to-face condition. Several explanations are considered for each of these findings as well as the discrepancy between them.

Face-to-face interactions are more cognitively and physically demanding - partners communicate not only through words, but also through a variety of visual cues including facial expressions, voice inflection, and body language. This exchange of non-verbal cues creates a more taxing communicative environment on both the sending and receiving ends of the interaction. Partners are simultaneously tasked with encoding their messages both verbally and

non-verbally, while decoding their partner's verbal and non-verbal messages. This back-and-forth exchange stimulates the visual and auditory systems and creates an information-rich communicative environment that heightens stimulation in the cognitive system as well. As such, it stands to reason that physiological arousal was found to be highest in face-to-face and lowest in text-based communication.

The opposite finding for negative affect is perhaps counterintuitive but explainable nonetheless. First, while a correlation between physiological arousal and negative affect was indeed found, this correlation was relatively weak, suggesting that these two variables may fluctuate differently across channels. Furthermore, text-based conflict communication is a focused activity where each partner's efforts are intently geared toward expressing their conflict-related thoughts and feelings in written words. This form of message exchange heightens each partner's awareness of their own feelings surrounding an argument, and the removal of non-verbal cues further heightens this awareness by vacating each partner's attention for exclusive focus on those feelings. The time permitted in asynchronous channels toward constructing a conflict-related message heightens this awareness further. From this perspective, it stands to reason that participants' self-reported negative affect was higher in text-based communication than in other channels that demand attention to other stimuli and tasks. Specifically, voice-based, video-based, and face-to-face channels demand attention to visual and auditory information, and the synchronicity that characterizes these channels leaves less time and resources for rumination - the act of directing attention inward, particularly toward one's negative feelings (Lyubomirsky & Nolen-Hoeksema, 1995).

Although Study 2 found that negative affect was highest in text-based communication and lowest in face-to-face communication, conflict outcomes were, as hypothesized, most

favorable in text-based communication and least favorable in face-to-face communication. This finding is again counterintuitive, but a compelling explanation may be offered. The theory of catharsis holds that venting one's emotions will produce a positive improvement in one's psychological state (Scheff & Bushnell, 1984). Early literature discussing catharsis and emotional expression suggests that it is not only the verbal or physical expression of those emotions, but rather the cognitive processing of those emotions, that must accompany emotional expression in order for the expression to be useful (Bohart, 1980). Text-based environments afford a heightened focus on one's emotions and may thereby enable cathartic expression. When partners are able to effectively express and resolve their emotions surrounding a relationship issue, they may in turn feel better about the conflict itself and about their communication surrounding it.

An additional explanation for the more favorable conflict outcomes that ensued from text-based communication despite heightened negative affect is the the asynchronicity of the text-based environment. Asynchronicity diminishes interaction pace, which may hold considerable benefits for conflict communication specifically. Conflict communication tends to be more fast-paced than other forms of communication (Kellerman, 1992), embodying a rapid exchange of symbols and cues that require immediate interpretation and response (Sillars et al., 2000). In text-based environments, conflict-laden exchanges are significantly decelerated as each partner works toward constructing a narrative surrounding his or her side of the argument. By slowing down the interaction, text-based channels afford a greater focus on deliberate (rather than reactive) message construction while also allowing partners to attend to each other's messages at their own pace. Although this slower pace may heighten each partner's focus on both their own and their partner's negative emotions, this heightened focus may have positive

consequences for relational communication. When partners are able to express themselves and interpret their partner's messages more effectively - even if the expressed or interpreted content is negative in nature - they are able to improve their empathic accuracy and engage in reasonable perspective taking, which both play crucial roles in facilitating successful conflict resolution (Ickes, 1993; Sillars et al., 2000).

A final inconsistency to address is Study 1's finding that conflict resolution outcomes were recalled to be most favorable in face-to-face and least favorable in text-based communication. While accuracy of retrospective recall may have played a role here, the age difference between Study 1 and Study 2's samples is worth considering. Specifically, the mean age of participants in Study 1 was 31.2, while the mean age of participants in Study 2 was 21.5, - a ten-year gap placing the mean age of each sample in separate generational groups (i.e., Millennials and Generation Z). While Millennials are known to be more tech-proficient than older generations (Anderson & Jiang, 2018), individuals falling in Generation Z - also known as the *iGeneration* - are considered to be the most highly connected and most active users of information and communication technologies (Desai & Lele, 2017), spending as much time on their smartphones as older generations spend watching TV (Nielsen, 2016). As 'tech natives', members of Generation Z are likely more comfortable communicating through computer-mediated channels than their older counterparts, with texting being the dominant form of communication between friends in this group (Lenhart et al., 2015). This generational gap may be partially responsible for the differences noted in communication outcomes between the two studies.

Shin et al. (2017). In exploring differences in conflict communication across face-to-face and video-based encounters, Shin et al. (2017) provided foundational support for the experiment

conducted in the present research. Findings from Study 2 extend Shin et al.'s (2017) work by exploring voice-based and text-based channels in addition to face-to-face and video-based channels. While Shin et al. (2017) found no difference in physiological arousal across channels, the present research pinpointed face-to-face communication as the most physiologically arousing compared to video-based and text-based communication.

Furthermore, while Shin et al. (2017) found that negative affect was higher for non-mediated than mediated communication, the present research found the opposite effect. An integral difference between these works that may have influenced this discrepancy is the recruitment of strangers (rather than relationship partners) in Shin et al.'s (2017) study. It is possible that issues and situations that hold high personal relevance are associated with different channel-based emotional consequences.

Both studies found that conflict resolution outcomes were generally more favorable for mediated than non-mediated communication, though specific differences detected between channel outcomes varied between works. Shin et al. (2017) found that better conflict outcomes ensued from video-based communication than from face-to-face communication, while Study 2 found better outcomes in text-based and voice-based communication than in video-based communication. Nonetheless, both studies point to the benefits of mediation for conflict communication.

In extending research efforts to explore differences in text-based and voice-based conflict outcomes, the present research has built upon Shin et al.'s (2017) work in several important ways. Both face-to-face and video-based communication involve visual and auditory forms of information, including facial expressions, body language, and voice inflection. In this sense, Shin et al.'s (2017) analysis was limited to channels carrying relatively similar types of information,

despite differing along the dimensions of distance, presence, and visual scope. In text-based communication, visual information remains but is exclusively textual, and auditory and non-verbal information are entirely removed. Therefore, by incorporating text-based communication in its analysis, the present research contributes to the communication literature by exploring a distinct form of visual information in the context of conflict communication, where communication is solely symbolic. Furthermore, by incorporating voice-based communication, which relies entirely on the exchange of auditory information, the present research extends this body of work to include communication processes in the complete absence of visual information. While further research is necessary to draw more definite conclusions regarding the precise implications of each channel for conflict communication across relational contexts, findings from the present study provide a promising starting point toward this goal.

The LC4MP & DHCCST

The present research was guided by the LC4MP and DHCCST, namely based on the assumption that heightened aversive activation would deplete cognitive resources available for information processing, thereby hampering conflict communication outcomes between partners. Aversive activation was expected to vary across channels such that channels that carried more visual cues would elicit more aversive activation. Removing a presumably threatening stimulus (i.e., one's partner during conflict) from one's action space was further expected to reduce aversive activation. Because communication through text message carries exclusively symbolic cues that must be decoded before perceived - in comparison to non-verbal cues transmitted through face-to-face and video-based communication, which the motivational system is hardwired to respond to - it was also expected that aversive activation would be lowest in text-based encounters. Due to limited theoretical direction from the LC4MP and DHCCST in

predicting voice-based aversive activation, voice based channels were included in the analysis for exploratory purposes but no explicit hypotheses were proposed for this channel.

The hypotheses derived from the LC4MP and DHCCST were based, in part, on a prediction that was not entirely supported in the present research: *That aversive activation would vary across channels.* Consistent with hypotheses, physiological arousal was found to be highest in face-to-face communication, lower in video-based communication, and lowest in text-based communication. However, evidence pertaining to physiological arousal alone is insufficient for developing conclusions about aversive activation. Two additional elements of aversive activation - negative affect and perceived threat - did not vary across channels consistently with physiological arousal. Specifically, negative affect varied in an entirely differently different direction, with text-based communication eliciting the *most* negative affect in participants, and perceived threat did not vary at all.

With perceived threat being a precursor to aversive activation, the absence of a significant finding here presents sufficient reason to question potential variations in aversive activation across channels. However, the measure of perceived threat incorporated in the present research (i.e., Couples Underlying Concerns Inventory; Sanford, 2010) focused on perceptions of hostility, blame, control, and criticism from one's partner - which may have limited the insights derivable from this measure in relation to aversive activation. More specifically, perceptions of interpersonal blame and criticism may diverge from the types of threatening stimuli the aversive system evolved to respond to. However, even if these perceptions do indeed warrant a response from the aversive system, it is questionable whether conflict simulated in the lab, with participants primed to reach a mutual understanding, would elicit threatening exchanges comparable to those that may arise in a less controlled, non-university setting.

Considering findings for perceived threat and negative affect, it appears that differences in physiological arousal across channels do not represent differences in aversive activation across channels. In light of this evidence, we may conclude that despite channel-based differences in physiological arousal, negative affect, and conflict resolution that were discovered in the present research, the theoretical arguments and predictions that informed the exploration of these differences were not supported. Nonetheless, existing theories of computer-mediated communication hold relevance for our understanding of the findings described thus far.

Theories of Computer-Mediated Communication

The hyperpersonal model and media richness theory can each be applied to our interpretation of the findings derived from the present research. The hyperpersonal model speaks to the seemingly paradoxical relationship between channel-based negative affect versus conflict outcomes, while media richness theory lends explanation to variations in physiological arousal across channels.

Hyperpersonal Model. The hyperpersonal model argues that computer-mediated spaces may promote more intimacy between partners by affording users a heightened focus on the construction and perception of exchanged messages (Walther, 1996). In the case of conflict communication, this heightened focus on message exchange also heightens partners' focus on their own emotions as they put them into words, and on the conflict itself as they engage in back-and-forth communication about it. Considered from this perspective, the heightened negative emotions reported by participants in the text-based condition are consistent with the hyperpersonal model. As users devote less attention to non-verbal cues and more attention toward message exchange, the content of those messages and their relational implications are perceived more prominently.

The hyperpersonal model further purports that this heightened focus on message exchange affords more intimacy between partners where they perceive each other more favorably and engage in more strategic message construction (Walther, 1996). Positive partner perceptions are critical to effective conflict resolution, particularly when partners are able to empathize with each other's viewpoints and emotions (Sillars et al., 2000). By affording more time and resources for message construction, partners are able to exchange elaborate verbal information that is focused on building a mutual understanding - hence the more favorable conflict outcomes found for participants in the text-based condition.

Media Richness Theory. Daft & Lengel's (1986) media richness theory is largely inconsistent with the study's findings, but its conceptualization of communication channels is useful to our interpretation of findings. The theory contends that 'richer' mediums, such as face-to-face communication, allow for more effective communication than 'leaner' mediums, such as voice call or text. While predictions ensuing from media richness theory would point to more favorable conflict outcomes in face-to-face than text-based communication, findings from the present study do not fall in line with this logic. Instead, experimental findings from the present research challenge the propositions of media richness theory, suggesting that *more* information does not always influence communication outcomes positively. This is consistent with conclusions drawn from Shin et al.'s (2017) work.

Nonetheless, the theory's comparison of communication channels is based on the dimension of information richness, which may lend explanation to differences in physiological arousal across studies. When communicating through *richer* mediums that carry higher volumes of information (i.e., verbal and non-verbal cues), partners are taxed with interpreting several forms of information at once. This creates a higher cognitive and sensory demand. Cognitive

load, defined as the used amount of working memory resources (Sweller, 1988), is known to be associated with physiological measures such as heart rate, skin conductance, and respiration rate (Mehler, Reimer, Coughlin, & Dusek, 2009). Specifically, as cognitive load increases, so too does physiological arousal (Mehler et al., 2009). Therefore, we may surmise that as the senses are heightened and attention is allocated toward message interpretation in 'richer' mediums, increases in physiological arousal follow.

Limitations

While the insights derived from the present research hold valuable implications for our understanding of conflict communication processes as they manifest across channels, there are several limitations to be noted surrounding both studies. Study 1 was conducted for the sole purpose of informing Study 2, where many of its limitations were addressed. Specifically, findings from Study 1 are based on retrospective recall, which can be especially unreliable in the context of negative affect. Additionally, self-report of negative affect is likely influenced by individual differences in interpersonal reactivity, and results may accordingly be misleading for the purpose of group comparison. Furthermore, participants in Study 1 were asked to self-report on numerous variables for their most recent argument for *each* channel they reported using at the onset of the survey. Not only does this extensive line of questioning impose significant cognitive load upon participants, but it adds uncontrolled variability to the time lapse between a 'most recent' argument and the participant's report of that event. For example, if a participant reported communicating face-to-face, via voice call, and via text message, their 'most recent' argument through text message may have been that very morning, while their most recent argument over the phone may have been two weeks ago. Such possibilities restrict the accuracy of self-report in some instances and limit the validity of comparisons across participants.

A primary limitation to note in Study 2 is the controlled lab setting that housed the experiment. Despite extensive efforts to ensure that in-lab discussions held high personal relevance, participants were nonetheless removed from their natural habitat and the conflict between them was simulated by the researcher rather than arising naturally. This limits the extent to which we may draw definite conclusions concerning the applicability of experimental findings to real-life scenarios. Furthermore, couples were assigned to their designated channel condition by the researcher, thereby confining their channel choice to a specific medium that may or may not be representative of their typical preferences and behaviors outside of the lab.

Another important limitation to note is the analysis of EDA data for each interaction. Due to limited time and resources, only tonic EDA was calculated for each participant. However, phasic EDA, which involves a quantitative assessment of the abrupt increases in skin conductance across the duration of the interaction, accounting for the occurrence of such increases as well as their magnitude, was not considered in the present analysis. An analysis of phasic EDA data would provide a more accurate account of participants' moment-to-moment experiences during conflict and allow for greater granularity in interpretation. This analysis remains on the researcher's agenda and will be incorporated in future publications ensuing from this work. Also concerning the interpretation of physiological arousal data, arousal valence (i.e., negative versus positive emotion) was only assessed *after* the interaction. Therefore, interpretations of physiological arousal as they relate to emotional arousal are limited.

FINAL REMARKS

Consistent with hypotheses, experimental findings from the present work point to the most favorable conflict outcomes in text-based interactions. Conflict outcomes were further found to be more favorable in voice-based than video-based interactions. Also consistent with hypotheses, physiological arousal was found to be higher in face-to-face interactions than in video-based and text-based interactions. Inconsistent with hypotheses, negative affect was found to be more pronounced in text-based interactions than in video-based or face-to-face interactions. No difference in perceived threat was found across channels.

Experimental findings varied from those in the preceding survey. Consistent with hypotheses, when participants were asked to recall retrospective conflict events, they reported the most negative affect for face-to-face interactions and the least negative affect for text-based interactions. Furthermore, and inconsistent with hypotheses and experimental findings, participants reported the best conflict outcomes for face-to-face interactions and the worst outcomes for text-based interactions. Differences between survey and experimental findings are expected and in line with previous research (Shiffman et al., 1997). Due to the questionable validity of recalled negative events, conclusions from the present research rely more heavily on its experimental findings.

To the author's knowledge, the present work serves as the first experimental comparison of communication outcomes and emotional arousal across multiple channels during conflict. As such, this work supports a growing body of research focused on the migration of conflict communication to mediated spaces. Specifically, findings echo existing works pointing to CMC as a means of assisting partners with emotion management and conflict resolution (Scissors & Gergle, 2013). While several mechanisms may be responsible for the emotion management

afforded by CMC, existing works have attributed this to a greater sense of control (Frisby & Westerman, 2010) and more time for idea construction and conflict de-escalation in CMC (Perry & Werner-Wilson, 2011).

Shin et al.'s (2017) experimental comparison of conflict outcomes and emotional arousal in face-to-face versus video-based interactions yielded similar conclusions, suggesting that distance and mediation can promote more favorable conflict outcomes. Specifically, Shin et al. (2017) speculate that limiting perceptions of physical co-presence can serve to enhance conflict resolution. The present research extends these findings by examining conflict-laden encounters among romantic partners specifically, and by incorporating voice-based and text-based interactions in its analysis. Findings from the present research and from Shin et al. (2017) both point to no difference in physiological arousal between face-to-face and video-based interactions, however, the present work identifies significant differences between text- and video-based interactions, voice- and video-based interactions, and text-based and face-to-face interactions.

Findings also lend support to the hyperpersonal model (Walther, 1996), which suggests that CMC affords greater intimacy between partners by fostering a heightened focus on message construction and perception. This proposition falls in line with the present experiment's finding that despite being associated with the most negative feelings, text-based interactions facilitated the most favorable conflict outcomes. Qualitative work, such as in-depth interviews, focusing on communication experiences and thought patterns across channels, will advance our insight into the exact experiences and thought patterns responsible for the text-based negative affect detected in the present work.

Circling back to the LC4MP and DHCCST, upon which the present work's hypotheses were based, implications are mixed. While findings provide little confirmation that aversive

activation varied across channels, a more extensive analysis of the theories' key constructs is warranted here. More granular measures of aversive activation over time, likely including an analysis of phasic EDA, will lend greater insight into potential differences in aversive activation across channels. Furthermore, an underlying assumption of the present study was that conflict communication involves, to varying extents, threat perceptions among partners. It is possible that the types of environmental threats that elicit aversive activation may vary from those present between partners during conflict. Furthermore, even if conflict-based threat perceptions do elicit aversive activation, it is also possible that such perceptions could be limited during conflict discussions facilitated in the lab. For these reasons, tapping into differences in aversive activation across channels may require stimuli that are universally perceived as threatening regardless of the setting in which they are presented.

Another premise guiding the link between aversive activation and conflict outcomes was that as aversive activation increases, cognitive resources decrease, thereby limiting interactants' abilities to engage in cognitively complex problem solving and perspective taking. However, information processing was not measured in the present work. Thus, a more comprehensive test of the LC4MP and DHCCST in this domain additionally warrants the examination of cognitive resource availability across channels. Despite findings in the present research, there is sufficient reason to believe that by incorporating more universally threatening stimuli in the lab and more extensive measures of information processing and aversive activation, the LC4MP and DHCCST may be applied toward deciphering differences in communication mechanisms across channels.

Practical implications drawn from this work are informative but inconclusive. While the present study found that physiological arousal, a factor known to have negative implications for conflict resolution, was highest in face-to-face communication, it is still uncertain whether this

finding will apply across couples, contexts, and conflict-laden situations. Furthermore, while the study found that the most favorable conflict outcomes ensue from text-based interactions, it is also uncertain whether this finding will hold outside of the lab. When choosing a channel for conflict communication, couples are advised to turn to whichever channel helps them manage their emotions most effectively. Further research examining a more extensive sample over a longer period of time is necessary before determining which channel is best, for which couple, under which circumstances.

In conclusion, the present work identifies differences in emotional arousal, physiological arousal, and communication outcomes across channels during couple conflict. This research not only provides actionable insights for couples hoping to make positive relational choices during conflict, but also advances a growing body of research in this field. Namely, it points to the benefits of CMC for critical communication processes and pushes back against traditional theories pointing to visual and non-verbal cues as necessary for effective communication (e.g., media richness theory, Daft & Lengel, 1986). It also provides support for further applications of the LC4MP and DHCCST to interpersonal communication, and falls in line with Walther's (1996) hyperpersonal model. Several opportunities for future research have been identified from this work toward generating theoretical and practical advancements surrounding our understanding of channel choice during conflict.

APPENDICES

APPENDIX A: Pre-Survey Measures

Relationship Satisfaction (RAS; Hendrick, 1988)

Please indicate the extent to which you agree with each of the following statements.
(1 = Strongly disagree; 7 = Strongly Agree)

My partner meets my needs (1)

I am satisfied in my relationship (2)

My relationship is good compared to most (3)

I often wish I hadn't gotten into this relationship (4)

My relationship has met my original expectations (5)

I love my partner (6)

There are many problems in my relationship (7)

APPENDIX B: Post-Survey Measures

Perceived Threat (Couples Underlying Concern Inventory; Sanford, 2010)

Rate the extent to which each statement describes your experience during the interaction. (1 = Strongly disagree; 7 = Strongly agree)

I felt criticized (1)

I felt blamed (2)

I felt accused (3)

I felt misjudged (4)

Rate the extent to which each statement describes your partner during the interaction. (1 = Strongly disagree; 7 = Strongly agree)

My partner seemed judgmental (5)

My partner seemed demanding (6)

My partner seemed controlling (7)

My partner seemed imposing (8)

Conflict Outcomes

Please indicate the extent to which you agree with each of the following statements about your interaction with your partner. (1 = Strongly disagree; 7 = Strongly agree)

I am satisfied with my discussion with my partner (1)

My partner and I were able to resolve our conflict (2)

Relationship Satisfaction (RAS; Hendrick, 1988)

Please indicate the extent to which you agree with each of the following statements. (1 = Strongly disagree; 7 = Strongly Agree)

My partner meets my needs (1)

I am satisfied in my relationship (2)

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I often wish I hadn't gotten into this relationship (4)

My relationship has met my original expectations (5)

I love my partner (6)

There are many problems in my relationship (7)

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988)

This scale consists of a number of statements that describe different feelings and emotions. Please read each item and use the scale options to indicate the extent to which you felt this way over the course of your interaction with your partner.
(1 = Strongly disagree; 7 = Strongly Agree)

Interested (1)

Distressed (2)

Excited (3)

Upset (4)

Strong (5)

Guilty (6)

Scared (7)

Hostile (8)

Enthusiastic (9)

Proud (10)

Irritable (11)

Alert (12)

Ashamed (13)

Inspired (14)

Nervous (15)

Determined (16)

Attentive (17)

Jittery (18)

Active (19)

Afraid (20)

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