Article

The Confirmation and Disconfirmation of Expectancies in Computer-Mediated Communication

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Stephanie Tom Tong[1] and Joseph B. Walther[2]

Abstract

This research addresses three important issues regarding interpersonal expectancy effects and communication across various modalities. The phenomena of behavioral confirmation and disconfirmation were tested in an original experiment involving 148 participants using computer-mediated communication (CMC). First, this study tested a boundary condition asserted by previous theorists about whether or not confirmation and disconfirmation could occur in communication channels without nonverbal communication. Secondly, it shed light on an important causal variable of perceived malleability of interpersonal expectancies in a novel, simultaneous test of confirmation and disconfirmation. Lastly, it verified the hyperpersonal model of CMC by demonstrating behavioral confirmation, and extended the model by specifying when disconfirmation occurs online.

Keywords

computer-mediated communication, behavioral confirmation, behavioral disconfirmation, expectancy effects, impression formation

First impressions arouse expectations that undeniably affect interpersonal interaction. Research in social psychology (Kelley, 1950; Rosenthal & Jacobson, 1968; Snyder & Haugen, 1994, 1995; Snyder, Tanke, & Berscheid, 1977) and communication (Burgoon & LePoire, 1993; Burgoon, LePoire, & Rosenthal, 1995; Levine et al., 2000) has examined how a "perceiver's" initial perceptions of a "target" might lead the perceiver to change his or her own communication behavior to facilitate interaction. Behavioral confirmation (Snyder

[1]Wayne State University, Detroit, MI, USA
[2]Michigan State University, East Lansing, MI, USA

Corresponding Author:
Stephanie Tom Tong, Department of Communication, Wayne State University, 569 Manoogian Hall, Detroit, MI 48201, USA.
Email: stephanie.tong@wayne.edu

et al., 1977) describes a widely studied process in which perceivers' initial impressions of targets affect their own behaviors, which leads their interaction partners to produce subsequent behaviors that confirm the expected impression. In contrast, behavioral *disconfirmation* may occur, whereby perceivers who hold negative preinteraction expectancies of their partners compensate for the targets' expected antisocial nature by being overly social, kind, or outgoing. Perceivers' overly friendly behaviors are then reflected by the target, resulting in contradiction, rather than confirmation, of preinteraction expectations (Bond, 1972; Ickes, Patterson, Rajecki, & Tanford, 1982; Swann & Snyder, 1980). Empirical tests of both types of expectancy effects usually occur within a dyadic "getting acquainted" interaction setting, where a perceiver is asked to form an impression of, and then interact with, a target. The conditions under which behavioral disconfirmation rather than confirmation occur, however, have not been adequately specified. Previous research has not tested the boundary conditions that should moderate responses to negative interpersonal expectancies.

Certain assumptions about the role of communication modality and the kinds of communicative cues that are implicated in these expectancy effects have developed as the literature in this area has accrued. Although these assumptions have gone relatively unchallenged in over more than four decades of research, they may be anachronistic and contentious in a more contemporary context. Research beginning in the 1970s did not have or has not employed advanced communication technology; almost all behavioral (dis)confirmation research utilized audio-only communication channels such as telephones (e.g., Adair & Epstein, 1968; Snyder et al., 1977; Snyder & Haugen, 1994, 1995) or, in rare cases, face-to-face (FtF) interaction (e.g., Burgoon & LePoire, 1993). This methodology has gone hand-in-hand with the assumption that the mechanism through which expectancies are transferred is the perceiver's "leaked" nonverbal communication. According to Buck (1993), the centrality of nonverbal behavior in expectancy transfer was initiated by Rosenthal's early studies into experimenter effects: "Rosenthal from the beginning recognized that these effects were exerted primarily via nonverbal communication: by vocal intonations, facial expression, and bodily movements that are largely involuntary and unintended" (p. 228). According to Archer, Akert, and Costanzo (1993, p. 242), "Although verbal cues could not be ignored, attention quickly focused on nonverbal communication as the most promising vehicle for the unintentional, implicit transfer of interpersonal expectations." Because previous research emphasized nonverbal cues without commensurate examination of alternative, language-based mechanisms, the assertion that nonverbal communication comprises the basis for the conveyance of expectancies remains merely an assumption and not an empirical fact. Such an assumption would be innocuous if almost all mediated interpersonal communication conveyed nonverbal cues, as it did when behavioral conformation research first flourished.

The proliferation and widespread adoption of the Internet and text-based interaction platforms, however, and recent research about computer-mediated communication's (CMC's) interpersonal dynamics, make this assumption worth contesting. The Internet offers venues where people frequently form impressions and get acquainted (Parks & Floyd, 1996; Tong, Van Der Heide, Langwell, & Walther, 2008), and CMC provides an

organic setting for researchers to investigate how expectancies function in an environment where nonverbal cues are reduced. Can expectancies be conveyed through a reduced-cue modality, or is nonverbal communication an important requisite for the procurement of expectancy effects? Under what conditions do confirmation and disconfirmation effects occur? The current research aims to answer these questions within the context of CMC.

Understanding Preinteraction Expectancy Effects

Causal Preconditions, Motivation, and the Role of Interaction

Behavioral confirmation and disconfirmation processes are governed by different cognitive/behavioral mechanisms (see Ickes et al., 1982; Snyder et al., 1977.). Both processes are initially activated and enacted by the perceiver, then reciprocated by the target. In behavioral confirmation, perceivers, in anticipation of a target's expected demeanor, are likely to produce communication behaviors that elicit the partner's demeanor which the perceiver expects the target to be disposed to convey. When a perceiver expects a positive demeanor and behaves in a positive way, the target reciprocates positive behavior. Through this process, preinteraction expectations are confirmed. When a perceiver expects negativity, and acts negatively, targets reciprocate negatively, also confirming expectations.

For behavioral disconfirmation to occur, two further conditions are required. Perceivers must view the target negatively (e.g., "My partner is unpleasant and antisocial"), and perceivers must believe that they can somehow correct or compensate for this state through their own interaction behavior ("I'll be extra outgoing to draw my partner out"). Disconfirmation will not occur if perceivers view targets as unpleasant but feel incapable or unmotivated to modify targets' anticipated behaviors. In summary, disconfirmation strategies will be initiated by the perceiver and reciprocated by the target when (a) perceivers view targets as undesirable, but (b) also believe that targets' behavior can be modified via mutual interaction and (c) are willing and able to perform contrasting behaviors that (when reflected by the target) can facilitate interaction (Ickes et al., 1982).

What motivates the perceiver to enact disconfirmation tactics? Balance theory (Heider, 1946) suggested that perceivers may form a unit relationship with the target due to the perceived proximity, similarity, or a "shared fate" of impending interaction. Pairing a participant with an "undesirable" (Berscheid, Boye, & Darley, 1968) or "obnoxious" (Tyler & Sears, 1977) partner creates a forced commitment to interact with this noxious person, and is often enough motivation to influence perception, attitudes, and behaviors. The perceiver's cognitive conflict between negative impressions of partners and the importance of the impending discussion creates inconsistency. Balance theory predicts linking perceivers and targets together in a unit relationship should motivate perceivers to reduce cognitive imbalance by modifying their own behaviors and attitudes towards the target. Research utilizing balance theory has found that individuals perform disconfirmation behaviors when paired with (ostensibly) negative partners, but fail to do so when paired with positive partners.

Initial Impressions: Trait Versus State

To induce the state of cognitive imbalance in perceivers necessary to initiate disconfirmation behaviors, most studies manipulate the traits of a target's ostensible personality. As a result, "Research has failed to examine more situationally variable, communication-specific expectances or has confounded them with personal attribute expectancies" (Burgoon & LePoire, 1993, p. 70). Because many previous studies have experimentally manipulated the target's trait attributes (e.g., extraversion, friendliness) rather than state attributes (e.g., "good" and "bad" moods), the effects of situationally based, state-like attributes are less known.

One factor reflected in these trait and state expectancy manipulations that may influence perceivers' choice of confirmation or disconfirmation tactics is *the perceived stability or malleability of the target's behavior* (Ickes et al., 1982). If an individual believes that his partner's behavior is attributable to a stable, nonchanging personality trait, he is more likely to enact behaviors that confirm his initial expectations. However, if the information suggests that the target's behavior is caused by something malleable (e.g., a fleeting emotion or mood), then perceivers will be more likely to enact disconfirmation tactics. Thus the perceiver's belief about the malleability of the source of the expectation holds particular interest for behavioral and perceptual effects specified by balance theory. Individuals who are in a state of imbalance can achieve cognitive consistency by either (a) attempting to change the behavior of their partner to be consistent with expectations (behavior) or (b) changing their own attitudes toward their partner (perception).

Perceptual and Behavioral Outcomes

Prior research has shown that when perceivers are sufficiently motivated to enact compensation behaviors, *perceptual* or *behavioral* disconfirmation may result. Perceptual disconfirmation occurs when perceivers' attitudes about the target change as a result of the interaction. That is, prior to the interaction, perceivers may form negative initial impressions of targets, but if expectations are disconfirmed during interaction, perceivers may exhibit positive attitude change toward the target. Thus perceptual disconfirmation is often measured as differences in a perceiver's postinteraction ratings of targets. Behavioral disconfirmation occurs when perceivers' expectations motivate them to change their actual behaviors during interaction. Behavioral effects are revealed when outside raters' judge the interaction behaviors of dyads. Results often show that perceivers alter own their behavior in reaction to their preinteraction expectations of their partner (Snyder & Stukas, 1999).

Research from social psychology has reported that although third-party raters often note perceivers' behavioral differences during the interaction, perceivers' preinteraction impressions of the target may persist in their self-reported postinteraction target ratings, resulting in behavioral, but not perceptual, disconfirmation: "These data revealed that perceivers in both studies maintained their original beliefs about the targets *in spite of the apparently disconfirming behaviors that their compensatory actions had elicited in the targets*" (Ickes et al., 1982, p. 162).

However, research in communication provides evidence that interaction behaviors can produce perceptual disconfirmation. In Levine et al.'s (2000) study, perceivers were told that they would be interviewing another individual, who (unbeknownst to them) was a confederate instructed to enact normal or "abnormal" communication behaviors (e.g., odd eye movements, excessive "teeth picking") during the interview. In the abnormal expectancy condition, experimenters primed perceivers regarding the confederates' behavior by saying that "the other person seemed kinda weird" (p. 130). Normal expectancy interviewers did not receive this induction. In some conditions, confederates' behavior confirmed initial expectations; in others, confederates behaved opposite to expectations. With the interview finished, perceivers rated confederates on honesty. Comparing honesty judgments across conditions yielded perceptual disconfirmation trends. When confederates' behaviors reflected expectations of normalcy, perceivers' postinterview ratings of honesty did not differ from conditions where perceivers' expectations of abnormality were disconfirmed by normally behaving confederates. When confederates disconfirmed perceivers' initial expectations of "weirdness" by behaving normally, this produced positive postinterview changes in ratings of honesty, suggesting that perceptual disconfirmation occurred as a result of inconsistencies between expectations and behavior.

Burgoon and LePoire (1993) examined the confirmation and disconfirmation of both state and trait expectancies by pairing naive perceivers with target-confederates. In line with confirmation effects, they found that positive state and trait expectancies and behaviors produced positive evaluations of targets. But, when trait and state expectancy manipulations were incongruous (i.e., one was positive and one was negative), it was found that those confederates who displayed disconfirming behaviors "generally increased evaluations relative to confirmations" suggesting a perceptual disconfirmation effect (p. 86). The strongest effects on perceivers' postinteraction judgments of targets' personality (e.g., social and task attraction, credibility, character, etc.) were found in those conditions where targets' interaction behavior disconfirmed stable trait rather than more variable state communication expectations.

The perceptual effects reported in Levine et al. (2000) and Burgoon and LePoire (1993) are at odds with Ickes et al.'s (1982) suggestion as to how perceptual and behavioral effects could occur independently of each other. A closer look at Levine et al.'s and Burgoon and LePoire's experimental design allows interpretation of these results. First, manipulating expectations of relatively stable trait attributes (e.g., self-centered, dishonest, etc.) or strange, compulsive behaviors (e.g., compulsive "teeth-picking") may have left perceivers feeling unable to change such enduring characteristics via their own interaction behaviors. Secondly, pairing a naïve perceiver with a target-confederate who acted out assigned communication behaviors to go directly against initial expectations prevented the mutual influence that is vital to confirmation and disconfirmation processes. The use of a confederate precluded the perceiver's ability to influence the target's (fixed) behavior and the target's ability to reciprocate the perceiver's overtures. In absence of mutual influence, perceivers may have attributed changes in the target's behavior to the only source left—the target's own true nature—resulting in perceptual disconfirmation. Although results in Levine et al.

and Burgoon and LePoire suggest that behavior can override expectations, it is still unknown what conditions prompt perceptual or behavioral effects in experimental settings where communication is allowed to freely vary.

Boundary Conditions: Channels and Cues

The assumption that nonverbal cues such as proximity, body posture, facial signals, eye contact, and vocalics provide the means through which a perceiver's expectations are conveyed to the target is one shared by many theorists (Archer et al., 1993; Buck, 1993; Darley & Oleson, 1993; DePaulo, 1993; Hall & Briton, 1993). Many have noted that nonverbal communication behaviors are particularly powerful for "prompting unambiguous meanings and evaluations" (Burgoon & LePoire, 1993, p. 71) because they are more "spontaneous" (Darly & Oleson, 1993) and function under less cognitive control than verbal behaviors (Buck, 1993). As a result scholars argue that nonverbal cues are the necessary transmission mechanisms mediating the relationship between expectancies and confirmation and disconfirmation outcomes. Although many believe in the necessity of nonverbal communication for expectancy transfer, to date, few studies have tested expectancy effects using true, dynamic interaction in an environment like CMC where nonverbal cues are reduced. But recent theoretical and empirical evidence in the field of CMC suggest that text-only communication may be a suitable (if not superior) medium to demonstrate the effects of interpersonal impressions.

Computer-Mediated Communication: Language, Cues, and Interaction

Since verbal statements have never been specifically considered or analyzed as another way in which perceivers might perform confirmation or disconfirmation strategies, the assumption made by previous studies that perceivers' nonverbal behaviors are the primary way in which targets infer perceivers' overtures and reflect them back deserves reconsideration.

Conveying Affect and Expectancies in CMC

CMC's reduced cue environment has led many to propose that it undermines the transmission of affect because it "filters out" important nonverbal cues that often convey emotional information during interaction (see for review Walther & Parks, 2002). Although this cues-filtered-out approach dominated early CMC research, over time, theorists began to recognize CMC's ability to support the communication of socioemotional content (see for review Walther, 2010). Rice and Love's (1987) landmark study found that socioemotional information was present in 30% of the posts contributed to an early public CMC bulletin board system. In line with these findings, social information processing theory (SIP; Walther, 1992) suggests that individuals successfully adapt their language behavior to convey affective communication online. In the most direct test of this proposition, Walther, Loh, and Granka (2005) assigned dyads to converse using either FtF or CMC, and primed

one member of each dyad to seek either affinity or disaffinity with the respective partner. Results revealed a number of kinesic and vocalic correlates with affinity, but no significant verbal cues, in FtF conditions. Participants using CMC effectively communicated affinity and disaffinity to an equal extent through a variety of linguistic strategies (e.g., agreements, disagreements, topic changes, etc.). Indeed, the number of studies documenting the affective and identifying power of language in CMC has become too great to review in this article (see for review Baron, 2008; Herring, 2010). However, one CMC study with implications for behavioral (dis)confirmation is Hancock, Gee, Ciaccio, and Lin's (2008) research on studying emotional contagion online. To induce either a negative or neutral emotional state, one member of each experimental dyad was primed by (a) viewing emotionally distressing versus neutral videos, (b) listening to sad versus neutral music, and (c) solving difficult versus easy anagram tasks. Primed participants interacted in a CMC chat to see if this emotional state would be transferred to the other, unprimed dyad member. Results showed participants primed in the negative affect condition used fewer words in their instant messages, had shorter message length, used more negative affect words (e.g., sadness, anger, and anxiety), and took longer to exchange messages during the conversation in comparison to neutral participants. Furthermore, unprimed participants who chatted with partners in the negative affective condition reported more negative feelings after the chat than those who chatted with neutral affect partners.

These studies reveal that individuals can convey emotion through text-only interfaces, and receivers of such messages can be influenced by senders' messages. As an extension, despite its limited cues, CMC may also convey perceivers' expectancies to targets within the behavioral confirmation and disconfirmation paradigms.

Extending the Hyperpersonal Model of CMC

One theoretical framework that is useful for understanding how CMC may actually not only suffice but heighten expectancy effects is the hyperpersonal model of CMC (Walther, 1996) which is composed of four concurrent elements: sender, receiver, channel, and feedback. First, senders are able to selectively self-present certain desirable attributes. Since the first step in the disconfirmation process is dependent upon the perceiver's initial overtures, the ability to selectively self-present only increases the perceiver's ability to display positive behaviors, in line with disconfirmation strategies. Secondly, receivers may interpret small message cues and overexaggerate attributions of similarity and desirability, increasing liking and attraction (Walther, 2007). Third, by reallocating the cognitive resources that are used in FtF settings to monitor physical self-presentation cues (such as appearance) and other environmental distractions, CMC's asynchronous format, increased editing capabilities, and added discretion provide increased control over message construction. Such affordances make it easier for perceivers to compose messages that influence targets, and also give targets the ability to reciprocate perceivers' behaviors, elevating expectancy effects to "hyperpersonal" levels.

The hyperpersonal model was originally conceptualized with a feedback component that suggested that the idealized or exaggerated impressions formed during CMC discussion could be confirmed through interaction. Ramirez and Wang (2008) studied the effects of "modality

switching" (e.g., switching from CMC to FtF) on the process of interpersonal expectancies and partner evaluations. Consistent with the hyperpersonal model, dyads that communicated exclusively in CMC over a long period of time displayed the most positive partner evaluations in comparison to those dyads who communicated exclusively in CMC over a short period of time, and those dyads whose interactions incorporated a modality switch from CMC to FtF during long and short term interaction periods. Ramirez and Wang concluded that in long-term CMC conditions, the combination selective self-presentation, control over message production, and overexaggeration of personal characteristics "maximized the likelihood of developing heightened expectations and idealized impressions over time" (p. 34). This ultimately led to a feedback loop that confirmed participants' expectations of their partners that were developed based on selective communication and idealized projections.

Although the hyperpersonal model originally predicted behavioral confirmation effects, the findings of more recent studies have raised the possibility of behavioral *disconfirmation* in CMC. For instance, Walther (2007) found that when participants anticipated interacting with partners of varying status (college professor/high school student) and desirability (socially attractive/socially unattractive) they incorporated different linguistic strategies into their messages. Participants interacting with a desirable, high-status partner, increased their linguistic complexity, whereas messages sent to a low-status, undesirable partner contained greater levels of personalization. Walther concluded that the linguistic affinity offered to high school student partners was an example of participants attempting to compensate for their partner's undesirability. Greater linguistic complexity was interpreted as participants' confirmation of the professor's intellect and social attractiveness. It is possible, conjecturally, that if perceivers enact disconfirmation tactics and targets reciprocate them, feedback may result in the exchange of behaviors that disconfirm initial expectancies.

Walther, DeAndrea, and Tong (2011) found similar effects. Dyads randomly assigned the role of "interviewer" or "interviewee" had a short interview session in which they asked eight scripted questions via a synchronous CMC chat or an audio/voice-only system. Unbeknownst to interviewees, the interviewers were primed with an induction: One half of interviewers received information inducing "smart" impressions of interviewees; others received information inducing "dumb" impressions. After the interview, interviewers rated their partner's intelligence. Results indicated that in the audio/voice condition, interviewers receiving the smart and dumb conditions rated their partners' intelligence in line with smart and dumb expectations. The CMC condition results reflected different perceptual effects: Interviewers in the smart expectancy condition gave their partners high postinterview intelligence ratings, a perceptual confirmation effect. But interviewers who received the dumb expectancy also gave their partners high postinterview intelligence scores. This indicates that postinterview intelligence ratings differed from initial expectations, evidence of perceptual disconfirmation.

Although this recent research suggests the possibility of behavioral and perceptual disconfirmation effects in CMC, these effects have only been asserted tentatively or identified as post hoc explanations. To date they remain subject to systematic analysis and empirical testing. To do so, would extend the hyperpersonal model beyond its original predictive framework. The model would then include both confirmation and disconfirmation as

theoretical possibilities, the activation of which should be subject to specific moderators as yet to be included in the model.

Hypotheses

The literature reviewed above suggests perceivers motivated to disconfirm a negative expectancy and perceivers motivated to confirm a positive expectancy will perform the same positive interaction behaviors. This raises an important question: If the same behaviors are produced in two different experimental conditions, can the causal and process variables associated with each condition be identified? The answer lies in the perceived malleability or stability of the expectation. For disconfirmation effects, perceivers must attribute the source of targets' expected behavior as negative and malleable. Malleability allows the perceiver to believe that the target's negativity can be altered during interaction. If perceivers expect that the source of the negative behavior is due to a stable personality trait, it is perceived as unmalleable, and perceivers feel less able and motivated to change the target, resulting in behavioral and perceptual confirmation. A second difference between confirmation of positive personality and disconfirmation of negative emotion lies in the perceptual outcomes associated with each process. An important comparison between confirmation and disconfirmation conditions is the contrast between preinteraction expectancy valence and postinteraction evaluative valence. Generally in confirmation, behavioral displays and postinteraction evaluative valence are the same as preinteraction expectancies. However in disconfirmation, how behavioral and postinteraction evaluations compare with preinteraction expectations are more difficult to predict.

According to Ickes et al. (1982) in disconfirmation conditions, although a perceiver and target may display behaviors inconsistent with initial expectations, a perceiver's postinteraction evaluations should be consistent with his initial negative expectancy. However, as discussed previously, other research (Burgoon & LePoire, 1993; Levine et al., 2000) suggests that behaviors produced during the interaction can "trump" preinteraction expectations and lead to perceptual changes. Following the hyperpersonal model of CMC, interactants have a "hyper" ability to produce disconfirming behaviors in CMC that should lead to changes in perceivers' postinteraction ratings of targets. When, despite expectations, targets behave positively, perceivers may reciprocate to the extent that some transformation among both parties occurs. The hyperpersonal argument suggests that targets' positive interaction behaviors can override their partners' initial negative expectations, causing changes perceivers' preinteraction and postinteraction judgments of targets. Each hypothesis outlined below contains predictions about behavioral and perceptual effects. All predicted effects can be found in Table 1.

Behavioral and Perceptual Confirmation: Stable Trait Valence

This set of hypotheses contains predictions relating to confirmation of preinteraction expectations. The causal variable of trait valence is expected to produce both behavioral and perceptual effects, thus all predictions in H1 refer to variations of stable personality valence:

Table 1. Predicted Behavioral and Perceptual Effects by Condition.

Expectancy effect	Stimulus	Preinteraction perceiver judgment of target	Observer ratings of perceivers' behaviors	Observer ratings of targets' behavior	Postinteraction perceiver judgment of target
Confirmation	Positive trait	+	+	+	+
	Negative trait	–	–	–	–
	Positive state	+	+	+	+
Disconfirmation	Negative state (Ickes et al., 1982)	–	+	+	–
	Negative state (Walther, 1996)	–	+	+	+

Hypothesis 1 (H1): When Perceivers with preinteraction expectancies of Targets' positively valenced stable personality traits are compared to Perceivers who hold expectations of Targets' negatively valenced stable personality traits (a) the former Perceivers perform more positively valenced behaviors during the interaction than the latter, and (b) their Targets reciprocate positively valenced behaviors during the interaction than do Targets of the latter Perceivers.

The following hypothesis predicts perceptual confirmation effects regarding the perceivers' postchat ratings of targets' personality:

Hypothesis 1c (H1c): When Perceivers with preinteraction expectancies of Targets' positively valenced stable personality traits are compared to Perceivers who hold expectations of Targets' negatively valenced stable personality traits, the former Perceivers exhibit more positive postinteraction judgments of Targets' stable personality traits than do the latter Perceivers.

Behavioral Disconfirmation: Negative, Malleable State

Behavioral disconfirmation effects are expected to obtain only under negative expectancy conditions, but with the important stipulation of perceived malleability of target's preinteraction expectancy. To test these predictions the expectancy condition of negative, malleable emotional state posited in H2a and H2b must be compared to conditions in which oppositely valenced communication behavior is anticipated (i.e., the negative personality expectancy condition):

Hypothesis 2 (H2): When Perceivers with preinteraction expectancies of Targets' negatively valenced malleable emotional state are compared to Perceivers who hold expectations of Targets' negatively valenced stable personality traits, (a) the former Perceivers perform positively valenced behaviors during the interaction than the latter, and (b) their Targets reciprocate more positively valenced behaviors during the interaction than do Targets of the latter Perceivers.

Perceptual Disconfirmation: Rival Hypotheses

Competing predictions are offered with regard to *perceptual* disconfirmation effects based on the arguments above. The first of these predictions, H2c, follows Ickes et al. (1982) and proposes perceptual *confirmation*. To test this prediction, the condition of negatively valenced malleable emotional state must be compared to conditions under which oppositely valenced perceptual effects are predicted to occur—positively valenced malleable emotional state:

Hypothesis 2c (H2c): When Perceivers with pre interaction expectancies of Targets' negatively valenced, malleable emotional state are compared to Perceivers who hold expectations of Targets' positively valenced malleable emotional state the former Perceivers exhibit more *negative* postinteraction judgments of Targets than do the latter Perceivers.

A rival hypothesis is proposed regarding the perceptual effects that are posited in H2c with respect to perceivers' postinteraction evaluations of targets. H2c, above, predicts that perceivers remain skeptical about their partner's demeanor following the chat; after all, the partner acted more positively only because of the perceiver's intentional influence. Alternatively, H2d, below, predicts that perceivers change their minds about targets' mood as their behaviors change. Following the hyperpersonal model of CMC, H2d predicts that perceivers' terminal evaluations of targets *do* change from negative expectations of emotional state before the chat to positive ratings after the chat. To detect the effect posited in H2d, the perceivers' postchat judgments of targets in the negatively valenced malleable emotional state condition are compared to the same judgments made in the negatively valenced stable personality condition:

Hypothesis 2d (H2d): When Perceivers with preinteraction expectancies of Targets' negatively valenced malleable emotional state are compared to Perceivers who hold expectations of Targets' negatively valenced stable personality traits, the former Perceivers exhibit more *positive* postinteraction judgments of Targets than do the latter Perceivers.

Behavioral and Perceptual Confirmation: Positive Emotional State

The effects of preinteraction positive, malleable emotional state conditions on behavior and perception are unknown. Previous research did not test these preinteraction circumstances, primarily because of the assumptions of balance theory: If perceivers are cognitively balanced (e.g., preinteraction expectations of target are positive), it is illogical and highly unlikely that they would be motivated to induce negative behaviors in their partner. Because confirmation effects are anticipated, the appropriate comparison group would be another condition where confirmation is also predicted, however in the opposite direction. The comparison for the positive malleable emotional state expectancy is the oppositely valenced confirmation condition, or negatively valenced stable personality trait:

Hypothesis 3 (H3): When Perceivers who have preinteraction expectancies of Targets' malleable, positively valenced emotional state and are compared to Perceivers who hold preinteraction expectations of Targets' negatively valenced, stable personality traits (a) the former Perceivers perform more positively valenced behaviors during the interaction than do the latter, and (b) their Targets reciprocate more positively valenced behaviors during the interaction than do the latter Perceivers' targets.

Likewise, perceptual confirmation is predicted with respect to preinteraction expectancies:

Hypothesis 3c (H3c): When Perceivers who have preinteraction expectancies of Targets' malleable positively valenced state are compared to Perceivers who hold preinteraction expectations of Targets' negatively valenced personality, the former Perceivers exhibit more positive postinteraction judgments of Targets' personality than do the latter Perceivers.

Method

The current research varied perceivers' preinteraction expectancies about targets to test whether differences in preinteraction stimuli elicited behavioral or perceptual effects in dyadic communication. (Graphic representations of hypotheses can be found in Appendix A).

Sample

A sample of 148 individuals was randomly assigned to 74 dyads. Perceivers ages ranged from 18 to 27 (M = 19.43, SD = 1.81), with 44.5% freshman, 23% sophomores, 20.3% juniors, and 12.2% seniors. Targets ages ranged from 18 to 23 (M = 19.26, SD = 1.33) with 41.9% freshman, 16.2% sophomores, 28.4% juniors, and 13.5% seniors.

Procedure

Experimenters obtained the participants' consent and asked perceivers to complete information questionnaires about themselves. Perceivers then viewed their partner's (bogus) personality or emotion information and completed a preinteraction survey regarding their partner (described below). They selected a screen name and entered a private chat room on Chatzy.com, a real-time online chat system. Targets also completed information questionnaires about themselves, but received no bogus information about their partner. All chat transcripts were saved by the experimenter in a manner that preserved the original sequencing of statements, yet was amenable to separation of the perceivers' from the targets' statements for subsequent rating purposes. Perceivers and targets completed the postchat questionnaire containing items about their partner and their own behavior during the chat. They were debriefed and thanked.

Experimental Design

The experiment reflected a 2 (expectancy valence: positive/negative) × 2 (stability: personality/emotional state) design. All male participants were randomly assigned to the role of perceiver in one of four experimental conditions designed to reflect the female target's personality characteristics or emotional demeanor. Each of the 74 dyads was randomly assigned to the following prechat expectancy conditions: 19 positive/personality, 19 negative/personality, 20 positive/emotion, and 16 negative/emotion. In line with previous research (e.g., Ickes et al., 1982; Snyder et al., 1977; Snyder & Haugen, 1994) only males were randomly assigned to perceiver roles and females were assigned to be targets. Holding the sex of perceiver-target dyads constant was a specific decision made to follow a true replication of previous experimental design, and to avoid the introduction of participant sex as a confounding variable. Future research should look at sex as a separate variable to see if the sexual makeup of the dyads affects expectancy processes.

Manipulation of Prechat Expectancies

The bogus information sheet given to perceivers consisted of a short questionnaire. Perceivers were told the target's information sheet contained her responses in which she evaluated her own personality or emotional state. In reality, these responses were bogus and were predetermined to reflect experimental manipulations. A pilot test on a separate sample of participants was conducted to verify manipulations.[1]

Stable personality trait. Perceivers randomly assigned to the positive and negative stable personality trait conditions completed a brief scale with items designed to measure "stable personality traits." They were told that this information would be exchanged with their partners' "so that you each have a little background information about each other's personality before the chat." Perceivers filled out this form to enhance the realism of the information exchange. In actuality, these completed forms were not exchanged with targets. Perceivers then received a bogus form with pregenerated responses designed to reflect experimental manipulations. Each information sheet depicted targets' responses to the questionnaire as having either "pleasant" (stable/positive) or "unpleasant" (stable/negative) personality characteristics.[2]

Malleable emotional state. To induce the emotional state expectancies, similar procedures to the stable trait manipulations were used. Experimenters asked perceivers to fill out a short questionnaire regarding their emotions and informed them that their partner would be doing the same prior to the interaction. Experimenters then gave perceivers the bogus results of their partners' emotion questionnaire which was designed to instill either the "positive" or "negative" emotional state manipulation. Targets received no partner information.

Measures

Hypotheses specified that perceivers' expectancies of targets should (in specified cases) lead to different perceptions of the targets' interpersonal desirability (e.g., positivity and

negativity), and that both perceivers' and targets' behaviors should reflect these variations in desirability. The dependent measures therefore needed to be amenable to reliable administration by both participants and by raters. Previous research on behavioral confirmation has used a variety of measures, but their usage and reliability are unclear. Snyder et al. (1977) used 21 items from Dion, Berscheid, and Walster (1972) which measures "stereotype traits" such as sociability, poise, and outgoingness. Ickes et al. (1982) used 18 bipolar interpersonal attraction items (e.g., "cold-warm," "exciting-dull,") from previous studies (Ickes & Barnes, 1978). The current research adopted three measures that have well-established reliability and have frequently been used in interpersonal and CMC research on impressions, enhancing the potential generalizability of the present efforts. The first dependent measure reflects McCroskey and McCain's (1974) measure of social (i.e., interpersonal) attraction as a measure of liking. Together with the last two measures (sociability and extraversion; McCroskey, Holdridge, & Toomb, 1974), these three indices formed the composite dependent variable of interpersonal desirability.

Perceivers completed measures both before and after the discussion. Pretest items provided a check on the preinteraction expectancy induction. Perceptions of expectancy valence were assessed using nine bipolar adjective items ($\alpha = .98$).[3] Seven bipolar adjective items measured perceptions of trait stability versus malleability[4] ($\alpha = .87$), and perceptions of targets' extraversion were also included in the pretest ($\alpha = .89$). In the posttest, perceivers were asked to assess the same measures of valence ($\alpha = .96$) as in the pretest. They also rated the social attractiveness of their partner[5] ($\alpha = .91$, McCroskey & McCain, 1974), their partner's sociability[6] ($\alpha = .92$, McCroskey et al., 1974), and their partners' level of extraversion ($\alpha = .95$, McCroskey et al., 1974).[7] Items on these scales were scored so that higher scores indicated greater ratings of positivity, perceived malleability, social attractiveness, sociability, extraversion, respectively, for both pre and posttests.

Targets completed only posttest measures of valence ($\alpha = .89$), social attractiveness ($\alpha = .80$), sociability ($\alpha = .82$), and extraversion ($\alpha = .83$). Like perceivers, higher composite scores on these variables reflected greater ratings of positivity, social attractiveness, sociability, and extraversion with regard to their perceiver partners.

Outside Ratings

Three outside judges, blind to hypotheses, viewed transcripts containing text from either the perceiver or the target, which allowed coders to rate only one half of each dyad at a time. Judges rated perceivers and targets in random order on the same dimensions of social attractiveness ($\alpha = .90$), sociability ($\alpha = .94$), and extraversion ($\alpha = .92$). Interrater reliability was sufficient for perceiver ratings (social attractiveness $\alpha = .66$, sociability $\alpha = .75$, extraversion $\alpha = .92$) and target ratings (social attractiveness $\alpha = .76$, sociability $\alpha = .84$, extraversion $\alpha = .86$). Each judge's individual item scores were averaged to create a single composite score for each dimension. After these composite scores were calculated, three index variables were created by averaging across individual coders' dimension ratings creating a "grand index" score for each of the three dimensions for perceivers and targets.

Results

To understand behavioral confirmation and disconfirmation of preinteraction expectancies in dyadic CMC interaction, analyses assessed the influence of the two independent variables (targets' ostensible negative or positive expectancy; stable personality or malleable emotion) on the dependent variables (male perceivers' and female targets' behaviors during the interaction, as measured by the observer judges' ratings of the chat transcripts; and male perceiver's postchat ratings of female targets).

Manipulation Checks

Two analysis of variance (ANOVA) tests were conducted to ensure that perceivers' perceptions of valence and malleability of targets were functioning in line with manipulations. Prechat evaluations of the target on the valence factor were aggregated so that higher scores indicated more positivity; scores on the malleability factor were aggregated so that higher scores indicated greater perceptions of malleability. The first analysis tested valence and malleability manipulations on perceivers' preinteraction evaluations of target expectancy valence. Results showed that perceivers receiving positively valenced information ($M = 6.23$, $SD = 0.14$) perceived targets as being more positive than those receiving negatively valenced information ($M = 3.16$, $SD = 0.15$), $F\ (1, 70) = 226.69$, $p < .001$, $\eta^2 = .75$. No significant main effect for stability on valence was found, $F\ (1, 70) = 0.14$, $p = .71$, and no interaction effect obtained, $F\ (1, 70) = .96$, $p = .33$. A second ANOVA tested effects of valence and malleability manipulations on perceivers' preinteraction evaluations of the target expectancy malleability. Results revealed significant differences between perceivers' evaluations of the malleability of the targets' expectancy; when perceivers were given information regarding targets' stable personality traits, evaluations of malleability were lower ($M = 3.29$, $SD = 0.15$) than when they were given information about the targets' emotional state ($M = 3.98$, $SD = 0.16$), $F\ (1, 70) = 10.16$, $p = .002$, $\eta^2 = .10$. Additionally, a significant and unexpected main effect of valence was found on perceptions of expectancy malleability, $F\ (1, 73) = 21.45$, $p < .001$, $\eta^2 = .24$. Positively valenced expectations produced lower evaluations of malleability ($M = 3.09$, $SD = 0.15$) when compared to negatively valenced expectancies ($M = 4.18$, $SD = 0.16$), suggesting that positivity is seen as more lasting than negativity—results which parallel those of previous research.[8]

Hypotheses

Hypothesis tests were conducted using the multivariate analysis of variance (MANOVA) procedure. Since the dependent variable of interpersonal desirability was measured using a combination of three dimensions of social attractiveness, sociability, and extraversion, the MANOVA procedure is the appropriate analysis to test whether the combination of these three dependent measures varies as a function of the independent factors (see Huberty & Morris, 1989). Furthermore, the moderate correlations among the dependent

variables (see Appendix B) suggest that a multivariate approach is warranted (Tabachnick & Fidell, 2007). These MANOVA results reported below test the differences among all three outcome variables simultaneously and as a group. The multivariate tests do not, however, specify the actual direction of these effects. The univariate results and descriptive statistics accompanying all hypothesis tests can be found in accompanying tables.

H1a and H1b: Behavioral confirmation of stable personality trait expectancies. Analyses for H1a were conducted to see if differences in positive and negative personality expectations affected outside judges' ratings of perceiver behaviors on the dimensions of social attractiveness, sociability, and extraversion. The multivariate effect of personality expectancy on behavioral ratings was significant, Wilks $\Lambda = .70$, F (3, 34) = 4.98, $p = .006$, supporting H1a. Significant univariate effects obtained with means in the predicted directions on social attractiveness and sociability, but not on extraversion, as shown in Table 2.

In H1b, the effects of perceivers' expectations about targets' positive versus negative personality were examined, but on target behavior (as a presumed consequence of treatment by the perceiver). The multivariate effect of personality expectancy on target behavior was significant, Wilks $\Lambda = .74$, F (3, 34) = 4.05, $p = .01$, with significant univariate effects on social attractiveness and sociability, but not on extraversion. Means fell in predicted directions, supporting H1b.

H1c: Perceptual confirmation of stable personality trait expectancies. To determine whether perceivers differed in their postchat views of targets as a result of a positive versus negative personality, postchat ratings of targets' social attractiveness, sociability, and extraversion were compared in a MANOVA. The multivariate effect of personality expectancy on perceivers' postchat ratings was significant, Wilks $\Lambda = .72$, F (4, 34) = 4.52, $p = .009$. As shown in Table 2, significant univariate effects were found with means in the predicted direction, supported H1c, on perceivers' postchat ratings of targets' social attractiveness and sociability, but there was no effect on extraversion.

H2a and H2b: Behavioral disconfirmation of negatively valenced malleable emotional state. In H2a and H2b, behavioral disconfirmation effects were predicted. For H2a, judges' ratings of perceiver behaviors were compared: Perceivers who had negative expectations of their partners' emotional state were compared to those who had negative expectations about their partners' personalities. Differences in the perceivers' behaviors indicated a significant multivariate effect, Wilks $\Lambda = .76$, F (3, 32) = 3.34, $p = .031$. Univariate ANOVA tests detected a pattern similar to that found in H1a: Significant univariate effects on ratings of perceiver social attractiveness and sociability, but no effect for extraversion. The pattern of the means indicated support for H2a. Regarding H2b, analyses included judges' ratings of female target behavior for those whose partners received negative personality expectancies versus those who received negative emotion expectancies. A significant effect was found, Wilks $\Lambda = .60$, F (3, 32) = 7.22, $p = .001$, with the pattern of means supporting H2b. Univariate tests showed significant effects for social attractiveness and sociability, but no effect for extraversion (see Table 3).

H2c and H2d: Perceptual disconfirmation of negatively valenced malleable emotional state. Following Ickes et al. (1982) H2c predicted that perceivers who are given negative preinteraction expectations of targets' emotional state maintain their negative ratings of their

Table 2. H1a, H1b, and H1c, Univariate Statistics, Means, and Standard Deviations.

Hypothesis	Dependent variable	*df*	*df(error)*	*F*	*p*	Personality expectation	Mean	Standard deviation
H1a	Judge ratings of perceiver social attractiveness	1	36	12.39	.001	Positive	5.13	0.12
						Negative	4.53	0.12
H1a	Judge ratings of perceiver sociability	1	36	6.82	.01	Positive	5.35	0.13
						Negative	4.86	0.13
H1a	Judge ratings of perceiver extraversion	1	36	0.98	.33	Positive	5.08	0.17
						Negative	4.85	0.16
H1b	Judge ratings of target social attractiveness	1	36	7.41	.01	Positive	4.80	0.19
						Negative	4.08	0.18
H1b	Judge ratings of target sociability	1	36	12.56	.001	Positive	5.37	0.22
						Negative	4.35	0.21
H1b	Judge ratings of target extraversion	1	36	3.15	.08	Positive	5.13	0.16
						Negative	4.79	0.15
H1c	Perceiver postchat ratings of target social attractiveness	1	36	6.79	.013	Positive	5.72	0.25
						Negative	4.80	0.24
H1c	Perceiver postchat ratings of target sociability	1	36	13.15	.001	Positive	6.27	0.24
						Negative	5.06	0.23
H1c	Perceiver postchat ratings of target extraversion	1	36	2.39	.13	Positive	5.04	0.27
						Negative	4.48	0.25

Table 3. H2a and H2b, Univariate Statistics, Means, and Standard Deviations.

Hypothesis	Dependent variable	*df*	*df(error)*	*F*	*p*	Stability expectation	Mean	Standard deviation
H2a	Judge ratings of perceiver social attractiveness	1	34	10.23	.003	Negative personality	4.53	0.12
						Negative emotion	5.09	0.13
H2a	Judge ratings of perceiver sociability	1	34	5.49	.03	Negative personality	4.86	0.13
						Negative emotion	5.31	0.14
H2a	Judge ratings of perceiver extraversion	1	34	4.12	.05	Negative personality	4.85	0.13
						Negative emotion	5.27	0.15
H2b	Judge ratings of target social attractiveness	1	34	13.80	.001	Negative personality	4.08	0.18
						Negative emotion	5.17	0.22
H2b	Judge ratings of target sociability	1	34	12.56	.001	Negative personality	4.35	0.20
						Negative emotion	5.43	0.22
H2b	Judge ratings of target extraversion	1	34	3.15	.08	Negative personality	4.75	0.13
						Negative emotion	5.45	0.14

partners at the end of the CMC discussion. In order to detect if perceivers' postchat ratings of their partner were relatively negative, the postchat ratings of perceivers in the negative, emotional state condition were compared to the post chat ratings in the oppositely valenced condition: positive, emotional state. If postchat ratings remained negative as they were in the initial manipulation, a comparison of the postchat ratings in the positive and negative emotional state conditions should reveal a significant difference in perceivers' postchat perceptions of targets. Analysis revealed that the multivariate effect was not significant, Wilks $\Lambda = .94$, $F\ (3, 32) = 0.67$, $p = .58$. Data were not consistent with H2c.

Rival hypothesis 2d posited a perceptual disconfirmation effect in perceivers' postchat ratings of targets. In order for perceptual disconfirmation to occur, perceivers must report an attitudinal shift, as indicated by their positive postchat ratings of targets. To detect a positive rating, perceivers' postchat perceptions must be compared to a condition with negative postchat ratings. The comparison cell used in this analysis was the negative personality expectancy condition. Thus if postchat ratings in the negative emotional state cell were significantly different from the postchat ratings in the negative personality trait cell, this would indicate a perceptual disconfirmation effect. Analysis revealed a significant multivariate effect on perceivers' postchat ratings of targets, Wilks $\Lambda = .76$, $F\ (3, 32) = 2.79$, $p = .03$. Means arrayed in the predicted directions, and significant univariate results emerged on all three dependent variables; see Table 4. The data support H2d.

H3a, H3b, and H3c: Behavioral and perceptual confirmation of positively valenced state. H3a and H3b posited behavioral confirmation for both perceivers and targets when positively valenced emotional state expectancies were compared to negative personality trait expectancies. The MANOVA results examining judges' ratings of perceivers' behavior indicated a significant multivariate effect, Wilks $\Lambda = .67$, $F\ (3, 36) = 5.49$, $p = .003$. A significant multivariate effect also emerged on raters' judgments of target behavior, Wilks $\Lambda = .57$, $F\ (3, 36) = 8.78$, $p < .001$, and significant univariate effects on all three dependent variables, with the predicted directions of the means supported H3a and H3b. Lastly, H3c predicted perceptual confirmation of positive, malleable emotional state expectancies. A MANOVA compared perceivers' postchat ratings of targets between negative stable personality expectations and positive malleable emotional state expectations. A significant multivariate effect, accompanied by means in the predicted pattern and all three univariate effects, supported H3c, Wilks $\Lambda = .71$, $F\ (3, 36) = 4.91$, $p = .006$ (see Table 5).

Discussion

The central findings of this research extend the hyperpersonal model of CMC with respect to the interactions among the subprocesses it originally specified. The current research supported many of the claims asserted in the model's original framework, but also extends the conceptualization of the feedback component beyond the model's original predictions. Originally, the model proposed that the sender, receiver, and channel components would lead to behavioral confirmation effects. The present research supports this contention provided that the perceiver's expectation for his partner's nature is positive. What is more novel with respect to the original

Table 4. H2d, Univariate Statistics, Means, and Standard Deviations.

Hypothesis	Dependent variable	*df*	*df(error)*	*F*	*p*	Stability expectation	Mean	Standard deviation
H2d	Perceiver ratings of target social attractiveness	1	34	7.42	.01	Negative personality	4.80	0.22
						Negative emotion	5.69	0.24
H2d	Perceiver ratings of target sociability	1	34	10.51	.003	Negative personality	5.06	0.24
						Negative emotion	6.13	0.25
H2d	Perceiver ratings of target extraversion	1	34	5.41	.03	Negative personality	4.48	0.16
						Negative emotion	5.55	0.16

Table 5. H3a, H3b, and H3c, Univariate Statistics, Means, and Standard Deviations.

Hypothesis	Dependent variable	*df*	*df(error)*	*F*	*P*	Expectation	Mean	Standard deviation
H3a	Judge ratings of perceiver social attractiveness	1	38	10.50	.002	Negative personality	4.53	0.12
						Positive emotion	5.06	0.12
H3a	Judge ratings of perceiver sociability	1	38	11.27	.002	Negative personality	4.86	0.13
						Positive emotion	5.48	0.13
H3a	Judge ratings of perceiver extraversion	1	38	12.29	.001	Negative personality	4.85	0.12
						Positive emotion	5.46	0.12
H3b	Judge ratings of target social attractiveness	1	38	7.84	.008	Negative personality	4.08	0.18
						Positive emotion	4.78	0.18
H3b	Judge ratings of target sociability	1	38	19.20	.001	Negative personality	4.35	0.18
						Positive emotion	5.48	0.18
H3b	Judge ratings of target extraversion	1	38	11.87	.001	Negative personality	4.75	0.13
						Positive emotion	5.37	0.13
H3c	Perceiver ratings of target social attractiveness	1	38	10.98	.002	Negative personality	4.81	0.21
						Positive emotion	5.80	0.21
H3c	Perceiver ratings of target sociability	1	38	15.05	.001	Negative personality	5.08	0.21
						Positive emotion	6.25	0.21
H3c	Perceiver ratings of target extraversion	1	38	10.02	.003	Negative personality	4.48	0.21
						Positive emotion	5.43	0.21

model is the activation of conceptually similar social influence processes that perceivers deploy in a compensatory manner when faced with expectations of their partner's behavior that is both negative and malleable. This is a dynamic that was not originally offered in the hyperpersonal model and has not previously been tested.

Findings reveal that when having a CMC chat with an individual who may be in a bad mood, rather than reinforcing that bad mood, a CMC user acts sociably, causing the target to act relatively more sociably as well. This, in turn, causes the initiator to perceive the target as a pleasant individual. In order to demonstrate this causal chain and distinguish it from rival conditions and effects, the simultaneous test of both confirmation and disconfirmation effects demanded precise hypotheses to predict the specific conditions under which each effect would occur. Taken together, the results of H1a-H1c and H3a-H3c reveal that behavioral and

perceptual confirmation occur in CMC's linguistic, reduced-cue environment. Because much of the early research on interpersonal expectancies focused on audio/voice and FtF channels, many researchers assumed nonverbal communication was essential to the behavioral transfer and perceptual interpretation of expectancies. These findings strengthen existing empirical evidence about CMC's capabilities in supporting a variety of complex interpersonal functions. The behavioral and perceptual effects were produced by variations of perceived valence and the stability or malleability of the expected behavior. Although a subtle distinction, the attribution of malleability was crucial in predicting when expectancies would be behaviorally and perceptually conformed or disconfirmed. Specifically, H2a's and H2b's results indicate that behavioral disconfirmation occurred between perceivers and targets, while H2d indicates a perceptual disconfirmation effect that occurred in the hyperpersonal environment created by CMC chat.

Although many researchers suggested that behavioral confirmation and disconfirmation were unlikely to occur in reduced cue channels, that contention should be dismissed. The greater control over self-presentational behavior and message construction in CMC become especially important communication advantages for both confirmation and disconfirmation effects because perceivers' initial communications are what start each process. Communicators trying to convey positive or negative demeanor may even be able to accomplish this more easily when attending only to linguistic content than when they must manage multimodal channels that include verbal messages, vocal tone, volume, and pitch, which may be difficult for a message sender. And if the receiver does not decode each of these cues as signaling positivity or negativity, he or she can be left with a conflicting sense of their partner's overall demeanor. In CMC, the control over verbal cues and messages is a distinct advantage: Although less information is being transmitted through linguistic cues than through multimodal channels, this information is more controllable, allowing communicators to effect their interactional goals (in this case inducing positivity or negativity).

The findings of this research must also change our views of regarding the behavioral disconfirmation process. Ickes et al. (1982) found that perceivers remain skeptical of targets' demeanor even when perceivers influenced changes in the targets' behavior. The present research found that perceivers' attitude toward their partners changed along with targets' actual behavior. This departure from Ickes et al. must be attributed to something about CMC. The hyperpersonal model provides some explanation of why expectancy effects may occur differently in CMC than in other modalities: CMC may provide unique ways for individuals to ameliorate negative expectations when they are perceived to be malleable, but to confirm expectations seen as stable, regardless of valence (Walther et al., 2011). However, without a true comparison to audio or FtF channels, it is unknown if these effects are due to CMC, the variables being tested, or a combination of both. Future research should include channel as a variable, and compare these results against audio and/or FtF dyads to discern more precisely the extent that medium impacts expectations.

Limitations and Future Research

The limitations of the current research warrant discussion. First, analyses suggest that the extraversion measure suffered a lack of discriminant validity with regard to sociability and

social attractiveness.[9] Although all hypotheses tests were run with three dependent measures, the results should be interpreted with some caution. Secondly, an unanticipated effect of expectancy valence on reported levels of malleability arose: Expectations of positivity were perceived to be less malleable than expectations of negativity. Although this "bleeding manipulation" could be considered problematic, the correlation among the independent variables was not a threat to internal validity because hypotheses focused on the interaction between these two variables, which needed to function in tandem. Had the hypotheses focused on individual main effects of each variable, the correlations may have been a greater cause for concern. Furthermore, because the malleability variable has never been (intentionally) induced in previous work, the perceived malleability of the expectancy has never been measured. Thus this interaction could have been operating in previous studies in the same way as the current research, but was never identified until now. Although malleability functioned as expected in the current study, future research should be cautious of its potential interactions with other variables of interest.

It should be noted that perceivers' postchat judgments of their partners' sociability, social attractiveness, and extraversion all exhibited greater mean scores than the pilot test and original prechat manipulation. This suggests that overall, there was an elevation in perceivers' judgments of targets from prechat to postchat in both positive and negative conditions; perceivers' judgments of targets on the dependent variables did increase by the end of the chat, perhaps suggesting a move from "negative" to "neutral" overall terminal judgment. Nevertheless, this increase was not enough to equal the positive postchat partner judgments exhibited by perceivers in the positive expectancy condition. Thus, there was still a statistically significant difference between perceivers' postchat target ratings in positive and negative valence conditions, which suggests that overall, the expectancy process did, in fact, produce differences in interpersonal desirability evaluations.

Future research should examine these phenomena in other settings, and try to manipulate expectancies in ways that are consistent with how individuals use the Internet to gather interpersonal information. For example, expectancy effects may arise when individuals are exposed to one another's online dating profiles. These systems allow individuals to form impressions and expectations about prospective interaction partners, a procedure enacted in many expectancy experiments, but in a more naturalistic way. Since these systems often show users photographs of their prospective partners, the issue of expectancy malleability arises again, and individuals who converse online after exposure to one another's pictorial profiles may be more likely to experience behavioral confirmation than disconfirmation. On the other hand, one recent study found that individuals enact "behavioral compensation" when their online physical depiction is relatively less attractive. In a study that randomly assigned attractive versus unattractive avatars to female CMC interactants, those with an unattractive avatar compensated for their virtual appearance using more positive relational communication than did the women who were assigned attractive avatars or no avatars at all (Van Der Heide, Schumaker, Peterson, & Jones, 2013). As technology continues to evolve, it will impact confirmation and disconfirmation effects in various ways, making consideration of these processes all the more important.

Appendix A

Hypotheses

Hypothesis	Valence comparisons	Expectancy comparisons	Predicted effect
H1a: Test of perceivers' behavioral confirmation	Positive	Personality	+PB
	Negative	Personality	–PB
H1b: Test of targets' behavioral confirmation	Positive	Personality	+TB
	Negative	Personality	–TB
H1c: Test of perceivers' perceptual confirmation	Positive	Personality	+PP
	Negative	Personality	–PP
H2a: Test of perceivers' behavioral disconfirmation	Negative	Emotion	+PB
	Negative	Personality	–PB
H2b: Test of targets' behavioral disconfirmation	Negative	Emotion	+TB
	Negative	Personality	–TB
H2c: Test of perceivers' perceptual confirmation	Negative	Emotion	–PP
	Positive	Emotion	+PP
H2d: Test of perceivers' perceptual disconfirmation	Negative	Emotion	+PP
	Negative	Personality	–PP
H3a: Test of perceivers' behavioral confirmation	Positive	Emotion	+PB
	Negative	Personality	–PB
H3b: Test of targets' behavioral confirmation	Positive	Emotion	+TB
	Negative	Personality	–TB
H3c: Test of perceivers' perceptual confirmation	Positive	Emotion	+PP
	Negative	Personality	–PP

Note. PB = perceiver behavior; TB = target behavior; PP = perceivers' postchat perceptions.

Appendix B

Correlations Among Perceivers' Postchat Ratings of Target Extraversion, Sociability, and Social Attractiveness

Measure	1	2	3
1. Social attractiveness	—		
2. Sociability	.75*	—	
3. Extraversion	.66*	.73*	—

*$p < .001$. $N = 74$.

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Notes

1. The dyads were always assigned as male-perceiver and female-target pairs. Because the targets' personality and emotion expectancy manipulations were being delivered to perceivers via bogus information, the experimental stimuli were pretested to ensure that male perceivers specifically would form preinteraction impressions in line with experimental manipulations. To assess the effectiveness of the stimuli, a pilot test was conducted with a separate sample of male participants. Participants in the pilot study were given experimental stimuli that supposedly depicted an unknown individual's responses to a survey. The survey instructions and items were selected specifically to manipulate personality trait or emotional state expectancies by indicating in that the scores being viewed were representative of either the unknown individual's "fleeting, temporary" mood or the individual's "lasting, stable" personality traits. In addition, the stimulus presented a "total score" which was designed to reflect either "positive" or "negative" valence inductions. Thus participants were asked to indicate their responses on the (a) valence and (b) stability of another person after viewing the stimuli.
   An independent samples t test revealed a main effect for valence, $t(60) = 14.39$, $p < .01$, $\eta^2 = .24$. Males viewing the positive stimulus viewed it as significantly more positive, $M = 5.95$, $SD = 0.76$, than those viewing the negative stimulus, $M = 2.56$, $SD = 0.24$. Analysis also indicated that manipulations produced expected effects with regard to malleability, $t(60) = 2.63$, $p = .011$, $\eta^2 = .02$. Participants viewing the "emotion" scores rated the unknown person's emotional state as significantly more malleable ($M = 4.07$, $SD = 1.18$) than those who viewed stimuli with "stable personality" scores ($M = 3.17$, $SD = 0.95$). Based on the results of this pilot test, the manipulations described in the manuscript were used in the actual test of expectancies in CMC.
2. All stimulus materials are available from the first author upon request.
3. Happy/Sad, Crabby/Jolly, Irritable/Agreeable, Glad/Melancholy, Nice/Awful, Grumpy/Perky, Pleasant/Unpleasant, Sorrowful/Lively, Joyful/Miserable.
4. Fixed/Shifting, Enduring/Fleeting, Temporary/Continuous, Adaptable/Steady, Steadfast/Fluctuating, Resolute/Malleable, Firm/Alterable.
5. This person just would not fit into my circle of friends; We could never establish a personal relationship with each other; I could have another friendly chat with this person; I think this person could be a friend of mine; It would be difficult to meet and talk to this person.
6. Friendly/Unfriendly, Sociable/Unsociable, Cooperative/Negativistic, Cheerful/Gloomy, Good natured/Irritable.
7. Extraverted/Introverted, Talkative/Silent, Timid/Bold, Energetic/Tired, Verbal/Quiet.
8. Although the interaction effect of valence and stability on perceptions of malleability did not achieve conventional significance levels, $F(1, 70) = 3.17$, $p = .06$, $\eta^2 = .04$, exploration revealed an ordinal

effect: negative emotion ($M = 4.72$, $SD = 0.23$), positive emotion ($M = 3.23$, $SD = 0.21$), negative personality ($M = 3.62$, $SD = 0.21$), and positive personality ($M = 2.95$, $SD = 0.22$).

9. Extraversion, sociability, and social attractiveness were tested in a three factor model. Using procedures outlined by Hunter and Gerbing (1982), each factor was tested for internal consistency. Comparing predicted to obtained correlations revealed that extraversion, [χ^2 (9, 74) = 13.60, $p = .14$, RMSEA = .05] sociability, [χ^2 (9, 74) = 7.64, $p = .73$, RMSEA = .02] and social attractiveness [χ^2 (9, 74) = 6.31, $p = .71$, RMSEA = .03] were all internally consistent. The three factor model was also tested for parallelism to assess measurement validity. Extraversion failed tests of parallelism with both sociability, χ^2 (4, 74) = 9.31, $p = .05$, RMSEA = .09, and social attractiveness, χ^2 (4, 74) = 9.83, $p = .04$, RMSEA = .11. Tests between sociability and extraversion produced χ^2 (4, 74) = 3.88, $p = .82$, and tests between sociability and social attractiveness produced χ^2 (4, 74) = 1.54, $p = .42$. Parallelism tests between social attractiveness and extraversion produced, χ^2 (4, 74) = 0.98, $p = .95$, and social attractiveness with sociability produced, χ^2 (4, 74) = 3.05, $p = .55$. Overall, the data were not consistent with the three factor model; due to the size of both local and global error, it was rejected.

   The failure of parallelism tests between extraversion and the other two factors suggested a two factor solution may be more stable. When testing the two factor model, sociability, χ^2 (9, 74) = 6.03, $p = .74$, RMSEA = .03, and social attractiveness, χ^2 (9, 74) = 6.01, $p = .73$, RMSEA = .07, were found to be internally consistent. Tests of parallelism between sociability and social attractiveness produced χ^2 (4, 74) =1.39, $p = .85$, and tests between social attractiveness and sociability produced χ^2 (4, 74) =3.14, $p = .53$. The small residual errors between predicted and obtained correlations, and the small size of global error suggested that the data were consistent with the two factor solution. However, due to the moderate correlations between sociability and social attractiveness, [r (72) = .75, $p < .001$] a unidimensional confirmatory factor analysis was also conducted to see if these factors actually reflected a single factor. Results indicated that the unidimensional solution was not internally consistent, χ^2 (54, 74) = 143.6, $p < .001$, RMSEA = .08. Thus the unidimensional model was rejected.

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Author Biographies

Stephanie Tom Tong (PhD, Michigan State University) is currently an assistant professor in the Department of Communication at Wayne State University. Her research focuses on how individuals use computer-mediated communication and social media to develop, maintain, and terminate interpersonal relationships.

Joseph B. Walther (PhD, University of Arizona) is a professor in the Department of Communication, the Department of Telecommunication, Information Studies & Media, and the Center for Advanced Studies in International Development at Michigan State University; and a 2013 Fulbright Scholar at the Amsterdam School of Communication Research. His research focuses on interpersonal, group, and educational applications of computer-mediated communication and social media.