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FlashReport

Strangers in sync: Achieving embodied rapport through shared movements ☆,☆☆

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ABSTRACT

This paper examines the emergence of behavioral synchrony among strangers in the context of self-disclosure, and their path in predicting interaction quality. Specifically, we hypothesize that behavioral synchrony mediates the direct effect of self-disclosure on the development of embodied rapport. Same-sex stranger pairs (n = 94) were randomly assigned to a video recorded self-disclosure or control condition, and afterward each member rated their social interaction. Following the procedure used by Bernieri, Reznick, and Rosenthal (1988), two trained judges independently watched each video record and rated each pair interaction on behavioral synchrony. Bootstrapping analyses provide support for the hypothesized mediating effect of behavioral synchrony, which emerged as independent of the effects of self-other overlap and positive affect. The authors discuss implications of behavioral synchrony for relationship formation processes and the inevitable entwinement of behavior and judgments in light of embodied cognition.

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Introduction

Knowing that quality social relationships are critical for personal health (e.g., Snyder & Lopez, 2002), it is important to understand the interpersonal micro-moments–the "building blocks"–of successful relationship formation. Acts of self-disclosure with strangers, be it informally on a morning subway commute or formally at a structured event like speed-dating, are a common step toward building social relationships. Turns out, a mechanism by which self-disclosure is effective involves the unspoken, shared physical movements of the interactants.

The present study employs behavioral coding of same-sex stranger dyads during instances of self-disclosure, and results point to the spontaneous act of people moving together in time and space as a key element that promotes quality interaction—namely, *embodied rapport*. Whereas rapport is traditionally defined by interactants' perceptions of positivity and mutuality (Tickle-Degnen & Rosenthal, 1990), recent findings on embodied cognition suggest that the bodily aspects of rapport have thus far gone under-appreciated. Consistent with embodied cognition's thesis that people's perceptions and judgments reflect their own motor and bodily experiences (see Niedenthal, 2007), we propose that rapport reflects interactants' physically shared motions, emotions, and vitality. In particular, beyond perceptions of positivity and mutuality, we propose that shared feelings of vitality and aliveness–bodily sensations theorized to stem from shared movements (McNeill, 1995)–are also keys element of what we here term embodied rapport.

Behavioral synchrony: moving together toward embodied rapport

General cultural observations suggest that behavioral synchrony fosters a sense of "oneness" that brings people together: religious activities, military drilling, and rituals among sports teams involve rich amounts of common rhythms to which people can move in synchrony (McNeill, 1995). Infant–caretaker dyads also illustrate how synchronous behaviors guide relational and social development (Feldman, 2007). Beginning around three-months of age, for example, when infants begin to recognize and respond to others' facial expressions, gaze, vocal, and touch patterns, they notably achieve synchrony with their caretakers: a dyadic and consequential dance between caretaker and infant in recognizing and reciprocating affective states emerges (Weinberg & Tronick, 1996).

Behavioral synchrony is the coordination of movement that occurs between individuals during a social interaction, featuring similarity of (1) *form*, the manner and style of movements, and (2) *time*, the temporal rhythm of movements (Kimura & Daibo, 2006). Early studies of behavioral synchrony utilized a coding procedure developed by Bernieri, Reznick, and Rosenthal (1988) based on the assumption that Gestalt qualities of behavioral synchrony are apparent and perceivable by human observers. As judged by observers, successful language acquisition results from behavioral synchrony between newborn infants' movements and adult speech patterns (Condon & Sander,

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[1] Dutton and Heaphy (2003), working within organizational studies, identify the construct we here term *embodied rapport* as *high-quality connections*.

1974), and increased rapport within teacher–student dyads stems from behavioral synchrony (Bernieri, 1988). More recently, experimental manipulations of synchrony show that it breeds compassion (Valdesolo & DeSteno, 2011), cooperation (Wiltermuth & Heath, 2009), affiliation (Hove & Risen, 2009), emotional support satisfaction (Jones & Wirtz, 2007), and even elevated pain thresholds (Cohen, Ejsmond-Frey, Knight, & Dunbar, 2010).

We see instances of self-disclosure as a sensible starting point for exploring our questions about behavioral synchrony and embodied rapport among strangers, particularly given its well-known ability to generate social closeness.

Self-disclosure: opening doors for embodied rapport

Self-disclosure involves revealing and sharing personal information about oneself, including facts, anecdotes, opinions, and emotions, to another person (Jourard, 1959), and evidence suggests that self-disclosure promotes relationships through mechanisms of liking and positive affect (Collins & Miller, 1994; Strong & Aron, 2006). One way self-disclosure is experimentally induced is through Aron's closeness paradigm (Aron, Melinat, Aron, Vallone, & Bator, 1997), wherein participants within dyads alternate asking and answering questions that progressively reveal more information—in other words, progressively self-disclose. This paradigm has been successfully adapted by several researchers (e.g., Kashdan & Roberts, 2004), and has been shown to produce neuroendocrine changes even when used in abbreviated form (Brown et al., 2009). Consistent with evidence of self-disclosure's benefits for relationships, we seek to demonstrate a direct effect of self-disclosure on embodied rapport using Aron's paradigm (H1).

One mechanism through which Aron's paradigm works is through *self-expansion*, the self-reported broadening of one's self-concept to include another person's beliefs, values, and feelings (Aron, Aron, & Norman, 2001). If people are indeed psychologically experiencing self-other overlap with another as a result of self-disclosure, then perhaps their behavioral experience is altered as well. That is, if information processing involves one's own motor experience, as suggested by research on embodied cognition, then we speculate that self-disclosure not only induces "oneness" psychologically but also behaviorally, manifest as synchronized body movements.

In this study, we experimentally induce self-disclosure and use behavioral coding to investigate our second hypothesis that self-disclosure increases behavioral synchrony, which in turn works as a mechanism to facilitate embodied rapport (H2). To our knowledge, this is the first paper to look at behavioral synchrony as it emerges spontaneously in a same-sex stranger–stranger dyadic interaction, with consideration of how it relates to interpersonal connections.

Methods

Participants

Ninety-four same-sex participant pairs (41 male: 19 same-race, 22 cross-race; 53 female: 22 same-race, 31 cross-race; $M_{age} = 19.41$ years) were recruited for a study on social coordination across two recruitment waves. Compensation was $25 in Wave 1 and course credit in Wave 2.

Experimental procedure

First, each participant pair was randomly assigned to complete one of two partner interaction tasks, each designed to last for 20 min. Pairs randomly assigned to the self-disclosure task completed an abbreviated version of Aron et al.'s (1997) self-disclosure induction paradigm.[2] Pairs randomly assigned to the control condition read a scientific article[3] together, and took turns indicating and correcting text that required edits to one another. One participant had an "edited" version of the article containing italicizations, strikeouts, and bolded text, and the other participant had an "unedited" version on which to make corrections.

Measures

Inclusion-of-other in self (IOS; Aron, Aron, & Smollan, 1992)

Immediately after the partner interaction task, participants each completed questionnaires in private, beginning with a measure of self-other overlap. The IOS is a 7-point single-item scale that visually depicts increasingly overlapping "self" and "partner" circles.

Positive emotions (mDES; Fredrickson, Tugade, Waugh, & Larkin, 2003)

After the IOS scale, participants individually rated 10 different positive emotion categories to indicate how they felt in the interaction (e.g., "love/closeness/trust"; "interested/alert/curious"; "glad/happy/joyful") using a 9-point scale.

Embodied rapport

To assess embodied rapport, after the mDES, participants individually completed Dutton and Heaphy's (2003) measure of High-quality Connections, comprised of three theoretically-derived subscales ($\alpha = .92$): positive regard (e.g., "My partner was friendly and warm toward me"), felt mutuality (e.g., "When I was interacting with my partner, there was a shared flow of thoughts and feelings"), and subjective vitality (e.g., "I felt alive and vital"). Scores were standardized from each subscale and aggregated for each pair.

Behavioral videocoding procedure

Audio and video were simultaneously recorded during the partner interaction task, and a split-screen generator captured one participant on one half of the screen and the other participant in-time on the other half. Two trained coders independently watched the first and last 5 min of all 94 video recordings, scoring both 5-minute segments on the three aspects of behavioral synchrony (Bernieri et al., 1988) using a 7-point semantic differential scale for each aspect: *simultaneous movement* (nonconcurrent-simultaneous), *tempo similarity* (dissimilar-similar), and *coordination and smoothness* (uneasy-smooth). All coding was completed with videos on mute, thereby eliminating influence of audio cues and minimizing demand effects. The coding procedure thus operationalizes behavioral synchrony as a purely physical phenomenon.

For each coder, we first computed two sum scores of the three behavioral synchrony aspects: one for the first 5 min and another for the last 5 min. Because scores for the first and last 5 min were highly correlated ($r = .89$ and .94 for Coders 1 and 2, respectively), we averaged the two sum scores across time points. Inter-rater reliability, calculated by a two-way mixed model (Shrout & Fleiss, 1979), was high ($\alpha = .87$). Accordingly, we averaged the two coders' behavioral synchrony scores to obtain a final behavioral synchrony score for each pair.

Results

Descriptive statistics

Of the 94 pairs considered, 45 were randomly assigned to the self-disclosure task and 49 to the control task. Across both conditions, the mean interaction time was 18.03 min ($SD = 3.02$). See Table 1 for raw

[2] The original 45-minute task consists of self-disclosing items that increase in intensity both within and across three sets of items. We selected from Sets I, II, and III, respectively, 4, 4, and 7 items.

[3] Fant, J. B., Kamau, E., and Preston, C. D. (2005). Chloroplast evidence for the multiple origins of the hybrid potamogeton × fluitans. *Aquatic Botany*, 83, 154–160.

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