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Author Note

Introduction

In *The Knowledge of Man,* renowned twentieth-century philosopher Martin Buber writes that "[t]here is no movement that is not directly or indirectly connected with a perception, and no perception that is not more or less consciously connected with a movement (1965, p. 156)." Our movements—as well as our words—may reveal a great deal about our inner world, including love, commitment, and resilience. Since Buber and many other prominent thinkers have examined the undeniable relationship between external behaviors and internal experiences, innovations in modern technology and empirical research have quantified this philosophical truth. In this study, I seek to examine the relationship between movement and language in the context of couples discussing their relationship strengths in committed, long-term relationships.

Nonverbal synchrony. Understood as the reciprocation of body movements over time among two or more interacting individuals, nonverbal synchrony has been shown to correlate with a wide variety of social, health, and interpersonal outcomes. Research on mimicry, a construct related to nonverbal synchrony, is included in the present research on nonverbal synchrony. Mimicry and nonverbal synchrony are similar, but there is an important distinction: Mimicry is the adoption or imitation of another individual's body position or movements, while nonverbal synchrony involves the coordination and entrainment of body movements over time within the dyad as a whole.

In the realm of social psychology, previous research has shown that nonverbal synchrony increases prosocial behavior (Valdesolo & Desteno, 2011). A similar study by Van Baaren, Holland, Kawakami, & Van Knippenberg (2004) found that, in addition to prosocial behavior directed at those who mimicked, nonverbal synchrony strengthens "general prosocial orientation," or a prosocial attitude towards others more broadly. In a study focusing on the

relationship between nonverbal synchrony and affect, Manusov (1995) found that reciprocation of nonverbal behaviors decreases with negative affect. Similarly, Tschacher, Rees, and Ramseyer (2014) found that nonverbal synchrony was associated with higher levels of positive affect and lower levels of negative affect. Facial mimicry has also been shown to decrease when individuals feel sad. As a whole, these results provide a preliminary understanding of the general connection between nonverbal synchrony and helping behaviors, as well as positive affect.

In studies on dyads, nonverbal synchrony has also been found to increase perceptions of affiliation, liking, rapport, and sexual attractiveness. Cacioppo et al. (2014) found that synchrony in auditory stimuli presented to participants increased perceptions of affiliation. Miles, Nind, and Macrae (2009) conducted a study in which participants either watched a video clip or listened to an audio sample of two people walking, varying the levels of synchrony between the walkers in both the video and audio groups. Consistent with other findings in this area, participants reported the highest levels of rapport when the presented stimuli were synchronous. In a study on mimicry and sexual attraction, Guéguen (2009) found that men who were mimicked during a speed-dating activity reported higher sexual attraction to their mimickers than men who were not mimicked. Men who were mimicked also reported more positive interactions than those who were not mimicked. Overall, findings involving liking and attraction are hopeful with regard to the present study.

Research involving nonverbal synchrony in mental health treatment has also emerged. For example, Ramseyer and Tschacher (2011) found that the presence of nonverbal synchrony between therapists and patients predicts reports of relationship satisfaction and outcome of therapy. As is commonly known, the quality of the therapeutic relationship is essential to

successful outcomes, and these results indicate that nonverbal synchrony reflects the quality of this relationship. These findings show that nonverbal synchrony reflects underlying interpersonal connectedness in an emotionally significant relationship.

In romantic relationships, the area of focus for the present research, nonverbal synchrony has been found to differentiate satisfied couples from dissatisfied couples. Satisfied couples show higher levels of nonverbal synchrony and reciprocated "immediacy behaviors," such as gaze direction, body openness, and body position, more often than dissatisfied couples (Julien, Brault, Chartrand, & Bégin, 2000). From these findings, we can see that nonverbal synchrony reflects elements of psychological connectedness, romantic compatibility, and relationship quality.

Pronoun Use. Rates of pronoun use reflect important components of psychological and interpersonal functioning. In a study of clinical interviews with individuals, for example, Zimmermann, Wolf, Bock, & Peham (2013) found that the use of "I" correlated positively with interpersonal distress and depressive symptoms, while the use of "we" correlated negatively with depressive symptoms. Because this finding is based on interviews with individuals, it does not necessarily generalize to couples, but it provides a baseline understanding of the power of language in revealing underlying processes.

In conversations with couples, frequent use of "we" may reflect strengths in communal coping and dyad-focused problem solving, whereas frequent use of "I," "you," and "me" may indicate shortcomings in a couple's overall sense of togetherness, or 'we-ness'. Rohrbaugh, Mehl, Shoham, Reilly, and Ewy (2008) analyzed pronoun use among couples in which one partner was being treated for heart failure. Interestingly, only we-talk from the spouses—not from the patients themselves—predicted positive health changes. A subsequent study by

Rohrbaugh, Shoham, Skoyen, Jensen, & Mehl (2012) found that couple we-talk predicted success in quitting smoking. Both rates of we-talk during preliminary interviews and increases in we-talk during the intervention predicted successful outcomes. As a whole, these findings provide strong support for we-talk as an indicator of communal coping in the face of hardship, but they do not reveal much about the possible link between we-talk and relationship satisfaction in general.

Findings regarding we-talk and relationship satisfaction have been mixed. Sillars, Shellen, Mcintosh, and Pomegranate (1997) found that satisfied couples showed more "integrated personal reference" (e.g., "we," "us," "our," etc.), while dissatisfied couples showed more "differentiated personal reference" (e.g., "I," "me," "you," etc.)   A study by Simmons, Gordon, & Chambless (2005) found that couples with higher levels of we-talk were more successful in coming up with mutually satisfactory solutions to problems. Surprisingly, in this problem-solving context, I-talk was positively associated with relationship satisfaction, while we-talk did not associate significantly with relationship satisfaction. The authors suggest that self-focused language in this context may reflect increases in self-disclosure or autonomy. Similarly, Slatcher, Vazire, & Pennebaker (2008) found that we-talk in instant messaging conversations between couples was not significantly associated with relationship satisfaction. Based on these results, it seems that context plays an important role in interpreting pronoun use among romantic dyads.

Findings on we-talk and relationship outcome suggest that we-talk is a positive sign of relationship health when a couple is facing a challenge, solving a problem, or confronting distress. In times of conflict and emotional tumult, when it is particularly easy for partners to turn on each other, we-talk represents a more dyadically-focused or collaborative approach to

navigating such issues. Couples in these difficult situations are at an advantage if they conceive

of their role in the relationship as members of a team rather than two conflicting individuals. But

outside the context of problem solving, conflict, and distress, we-talk fails to differentiate

distressed from non-distressed couples.

High rates of self-focused pronoun use (e.g., "me" and "I") in couples have been

associated with relationship distress (Williams-Baucom, Atkins, Sevier, Eldridge, & Christensen,

2010) and depressive symptoms (Fast & Funder, 2010; Zimmerman et al., 2013). Additionally,

Williams and colleagues found that I-talk among distressed couples associated positively with

relationship satisfaction, whereas I-talk among non-distressed couples associated negatively with

relationship satisfaction. These findings corroborate those in the aforementioned study by

Zimmerman et al. (2013) in which use of "I" by individuals was positively associated with

depressive symptoms. Despite the potential positive role of self-focused language during

distressing situations, findings on self-focused language in other contexts still suggest that it an

indicator of problematic interpersonal processes. Beyond self-focused language, Sillars et al.

(1997) found that differentiating language (e.g., "you" and "me") negatively predicts relationship

satisfaction.   In analyses of conversations between couples during a problem-solving task,

Williams-Baucom et al. (2010) found that distressed couples used "you" and "me" more than

non-distressed couples.

Notable gender differences have also emerged in the examination of self-referencing

language and its implications for romantic relationships. Fast and Funder (2010) found that

men's self-referencing (e.g., "I, I'd, I'll") correlated positively with self-reported narcissism,

while women's self-referencing correlated with depressive symptoms. Another study found that,

among women, use of "I" was positively associated with female relationship satisfaction, while

men's use of "me" was negatively associated with their partner's relationship satisfaction (Slatcher et al., 2008). These gender differences reveal the importance of context in interpreting self-referencing in couples. These findings suggest that men's self-referencing may reveal problematic interpersonal dynamics, while women's self-referencing is more likely to reveal positive communication and the addressing of issues that may have been previously overlooked or ignored by the male partner.

These results indicate that self-focused language can reflect both adaptive and problematic interpersonal patterns within couples. In the context of a distressed relationship, self-referencing may be focused on finding solutions, whereas it may be more complaint-focused in non-distressed couples. For example, when facing conflict or solving a problem, making statements about personal thoughts and feelings may be more adaptive, perhaps from drawing attention to previously-ignored or overlooked problems. Conversely, frequent self-referencing among partners in non-distressed relationships may reflect a lack of attention to the needs of one's partner or to the relationship as a whole.

The goal of the present study is to examine the relationship between nonverbal synchrony and pronoun use in couples. I predict that the two constructs are related in that they are latent indicators of underlying interpersonal connectedness in couples. To my knowledge, no previous research has investigated these two constructs together; furthermore, both constructs are based on observable, nonconscious behaviors, so they are not subject to the limitations of self-report measures. Because both nonverbal synchrony and pronoun use have strong associations with important components of relationship health, I predict that there will be a strong association between the two. Specifically, I present three hypotheses. First, I predict that nonverbal synchrony will correlate positively with "we." Second, I predict that nonverbal synchrony will

correlate negatively with "me." Third, I predict that nonverbal synchrony will correlate

negatively with "I."

<div align="center">Method</div>

Participants

Participants were cohabiting, opposite-sex couples who reported being in a committed

intimate relationship. All participants had taken part in RelationshipRx (Gordon, 2014), a brief

relationship intervention program aimed at couples who may not have the means to participate in

couples' therapy. The sample used for the current study consisted of 19 opposite-sex couples

($N=38$), a subset of a sample of 150 couples used for a similar study by Wischkaemper (2016).

All couples included in the present study consented to being electronically recorded for their

interviews. The RelationshipRx program and the questions asked to participants were approved

by the Institutional Review Board at the University of Tennessee.

Procedure

RelationshipRx. The RelationshipRx program (Gordon, 2014) consists of two main

components: Assessment and Feedback. During Assessment, participants are asked to provide

demographic information, self-reports of relationship satisfaction, and self-described strengths.

During Feedback, generally about two weeks after Assessment, couples are provided with

information about the health of their relationship, often including suggestions and community

resources available to them. Samples used to examine pronoun use in the present study were

from the Assessment portion in which partners were asked to describe their strengths.

Additionally, I included responses to partners' self-described strengths. For example, when I

included a sample of a woman describing the perceived strengths of her marriage, I also included

the frequency of pronoun use in the husband's response to the woman's strengths.

Transcription. To examine pronoun use, a group of trained undergraduate research assistants transcribed interviews using Linguistic Inquiry and Word Count (LIWC). In order to ensure consistency, all research assistants were required to read the LIWC owner's manual and attend regular lab meetings, where they could ask questions and participate in guided practice exercises with a trained supervisor. Research assistants transcribed ten-minute segments of the recorded conversations according to the LIWC owner's manual. They were also trained to exclude fillers (e.g., "you know" and "I mean"), as these phrases do not qualify as pronouns for the purposes of this study.

Motion Energy Analysis (MEA). To calculate nonverbal synchrony objectively and without the limitations of human frame-by-frame coding, MEA was used to calculate synchrony in couples. The MEA program can analyze frame-by-frame changes in body movement between two partners, providing an objective, reproducible method for calculating synchrony. Research assistants were trained in using MEA on the digital video files of couples' interactions, selecting one region of interest for each partner. Using the mouse of the computer, research assistants shaded the area surrounding each partner and followed particular instructions regarding the settings of the program. For more information on MEA and its utility in calculating nonverbal synchrony, see Ramseyer & Tschacher (2011).

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Results

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The relationship between nonverbal synchrony (as measured by the MEA program) and rates of "we," "me," and "I" (as measured by the LIWC program) was examined using the Pearson product-moment correlation coefficient. There was a strong, positive correlation between nonverbal synchrony and total use of "we," $r = .537$, $n = 38$, $p < .0002$, with high levels of we-talk associated with higher levels of synchrony. There was a moderate, negative

correlation between nonverbal synchrony and total use of "me," $r = -.343$, $n = 38$, $r < .018$, with

higher levels of me-talk associated with lower levels of synchrony. Finally, there was a

moderate, negative correlation between nonverbal synchrony and total use of "I," $r = -.251$, $n =$

38, $p < .064$, with higher levels of I-talk associated with lower levels of synchrony. Correlations

between nonverbal synchrony and total pronoun use, as well as pronoun use specifically during

strengths discussions and responses, are shown in Table 1.

Table 1

Pearson Correlations Between Nonverbal Synchrony and Pronoun Use in Couples

Measure	Correlation	Significance	N
We: total	.537**	.0002	38
We: strengths	.447**	.002	38
We: responses	.556**	.0001	38
Me: total	-.343*	.018	38
Me: strengths	-.271	.050	38
Me: responses	-.228	.085	38
I: total	-.251	.064	38
I: strengths	-.243	.071	38
I: responses	-.230	.082	38

Note: $* = p < .05$, $** = p < .01$. Measures followed by "strengths" and "responses" are

subcategories of total pronoun use, separated into strengths discussions and partner

responses. Measures followed by "total" signify combined strengths and responses.

Correlations between nonverbal synchrony and use of "we" were significant across both descriptions of strengths and partner responses. Correlations between synchrony and use of "me" were significant in the total group, but they were not significant when split into strengths and responses. While correlations between nonverbal synchrony and use of "I" were insignificant, all correlations were in predicted directions and approaching significance.

Discussion

Results support all three hypotheses presented for the current study. The associations between nonverbal synchrony and pronoun use support the general hypothesis that both constructs reflect underlying components of relationship health and psychological connectedness. The positive association between nonverbal synchrony and we-talk corroborates previous findings that we-talk is a sign of interpersonal connectedness and compatibility (Sillars et al., 1997; Simmons et al., 2005). Furthermore, the negative association between nonverbal synchrony and self-focused pronoun use (e.g., "me" and "I") is partially consistent with previous findings that self-focused language is a sign of relationship distress and interpersonal problems (Fast & Funder, 2010; Williams-Baucom et al., 2010). Overall, these findings align with previous research on both nonverbal synchrony and pronoun use.

Despite the strong correlations found in the present study, it has a few pertinent limitations. Most importantly, the design of the current study did not allow for the examination of the nuances of self-focused language across different contexts. As previously discussed, self-focused language among distressed couples may be a positive sign, while it may represent more problematic dynamics among satisfied couples; furthermore, self-focused language may play a positive role in problem-solving situations (Williams-Baucom et al., 2010). The interviews used in this study include only discussions of self-identified relationship strengths and partner

responses to those discussions. Therefore, future studies should examine the intricacies of nonverbal synchrony and pronoun use in a wider array of contexts, such as problem-solving tasks and distressing situations. Future research should also examine these constructs in conversation topics of varying emotional salience. For example, if a couple were asked to describe how they met and fell in love, the relationship between nonverbal synchrony and pronoun use may be different than if they were asked to discuss their most difficult reoccurring problems. Using these findings as a foundation, the nature of the relationship between pronoun use and nonverbal synchrony can be further explored with regard to specific constructs such as gender or conversation topic.

Another limitation of this study is the relatively small sample size of 19 couples (N=38). Despite this limitation, significant correlations were found between nonverbal synchrony and use of "we" and "me." As shown in Table 1, the insignificant correlations found in the subcategories of "me" use (strengths and responses), as well as the insignificant correlations found in the "I" use category, were in the predicted direction and approaching significance. I predict that these correlations will reach significance with a larger sample size and, therefore, additional power. Future research should seek to flesh out these hopeful findings in further detail across different contexts and cultures.

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