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Affective Language Spreads Between Anxious Children and Their Mothers During a Challenging Puzzle Task

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Humans influence each other's emotions. The spread of emotion is well documented across behavioral, psychophysiological, and neuroscientific levels of analysis, but might this influence also be evident in language (e.g., are people more likely to use emotion words after hearing someone else use them)? The current study tests whether mothers and children influence each other's use of affective language. From 2018 to 2020, children aged 6–12 who met diagnostic criteria for anxiety disorders and their mothers ($N = 93$ dyads) completed a challenging puzzle task while being video recorded. Analyses of transcriptions revealed that mothers and children indeed influenced each other's language. Bidirectional influence was observed for use of negative affect words: Mothers were more likely to use negative affect words if their child had just used negative affect words (over and above mothers' own language on their previous turn), and children were similarly influenced by mother affect word use. A similar bidirectional relation emerged for *linguistic distance*, a measure related to effective emotion regulation and mental health. However, the significance of the child-to-mother direction of influence for these two variables varied depending on correction threshold and should thus be verified in future research. Nonetheless, these findings extend understanding of emotional influence by showing turn-by-turn relations between the use of affective language.

Keywords: parent–child interactions, language, emotion, anxiety, emotional influence

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Our emotions are strongly influenced by people around us. Emotional influence is evident across several levels of analysis, including self-report (Brown et al., 2021), behavior (Cialdini et al., 1990; Nook et al., 2016), psychophysiology (Palumbo et al., 2017; Thorson et al., 2018; Wass et al., 2019; Waters et al., 2014), and neuroimaging (Lee et al., 2018; Nook & Zaki, 2015). However, whether emotional influence occurs at the *linguistic* level of analysis remains an open question: Do people influence each other's use of affective words? There are two major bodies of work supporting the notion that affective language should indeed spread across individuals.

First, affective scientists and social psychologists have shown that emotions spread across individuals. When mothers are exposed to acute stressors and then reunited with their infants, their infants show elevated signs of physiological arousal, even though they themselves were not exposed to the stressor (Waters et al., 2014, 2017). When people see group ratings for how desirable they find stimuli, they shift their own ratings toward those of others, and parallel shifts occur in brain regions thought to encode value

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(Klucharev et al., 2009; Nook & Zaki, 2015; Zaki et al., 2011). When people read emotional comments from others online, they later produce posts that share those emotions (Brady et al., 2021; Goldenberg & Gross, 2020; Kramer, 2012). These lines of work suggest that emotions are social forces that can rapidly move between individuals in a group. Given this, it is plausible that social transmission of emotion will also be evident in shared use of affective language. Studies have shown overall correlations in the use of affect words across dyads (Bauer et al., 2005; Niederhoffer & Pennebaker, 2002; Ogren & Sandhofer, 2021) and that social media users are more likely to use affect words when their friends do so (Kramer, 2012). However, these studies leave open the question of whether people influence each other's use of affect words on a turn-by-turn basis. Do people *dynamically* influence each other's use of emotional language? If so, this could reflect dynamic shifts in interpersonal emotion processes over the course of a social interaction, giving us an unobtrusive and ubiquitous tool for measuring these important social phenomena.

Second, basic cognitive science has demonstrated that people tend to *align* their language with other people (Doyle & Frank, 2016; Giles & Powesland, 1997; Pickering & Ferreira, 2008). Over the course of a conversation, people repeat the words they hear others say, talk about things that are semantically related to their conversation partner, and even shift the pace and pronunciation of their words to converge with others (Dideriksen et al., 2019; Pardo, 2013; Street, 1984; Xu & Reitter, 2015). This linguistic alignment has been documented in several settings, including in child–adult conversations (Dale & Spivey, 2006; Fernández & Grimm, 2014; Misiek et al., 2020). Interestingly, although both children and adults tend to align their speech with each other, adults seem to align more strongly than children (i.e., there is stronger child-to-adult influence than the reverse; Denby & Yurovsky, 2019; Foushee et al., 2021; Yurovsky et al., 2016). Growing evidence suggests that this alignment facilitates word learning in children (Denby & Yurovsky, 2019; Foushee et al., 2021). This body of research suggests that people spontaneously take on others' words to align themselves and facilitate communication during a conversation. However, specific attention to linguistic alignment about *affective* language has been neglected, even though alignment on affective language could reflect important interpersonal emotion processes.

In particular, there are several candidate linguistic variables that deserve attention, given prior work demonstrating their relation to affect or affect regulation. First, use of both positive and negative affect words (e.g., "fight," "mad," "help," "happy") have been associated with self-reported affect (Kahn et al., 2007; Nook, Schleider & Somerville, 2017). Greater spread of these words could indicate emotional influence. Additionally, research shows that using language to "distance" oneself from negative stimuli by reducing use of the word "I" and present-tense verbs (e.g., replacing "I hate this" with "that was hard") can down-regulate negative emotions (Kross et al., 2014; Nook, Schleider & Somerville, 2017). Greater linguistic distancing is associated with effective emotion regulation and mental health in both youth and adults (Cohen et al., 2022; Edwards & Holtzman, 2017; Kross et al., 2017; Nook et al., 2022; Nook, Schleider & Somerville, 2017; Nook, Vidal Bustamante, et al., 2020; Orvell et al., 2019; White et al., 2017). As such, interpersonal transmission of linguistic distance could reflect the contagious spread of psychological distancing, and subsequent emotion regulation or dysregulation.

In this study, we test the hypothesis that one conversation partner's use of affective language can be predicted from the other partner's word use on their previous "turn." We capture these naturalistic exchanges while dyads engage in a challenging task of attempting to solve difficult puzzles while under time pressure. In this "Tangrams task," participants are given a set of puzzle pieces and asked to assemble them into as many predefined shapes as possible while being monitored by an experimenter and under time pressure. This task is well-utilized in the developmental and clinical literatures to test behavioral responses to this affective challenge (Chan et al., 2021; Clarke et al., 2013; Corpus & Lepper, 2007; Hudson & Rapee, 2001; Park et al., 2017; van der Bruggen et al., 2010). We posited that linguistic transmission of affective language may be especially likely while participants were attempting to collaboratively solve frustrating puzzles, making this a prime setting for conducting this research. Specifically, we hypothesized that when one conversation partner used more positive or negative affect words, the other conversation partner would then be more likely to use positive or negative words on their next turn. We also posited that when one person spoke with higher linguistic distance, the other person would use more distanced language on their next turn. This linguistic influence could reflect the spread of affect and its regulation or a broader linguistic alignment process in which dyads naturally conform to each other's language.

Although the spread of affective language across individuals is likely a general interpersonal phenomenon, here we examine it specifically within dyads composed of children with anxiety disorders and their mothers. Prior research has shown that these dyads have heightened affective synchrony (i.e., alignment in psychophysiological measures; Pérez-Edgar et al., 2021; Perlman et al., 2022; Smith et al., 2021), meaning that these dyads may demonstrate heightened spread of affective language and making them well-suited for testing our research questions. And conversely, prior research on linguistic alignment on child–adult pairs has studied unselected populations, making it unknown the extent to which linguistic alignment occurs in these dyads. Given that prior research has demonstrated that parents tend to overly accommodate anxious children (e.g., taking over for them in conversation or helping them avoid stressful situations; Lebowitz et al., 2013), we also examined interpersonal influence in word count. Here, we specifically hypothesized that when mothers spoke more on their turn, their children would speak less on their subsequent turn.

Finding language-based emotional influence in any context melds prior research on affective influence with our understanding of linguistic alignment. Identifying the dynamic spread of affective language on a turn-by-turn basis would open new avenues for inquiry regarding the affective and psychological processes producing this spread, as well as the ways in which these dynamics might vary as a function of mental health, context, or interpersonal functioning. In particular, finding these relations specifically within an anxious population could advance translational understanding of how parent–child dynamics function differently in children with and without anxiety disorders, thereby laying groundwork for future research to test whether heightened interpersonal spread of affective language is a marker of anxiety and/or whether changing parent or child language shifts interpersonal regulation in these dyads.

Method

Participants

Data for this study were collected as part of a randomized controlled trial (RCT) of psychosocial treatments for pediatric anxiety conducted in 2018–2020. Ninety-five mother–child dyads provided informed assent–consent for the trial and completed measures at their baseline evaluation. To be included in lagged linguistic analyses (see below), dyads must have each taken at least three turns of speech. Two dyads were consequently excluded, resulting in a usable sample of $N = 93$ dyads (see Table 1 for demographics). Key inclusion criteria for the RCT required that child participants were 6–12 years old, met symptom criteria for a primary anxiety disorder, and were eligible for fMRI scanning (see online supplemental materials for full criteria). This portion of childhood was well-suited to our research questions because (a) it represents a key period of risk for the development of anxiety disorders, (b) language is sufficiently developed to allow for dyadic exchanges, (c) it overlaps with an age range shown to distance language during regulation, and (d) heightened parent–child synchrony in anxiety is already established in infancy and early childhood (Kessler et al., 2005; Nook, Vidal Bustamante, et al., 2020; Perlman et al., 2022; Smith et al., 2021). Sample size was determined by a power analysis at the time of submission of the National Institutes of Mental Health (NIMH) grant that funded the current work. All procedures were approved by the Yale University IRB #2000023649, “Brain response associated with parent-based treatment for childhood anxiety disorders.”

Procedure and Dependent Measures

This study focuses on measures collected during the baseline session of the RCT (i.e., before treatment began). During this session, mother–child dyads completed a challenging puzzle task called the Tangrams task, while being video recorded. Each speech “turn” (i.e., contiguous stream of speech from either the mother or child) was transcribed and used in linguistic analyses.

Tangrams Task

The Tangrams task (Hudson & Rapee, 2001) involved the mother and child working together to solve as many visuospatial puzzles as they could in 7 min. This task is a well-used paradigm to observe behavioral responses to negative affect induced by a challenging task (Chan et al., 2021; Clarke et al., 2013; Corpus & Lepper, 2007; Hudson & Rapee, 2001; Park et al., 2017; van der Bruggen et al., 2010). Specifically, a trained researcher gave the participants a set of blocks and a deck of cards with shapes on them. Participants were instructed to arrange the blocks so they formed the shapes displayed on the cards (see online supplemental materials for task instructions). However, the task was designed such that it is very difficult to fit the puzzle pieces together to make the expected diagrams, and the experimenter expects participants to finish as many puzzles as they can under time constraints. As such, the task provides an optimal context in which to assess interpersonal reactions to negative affect. The experimenter provided no feedback to participants during the task.

Linguistic Variables

Audio exchanges during video recordings of the Tangrams task were transcribed and processed using Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2007). LIWC computes the proportion of words in a passage of text that falls within predefined categories. We extracted four linguistic measures for each “turn” of both mother and child speech: negative affect words, positive affect words, linguistic distance, and word count. Negative affect words broadly represent the use of words that convey a negative connotation (e.g., fight, bad, mad), and the reverse is true for positive affect words (e.g., good, cheer). Following prior work (Cohn et al., 2004;

Table 1
Participant Demographics and Language Characteristics

Demographic factor	Full sample	Children	Mothers
N	93 Dyads	93	93
Age	2014	$M = 8.20$, $SD = 1.67$	—
Sex	—	33 female (35.48%), 60 male (64.52%)	93 female (100%)
Race[a]			
Asian	—	2 (2.25%)	3 (3.37%)
Black or African American	—	3 (3.37%)	4 (4.49%)
Multiracial	—	10 (11.24%)	4 (4.49%)
White	—	74 (83.15%)	78 (87.64%)
Ethnicity[b]			
Hispanic or Latino	—	11 (12.22%)	7 (7.87%)
Not Hispanic or Latino	—	79 (87.78%)	82 (92.13%)
Family income[a]			
$21,000–$40,999	5 (5.62%)	—	—
$41,000–$60,999	5 (5.62%)	—	—
$61,000–$80,999	9 (10.11%)	—	—
$81,000–$99,999	9 (10.11%)	—	—
$100,000–$124,999	13 (14.61%)	—	—
$125,000–$149,999	8 (8.99%)	—	—
$150,000+	40 (44.94%)	—	—
Number of speech turns	6,519	3,232 (49.58%)	3,287 (50.42%)
Length of turns (audible words)	$M = 8.40$, $SD = 9.75$	$M = 6.61$, $SD = 6.76$	$M = 10.13$, $SD = 11.69$
Number of audible words/person	$M = 289$, $SD = 168$	$M = 224$, $SD = 137$	$M = 355$, $SD = 171$
Fully inaudible turns	112 (1.72%)	84 (2.60%)	28 (0.87%)
Inaudible words per turn	$M = 0.09$ (1.04%)	$M = 0.11$ (1.36%)	$M = 0.07$ (0.74%)

Note. Percentages represent proportions of available data.
[a]Race and family income was not reported for 4 dyads. [b]Ethnicity was not reported for 3 children and 4 mothers.

Nook, Schleider & Somerville, 2017), linguistic distance was computed by extracting the proportion of words that were first-person singular pronouns (e.g., "I," "me"), present-tense verbs (e.g., "give," "help"), articles (i.e., "the," "a"), discrepancy words (e.g., "could," "should"), and words greater than 6 letters for each turn. We *z*-scored each measure across all turns for both mothers and children; reversed the *z*-scored measures of first-person singular pronouns, present-tense verbs, and discrepancy words by multiplying them by −1; and averaged these *z*-scored measures for each turn. Higher linguistic distance indicates that the speaker's language is more removed from oneself and the present moment, whereas low linguistic distance indicates the speaker is more focused on oneself and the here and now. Finally, we used LIWC's word count variable as a measure of the number of words spoken by a child or their mother on each of their turns. Of note, the available amount of linguistic data (approximately 35 speech turns and 289 words per person, see Table 1) was comparable to if not larger than other studies of linguistic distancing (Cohen et al., 2022; Nook, Vidal Bustamante, et al., 2020).

Analytic Approach

The current study examined dyadic relations between child and mother language during the Tangrams puzzle task. First, two data files were created, one for analyses testing how child language predicts mother language, and one for analyses testing how mother language predicts child language. The first dataset began with the child's first turn (i.e., if the mother spoke first, that turn was discarded), and linguistic measures of each child turn were aligned with linguistic measures of their mother's subsequent turns. The second dataset began with the mother's first turn (i.e., if the child spoke first, that turn was discarded), and linguistic measures of each mother's turn were aligned with linguistic measures of their child's subsequent turns. We also produced "lagged" versions of linguistic variables in each dataset (e.g., in the dataset used for testing how child language predicts mother language, we also aligned each child turn with the mother's language on their previous turn, allowing us to control for mother's language on their previous turn when testing how child language predicts subsequent mother language).

Analyses involved mixed-effects models at the turn level implemented through the *lme4* package (Bates et al., 2015) in R (R Core Team, 2021). All analyses included participant ID as a random intercept with turns nested within dyads. For each dependent variable (i.e., negative affect words, positive affect words, linguistic distance, and word count), we tested the hypotheses that (a) children's language on their turn would predict mothers' language on their subsequent turn, over and above mothers' own language on their previous turn and (b) mother language on their turn would predict child language on their subsequent turn, over and above their child's own language on their previous turn. Negative and positive affect words had highly zero-inflated distributions. We attempted log transformations, negative binomial regressions, and zero-inflated negative binomial regressions, but all yielded unacceptable regression diagnostics. As such, we dichotomized turns (0 = no affect words, 1 = affect words) and analyzed them using mixed-effects logistic regressions. Model diagnostics were then acceptable. Word count also had a skewed distribution but model diagnostics stabilized after adding 1 and log transforming raw word count values.

We followed conventional steps regarding mixed-effects model building. We began by only including random intercepts for participant and tested whether adding random slopes of each predictor significantly improved fit using model comparisons. Results of these tests showed that random slopes were only indicated for one analysis (mother linguistic distance predicting child linguistic distance), and the significance of the key result did not change after adding random slopes. We intentionally only investigated four dependent variables to constrain our search space and reduce the possibility of false-positive results. Nonetheless, for additional rigor in interpreting our results, we applied Benjamini–Hochberg correction for multiple comparisons to key analyses (Benjamini & Hochberg, 1995). This correction suggests that all significant *p*-values survive correction when a 10% false discovery rate (FDR) is applied, but two results indicated in Table 2 fail to meet correction when a 5% FDR is applied (note that FDRs up to 20% are deemed suitable, depending on context; McDonald, 2009).

Odds ratios (OR) are reported for mixed-effects logistic regressions and standardized betas (β) are reported for linear mixed-effects model results to provide estimated effect sizes, along with 95% confidence intervals (CI). Standardized betas were computed by standardizing variables at the turn level (i.e., across all speech turns in the dataset, the smallest unit of measurement) using the "basic" option of the *standardize_parameters* function in the *effectsize* package (Ben-Shachar et al., 2020). Unstandardized regression statistics including intercepts for each model are provided in Table S1 in the online supplemental material.

Transparency and Openness

Data and analytic code are available at https://github.com/Yale-CANDLab. These analyses were not preregistered and should be considered exploratory.

Results

Negative Affect Words

Bidirectional relations were observed between mother and child negative affect word use (Table 2). When children used negative affect words during their turn, mothers were significantly more likely to use negative affect words in their subsequent turn (OR = 2.16, $p = .043$), over and above whether the mother used negative affect words on their preceding turn. Similarly, whether a mother's turn included negative affect words significantly predicted whether a child would use negative affect words in their subsequent turn (OR = 2.57, $p = .009$), over and above whether the child used negative affect words in their preceding turn. Although all results survive correction for multiple comparisons at 10% FDR, the first of these results (child language predicting mother language) did not survive correction at 5% FDR.

Positive Affect Words

Whether a child used positive affect words during their turn significantly predicted whether mothers would use positive affect words in their subsequent turn, over and above whether the mother used positive affect words on their preceding turn (OR = 1.31, $p = .012$; Table 2). However, the reverse direction (mother-to-child) did not reach significance (OR = 1.17, $p = .139$).

Table 2

Results from Mixed-Effects Regression Models Testing Dyadic Relations Between Child and Mother Language

Predictor	Negative affect words			Positive affect words			Linguistic distance			Word count (log)		
	OR	95% CI	*p*	OR	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Child language predicting mother language												
Child language	**2.16**	**[1.02, 4.55]**	**.043**[a]	**1.31**	**[1.06, 1.62]**	**.012**	**.04**	**[0.002, 0.07]**	**.039**[a]	−0.03	[−0.08, 0.01]	.098
Mother language on prior turn	**2.80**	**[1.53, 5.15]**	**<.001**	1.08	[0.91, 1.28]	.388	**.05**	**[0.02, 0.09]**	**.005**	.004	[−0.03, 0.04]	.822
Mother language predicting child language												
Mother language	**2.57**	**[1.27, 5.21]**	**.009**	1.17	[0.95, 1.45]	.139	**.07**	**[0.03, 0.10]**	**<.001**	**−.06**	**[−0.09, −0.02]**	**.002**
Child language on prior turn	1.60	[0.71, 3.60]	.256	**1.34**	**[1.04, 1.72]**	**.024**	.02	[−0.03, 0.07]	.389	**.06**	**[0.02, 0.10]**	**.001**

Note. Negative affect words and positive affect words were dichotomized on each turn (0 = no affect words, 1 = affect words present) to improve regression diagnostics. These dichotomized variables were analyzed using mixed-effects logistic regressions. All other variables were continuous and analyzed using linear mixed-effects regressions (with word count log transformed to improve regression diagnostics). Bold indicates $p < .05$ (uncorrected). OR represents the odds ratio for logistic regressions, and β represents the standardized coefficient for linear regressions. 95% CI = 95% confidence interval.
[a]Survives 10% false discovery rate correction but fails 5% false discovery rate correction for multiple comparisons.

Linguistic Distance

Bidirectional relations between mother and child linguistic distance also emerged (Table 2). The linguistic distance of a child's turn significantly predicted the linguistic distance of their mother's subsequent turn ($\beta = .04$, $p = .039$), even after controlling for the linguistic distance in the mother's preceding turn. Conversely, the linguistic distance of a mother's turn significantly predicted the linguistic distance of a child's subsequent turn ($\beta = .07$, $p < .001$), over and above the linguistic distance in the child's preceding turn. Although all results survive correction for multiple comparisons at 10% FDR, the first of these results (child language predicting mother language) did not survive correction at 5% FDR.

Word Count

When mothers spoke more words during their turn, children used significantly fewer words on their next turn, over and above child word count on their previous turn ($\beta = -.06$, $p = .002$; Table 2). The reverse effect (child-to-mother) was not significant ($\beta = -.03$, $p = .098$).

Discussion

We tested whether linguistic markers of affect and affect regulation would spread between children with anxiety and their mothers during a challenging puzzle task. We found significant bidirectional influence for negative affect terms, such that both mothers and children were more likely to use negative affect words when their interaction partner had previously done so. Although bidirectional influence was also observed for linguistic distance, the child-to-mother relationships for these two variables did not survive more stringent correction for multiple comparisons. Unidirectional influence emerged for positive affect terms and word count, such that mothers were more likely to use positive affect words when their children had done so on their previous turn, and children were more likely to speak fewer words when their mothers spoke more words on their previous turn. These results shed light on the dynamic influence of affective language in mother–child dyads.

Prior research has established that emotions readily spread from individual to individual, but a paucity of research has specifically focused on dynamic turn-based linguistic transmission of affective language between dyads. We document this process within the context of a frustrating task: When one conversation partner uses a negative affect word, the other was more likely to do so, too, even after controlling for that partner's previous language use. Conversely, we found that linguistic distance—which prior work has connected to both cognitive emotion regulation and mental health (Nook et al., 2022; Nook, Schleider & Somerville, 2017; Orvell & Kross, 2019)—also spread across conversation partners. Given prior research on the affective correlates of these words, these results might suggest that language tracks how affect and affect regulation "spread" across individuals within a dyad. In the context of the frustrating puzzle task, this implies that language may be a tool for documenting interpersonal dysregulation that "jumps" from individual to individual, just as negative affect has been shown to spread interpersonally across other levels of analysis (Palumbo et al., 2017; Thorson et al., 2018; Wass et al., 2019; Waters et al., 2014).

There are two important caveats for this interpretation, however. First, results for child language predicting mother language were on the border of significance for negative affect words and linguistic distance. Although all results survive correction for multiple comparisons at 10% FDR, they fail at 5% FDR. Given that this is an initial exploratory study of these relations, we present these thresholds for transparency and highlight that future research should verify whether or not these relations are truly bidirectional. Second, because we did not assess actual affect during the task, it is not certain that these results reflect actual spread of emotion but rather a natural alignment of language that has been documented for other word classes (Dale & Spivey, 2006; Dideriksen et al., 2019; Doyle & Frank, 2016; Fernández & Grimm, 2014; Misiek et al., 2020; Pickering & Ferreira, 2008). In fact, this natural convergence in language (a) is often stronger for the child-to-parent direction than the parent-to-child direction and (b) has been shown to positively predict child word learning (Denby & Yurovsky, 2019; Foushee et al., 2021; Yurovsky et al., 2016). From this lens, our results may reflect group coordination. Identifying the affective and cognitive processes underlying the linguistic spread of affective language is an exciting frontier of future research, a point we return to below.

Interestingly, whereas negative affect words showed a bidirectional spread between mothers and children, positive affect words showed only a monodirectional spread from children to mothers. Although we hypothesized a similar bidirectional relationship for positive affect words, there are a few reasons this monodirectional relationship may emerge. People tend to give greater attention to negative than positive information (Baumeister et al., 2001; Rozin & Royzman, 2001), and recent studies have shown stronger influence of negative than positive language on social media posts (Schöne et al., 2021). This may lead children (especially anxious children, Abend et al., 2018; Fu & Pérez-Edgar, 2019; Puliafico & Kendall, 2006) to not be as sensitive to taking on positive affective language expressed by their mothers as they do for negative language. It is also possible that mothers aim to amplify or "capitalize on" their child's positive affect specifically, potentially due to common observation that praise can be highly effective in motivating behavior change in children (Leonard et al., 2021). This process could also be especially pronounced in the current sample, as mothers may have sought to emphasize positive information for youth who are chronically anxious. These plausible interpretations require further research in studies that assess the spread of positive and negative affect language in other populations and further probing of the function of positive and negative affect language transfer. Relatedly, as mentioned above, child-to-parent linguistic alignment for nonemotional language tends to be stronger than the reverse (Denby & Yurovsky, 2019; Foushee et al., 2021; Yurovsky et al., 2016). This would provide a general explanation for the unidirectional influence of children on mothers for positive affect words, although it is notably inconsistent with the potentially unidirectional influence of mothers on children for negative affect words and linguistic distance discussed above.

We found these turn-by-turn relations specifically between children with anxiety and their mothers. There are benefits to examining these questions in this sample: (a) it is a population known to have heightened interpersonal physiological synchrony (Perlman et al., 2022; Smith et al., 2021), (b) it is homogenous and potentially limits variance that may arise in mother versus father dyads (e.g., Karnilowicz et al., 2019; Waters et al., 2020), and (c) it lays a foundation for translational research on child psychopathology. However, this focused sampling also imposes limitations in the breadth of generalizations we can draw from these results. In particular, even though prior research has found that the relation between linguistic distancing and emotion regulation is stable across ages 10–23 (Nook, Vidal Bustamante, et al., 2020), and that linguistic distancing facilitates performance regardless of one's level of anxiety (Kross et al., 2014), it is not certain that the dyadic linguistic processes we observed in this study would also generalize to other ages and levels or types of psychopathology. Additionally, our study leaves open the question of whether these patterns differ when fathers rather than mothers are included (Karnilowicz et al., 2019; Waters et al., 2020), or when the other conversant is a peer. Nonetheless, it is promising to show that linguistic distance "travels" from parent to child and back again, given that this metric has been associated with successful emotion regulation and mental health in both youth and adults (Cohen et al., 2022; Nook et al., 2022; Nook, Schleider & Somerville, 2017; Nook, Vidal Bustamante, et al., 2020).

Relatedly, we found that when mothers spoke more on a turn, children spoke less. This is consistent with contemporary models of youth anxiety in which overinvolvement or accommodation by parents facilitates avoidance in youth (Lebowitz et al., 2013), suggesting that word count *may* be a measure of this dyadic process typical of youth anxiety. However, because we do not compare anxious and non-anxious children, we cannot attribute this finding to anxious accommodation based on these data alone. It is also possible that this relationship reflects other processes, although the mechanism would need to explain why mother word count predicts reduced child word count and not the reverse. This finding consequently prompts future studies that test whether mother–child word count dynamics might be a measure of youth anxiety or predict other instances of parental accommodation that are both similar (e.g., speaking for children when in conversation with strangers) or dissimilar (staying home from school when anxious) to the specific phenomenon assessed here.

A few key limitations of this study deserve discussion. As noted above, negative affect word use does not necessarily imply that an individual is *feeling* negatively (Kross et al., 2019), and dyads may be coordinating affective language without sharing emotional experiences (Doyle & Frank, 2016). As such, future research would need to measure negative affect itself to clarify this interpretation. Additionally, exploring whether the spread of affective language is associated with better or worse task performance could clarify whether these patterns are helpful or harmful to collaboration. Second, although we focus on affective language in the *context* of youth anxiety, we have not demonstrated relations *with* symptoms of psychopathology. Comparing affective language spread in anxious and non-anxious youth could test whether these linguistic processes are indeed amplified in anxious children, as other evidence would suggest. Third, we focus on a fairly broad period of childhood (ages 6–12), and although this sample provides a strong fit with our research questions (as noted previously), it leaves open the question of how these relations might differ at other ages. Testing whether these linguistic effects vary as a function of language development is a particularly interesting direction of future research (Hoemann et al., 2019; Nook et al., 2017; Nook, Stavish, et al., 2020; Ogren & Johnson, 2020; Ruba et al., 2020). Finally, the current study is correlational in nature. Even though the lagged and within-person structure of our analyses allows us to ascertain direction of influence, it is nonetheless possible for there to be third variables that explain our results (e.g., seeing a specific puzzle pattern could lead both participants to make the same verbal utterances). Future experiments could test whether manipulating affective language in one partner causes changes in affective language of the other partner.

Nonetheless, our results provide novel insight regarding interpersonal influence of affective language, bringing together prior research on emotion contagion and linguistic alignment. These findings open new lines of research that tests questions such as (a) how the spread of affective language relates to dyadic emotional experiences and regulation, (b) whether language can serve as a marker of interpersonal emotion functioning as it does for intrapersonal wellbeing (Nook et al., 2022), (c) whether the spread of affective language is influenced by either levels of anxiety in children or parents, and (d) whether manipulating emotion language could serve to regulate others' emotions (Zaki & Williams, 2013). These and other questions would advance our ability to detect and potentially intervene on dyadic emotion processes using language alone.

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