

# Pronoun Use during Patient-Caregiver Interactions: Associations with Caregiver Well-Being

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## Keywords

Dementia · Caregiving · Language · Well-being · Pronouns · Social interaction

## Abstract

**Introduction:** Caring for a spouse with dementia can be extremely challenging. Many caregivers experience profound declines in well-being; however, others remain healthy. **Objective:** This study determined whether the personal pronouns used in interactions between persons with dementia (PWDs) and their spousal caregivers were associated with caregiver well-being. **Methods:** Fifty-eight PWDs and their spousal caregivers engaged in a 10-min conversation about an area of disagreement in a laboratory setting. Verbatim transcripts of the conversation were coded using text analysis software, and caregivers and PWDs each received scores for (a) I-pronouns, (b) you-pronouns, and (c) we-pronouns. Caregivers' well-being was assessed using a composite measure of depression, anxiety, burden, and strain. **Results:** Results revealed that less use of we-pronouns by caregivers

and PWDs and greater use of I-pronouns by PWDs were associated with lower caregiver well-being. **Conclusions:** These findings indicate that less use of pronouns that refer to the couple (we-pronouns used by either partner) and greater use of pronouns that refer to the PWD (I-pronouns used by the PWD) are indicative of caregivers at heightened risk for lower well-being.

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## Introduction

Caring for a loved one with a neurodegenerative disease can be a highly meaningful and fulfilling part of family life [1, 2]. However, the demands of caregiving cause many to experience profound declines in well-being, including increased depression, anxiety, burden, and strain [3]. Research on the causes of declines in caregiver well-being [3–12] has largely focused on factors related to the external environment (e.g., social support) [4], the person with dementia (PWD; e.g., particular symptoms) [3–9],

or the caregiver (e.g., age, gender) [3, 4, 10] that contribute to caregiver vulnerability. While research has linked relationship quality with declines in caregiver well-being [13, 14], less attention has been given to the specific characteristics of the PWD-caregiver relationship, such as the ways that PWDs and caregivers communicate and interact. Examining declines in caregiver well-being in the context of the PWD-caregiver relationship could be highly informative given prior research that indicates that caregiver outcomes are highly impacted by the interpersonal nature of caregiving [13–18].

Dementia can alter the nature of the PWD-caregiver relationship [14, 15, 17, 18] in ways that create additional stress and strain for caregivers. For example, PWDs may progressively withdraw from the social world, which can increase the sense of isolation and loneliness in caregivers and contribute to the development of depression [19]. This can be particularly true for spousal caregivers, for whom the loss of a life partner significantly reduces the size and richness of their social world.

## Using Language to Understand the Nature of Intimate Relationships

### *Healthy Couples*

The words that people use in their interactions with relationship partners can provide important clues about their own thoughts and feelings as well as the nature of the relationship [20, 21]. One particularly revealing characteristic of the language used in interpersonal interactions is pronoun usage. Pronouns can provide important clues about how partners think about and relate to each other [20, 21]. For example, researchers have distinguished between the use of *we-ness* pronouns (e.g., we, us, ours) and *separateness* pronouns (e.g., I, me, yours) as indicators of how partners view themselves in relation to each other [20]. According to this viewpoint, greater relative use of *we-ness* versus *separateness* pronouns indicates that the partners identify themselves as part of a team rather than as autonomous individuals. Given that research suggests that happy couples have higher inclusion of other in self and greater cognitive interdependence [22, 23], assessing *we-ness* has become an important method for objectively measuring mutuality between relationship partners [24].

Prior research with healthy couples has shown that greater use of *we*-pronouns is related to a number of different positive relationship outcomes [25] including greater relationship commitment, intimacy, feelings of togetherness, and marital quality [22, 26]. Greater *we*-

pronoun use has also been associated with lower cardiovascular arousal, more positive emotional behavior, and more adaptive problem-solving behaviors when conflict arises [20, 27].

In contrast, greater use of *separateness* pronouns has been related to a number of negative relationship outcomes including lower marital satisfaction and expressing more negative emotion during an interaction [20, 28]. Comparing *you* and *I* variants of *separateness* pronouns, greater use of *you*-pronouns has been linked with negative interaction qualities including criticism, blame, and less shared identity. In contrast, greater use of *I*-pronouns has been linked with greater self-focus [27]. In a study of distressed and non-distressed couples [29], greater use of *I*-pronouns was associated with lower marital satisfaction in non-distressed couples but not in distressed couples. To summarize, there is a large body of scientific evidence supporting the associations between pronoun use and a range of important relationship qualities in healthy couples.

### *Vulnerable Couples*

There have also been a few studies that examined pronoun use in more vulnerable couples such as those in which one partner is afflicted with a serious health problem. In a study of patients with heart disease, greater use of *we*-pronouns by partners during an interview predicted fewer symptoms of heart failure for patients over the following 6 months [30]. A similar result was found in an intervention study with smokers where greater use of *we*-pronouns during a conflict discussion predicted greater success in smoking cessation [31]. Investigators have also examined pronoun use in patient-caregiver dyads during a discussion about how they cope with breast cancer, finding that greater use of *we*-pronouns was associated with better dyadic adjustment and lower depressive symptoms in patients [32]. Finally, Skerrett [33] posited that nourishing and building the “we” in a relationship can help promote healing in illness by helping couples overcome the feelings of isolation that often accompany declines in health.

## The Present Study

Although we have studied the use of emotionally positive (e.g., “happy”) and negative (e.g., “angry”) words in the interactions of PWDs and caregivers [34], we are aware of no studies that have examined pronoun use in these kinds of couples. Based on the notion that greater

use of we-ness pronouns reflects greater connection and less isolation between partners and that greater use of separateness pronouns reflects the opposite, we hypothesized that less use of we-ness pronouns in the interactions of dementia PWDs and spousal caregivers would be associated with lower levels of caregiver well-being. Similarly, we hypothesized that greater use of separateness pronouns (I-pronouns and you-pronouns) would be associated with lower caregiver well-being. Moreover, if these hypotheses were supported, we planned to examine the role that caregiver marital satisfaction played in explaining the relationship between pronoun usage and caregiver well-being.

## Method

### Participants

Fifty-eight PWDs (mean age: 62.78 years, SD = 8.85; 54.2% male) and their spousal caregivers (mean age: 63.98 years, SD = 10.33; 44.8% male) were recruited through the Memory and Aging Center at the University of California, San Francisco, CA, USA. PWDs received a diagnosis based on a neurological exam, neuropsychological assessment, and neuroimaging using current research criteria. Thirty-seven PWDs were diagnosed with frontotemporal dementia [35–37], 13 were diagnosed with Alzheimer disease [38], and the remaining 8 had a variety of other diagnoses (e.g., Parkinson disease, progressive supranuclear palsy). All couples were paid USD 90 for their participation in addition to being reimbursed for any transportation costs.

### Procedure

A week before their laboratory visit, caregivers completed a questionnaire packet (described below). PWDs and caregivers came to the Berkeley Psychophysiology Laboratory at the University of California, Berkeley, to participate in a daylong comprehensive assessment of emotional functioning that included tests of emotional reactivity, regulation, and recognition [39]. Couples were told that their participation was completely voluntary, their responses were confidential, and that either partner could withdraw at any time. All participants provided consent at each site for research projects approved by their respective institutional review boards.

For the purpose of the present study, we focused on one part of the assessment, a well-established task for studying marital interaction that has been used extensively with healthy couples of all ages [40, 41] as well as with couples with a partner with a neurodegenerative disease [14, 15]. Participants sat facing each other in comfortable chairs in a laboratory room set up for video recording of emotional behavior and monitoring of physiological responding (physiological data were not used for the present study). Participants were interviewed briefly by a trained experimenter to identify an area of unresolved conflict in their relationship. Conflict topics varied among couples (e.g., communication, home improvements). After the experimenter left the room, the couple sat quietly for 5 min and then engaged in a 10-min unrehearsed conversation about the chosen topic.

### Measures

#### Text Analysis

Verbatim transcripts of the conflict conversations were prepared by trained transcribers working with the video recordings. These transcripts were processed using text analysis software, Oedipus Text (OT) [42], that compared each word against a dictionary of personal pronouns to provide frequency counts of PWDs' and caregivers' use of pronouns in 3 categories: (a) I-pronouns (I, I'd, I'll, I'm, I've, me, mine, my, myself); (b) you-pronouns (you, you'd, you'll, you're, you've, your, yours, yourself); and (c) we-pronouns (our, ours, ourselves, us, we, we'd, we'll, we're, we've). In most studies of pronoun use using text analysis software, the program detects pronouns and assigns them to categories with no additional processing [24, 27, 29]. In the present study, OT also allowed coders to consider the context in which a pronoun was spoken and to use that information to change its dictionary-based categorization if needed. This additional layer of context-based analysis is potentially important in studies of couples' interactions because the pronouns used may not always refer to the couple and/or either spouse. For example, a spouse might say, "In the United States, our unemployment levels are currently quite low." In this instance, the pronoun "our" does not refer to the couple but rather to "Americans."

OT presented trained coders with each pronoun that had been detected in the transcript in the context of the sentence it occurred along with the previous and following sentences. Coders then assigned each pronoun to one of the following 8 categories: (a) *I*-words; (b) *you*-words; (c) *we*-words; (d) *we*-phrases; (e) dysfluencies, which occur when there is a repetition and/or the truncation of a proposition (e.g., "I, I...I need to stop at the store on the way home."); (f) fillers, which are used by speakers to fill gaps in their narrative but serve no communicative function (e.g., *you* know, *I* mean); (g) generics, which occur when the speaker uses pronouns in a general way, rather than referring to a specific person (e.g., "We have to take better care of the planet."); (h) references to others, which occurs when the speaker is referring to or speaking for another person (e.g., "After work, *we* went to happy hour to celebrate her last day."); and (i) elder speak, which is a form of baby talk often directed at older adults in care (e.g., "Did *we* forget to take our medicine today?"). Interrater reliability for context coding was high (interclass correlation coefficient was 0.92). Only pronouns that referred to the couple or individual spouses were used in all subsequent analyses. For each participant, a ratio score for words in each category (we, you, I) was computed by dividing the total number of pronouns in that category by the total number of pronouns spoken.

#### Caregiver Well-Being

We characterized caregiver well-being using a composite measure of depression, anxiety, burden, and strain. This measure was calculated by averaging normalized values of 4 caregiver outcome measures inversed as needed so that lower values always indicated lower well-being. Reliability of this composite well-being score was high ( $\alpha = 0.841$ ):

**Caregiver Depression.** Caregivers completed a 20-item version of the Center for Epidemiological Studies Depression Scale (CESD) [43]. This measure assesses depressive symptoms (e.g., depressed mood, feelings of worthlessness, loss of appetite) on a scale ranging from 0 (rarely or none of the time) to 3 (most or almost all the time) during the previous week. Caregivers' average depression score was 12.05 (SD = 9.42, range 0–44).

**Table 1.** Correlations between proportion of pronoun type usage, caregiver loneliness, caregiver well-being, and covariates

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Patient <i>I</i> -pronouns	–	–0.590**	–0.738***	–0.233	0.575***	–0.547***	–0.379**	–0.225	0.03	–0.268	–0.131
2. Patient <i>you</i> -pronouns	–	–	–0.109	0.212	–0.080	–0.156	0.036	0.106	–0.088	0.151	0.168
3. Patient <i>we</i> -pronouns	–	–	–	0.109	–0.641***	0.804***	0.436**	0.263	0.070	0.180	0.020
4. Caregiver <i>I</i> -pronouns	–	–	–	–	–0.746***	–0.190	0.232	0.151	–0.226	–0.051	0.358**
5. Caregiver <i>you</i> -pronouns	–	–	–	–	–	–0.512**	–0.370**	–0.227	0.180	–0.107	–0.253*
6. Caregiver <i>we</i> -pronouns	–	–	–	–	–	–	0.246*	0.262	0.026	0.214	–0.089
7. Caregiver well-being	–	–	–	–	–	–	–	0.243	–0.289*	0.522**	0.307**
8. Caregiver age	–	–	–	–	–	–	–	–	0.053	0.080	0.466**
9. Caregiver sex	–	–	–	–	–	–	–	–	–	–0.157	–0.116
10. Caregiver marital satisfaction	--	--	--	--	--	--	--	--	--	--	–0.130
11. Patient cognitive functioning	–	–	–	–	–	–	–	–	–	–	–

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Caregiver Anxiety.** Caregivers completed the Beck Anxiety Inventory (BAI), a 21-item measure that assesses cognitive and somatic symptoms of anxiety (e.g. heart pounding, difficulty breathing, fear of the worst) on a scale ranging from 0 (not at all) to 3 (severely) [44]. Caregivers' average anxiety score was 6.53 (SD = 7.58, range 0–37).

**Caregiver Strain.** Caregivers completed the Caregiver Strain Index (CSI), a 13-item measure that assesses subjective and objective elements of caregiver strain (e.g., inconvenience, disturbed sleep, financial strain), which was computed by summing the no (0) and yes (1) responses for the 13 items [45]. Caregivers' average strain score was 5.36 (SD = 3.46, range 0–13).

**Caregiver Burden.** Caregivers completed the Zarit Burden Interview-Short Form (ZBI-SF), a 12-item measure that assesses caregivers' subjective appraisal of burden associated with functional and behavioral impairments of the care recipient (e.g., "Do you feel you have lost control of our life since your relative's illness?") on a scale from 0 (never) to 4 (nearly always) [46]. Caregivers' average burden score was 17.60 (SD = 9.35, range 1–37).

#### Caregiver Marital Satisfaction

Caregivers completed the Locke-Wallace Marital Adjustment scale [47], a 15-item measure that assesses agreement on a number of domains including family finances, demonstrations of affection, sexual relations, and philosophy of life along with a global question, "Do you ever wish you had not married?" Scores range from 2 to 158, with higher scores indicative of greater marital satisfaction. Scores of 100 or above indicate satisfaction with marriage; scores below 100 indicate dissatisfaction with marriage. Caregivers' average marital satisfaction score was 101.48 (SD = 27.57, range 39–148).

#### PWD Cognitive Functioning

PWDs cognitive functioning was measured using the Mini-Mental Status Examination (MMSE), an 11-item measure that assesses cognitive abilities in multiple domains (e.g., memory, attention, ability to follow verbal commands) [48]. PWDs' average MMSE score was 25.22 (SD = 4.57, range 3–30), which falls in the mild impairment range.

## Results

### Data Analysis

Because pronoun scores in each category were computed as the proportion of total scores, they were not statistically independent. Thus, to avoid problems with collinearity, the data were analyzed initially using 6 (3 pronoun categories  $\times$  2 participants) linear regressions with PWD or caregiver pronoun type as the predictor and caregiver well-being as the dependent measure. To isolate the effects of pronoun use on caregiver well-being, we considered 3 potential covariates (i.e., caregiver sex, caregiver age, PWD cognitive functioning), factors that have consistently been found to predict negative caregiver outcomes [4, 10]. There were significant differences between female and male caregivers in caregiver well-being, with female caregivers reporting lower well-being than their male counterparts ( $r(54) = -0.289$ ,  $p = 0.034$ ; females  $M = 0.266$ ,  $SD = 1.09$ ; males  $M = -0.309$ ,  $SD = 0.79$ ). Further, PWD cognitive functioning ( $r(54) = 0.307$ ,  $p = 0.024$ ) was related to caregiver well-being, with lower PWD cognitive functioning associated with lower caregiver well-being. However, caregiver age ( $r(54) = 0.243$ ,  $p = 0.085$ ) was not significantly related to caregiver well-being. Thus, we used caregiver sex (coded as 1 for males and 2 for females) and PWD cognitive functioning as covariates in all analyses (Table 1).

To determine whether found associations between pronoun use and caregiver well-being could be attributed to caregivers' marital satisfaction, a path analysis was conducted using bootstrapping [49]. Unstandardized indirect effects were computed for each of 5,000 bootstrapped samples, and the 95% confidence intervals were computed for the effects of caregiver's marital satisfaction.

**Table 2.** Pronoun type usage by patient and caregiver as predictors of caregiver well-being

	Caregiver well-being											
	patient I		patient you		patient we		caregiver I		caregiver you		caregiver we	
	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Pronoun type	-10.78 (0.62)	-0.35**	-0.26 (0.99)	-0.03	20.84 (0.71)	0.45***	0.08 (0.72)	0.09	-10.50 (0.70)	-0.28*	20.23 (0.99)	0.28*
Caregiver sex	-0.52 (0.23)	-0.26*	-0.52 (0.26)	-0.26	-0.58 (0.23)	-0.29*	-0.48 (0.26)	-0.24	-0.43 (0.25)	-0.22	-0.48 (0.25)	-0.26*
PWD cognitive functioning	0.23 (0.12)	0.23	0.28 (0.13)	0.28*	0.26 (0.11)	0.26*	0.24 (0.14)	0.25	0.21 (0.13)	0.21	0.30 (0.12)	0.30*

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

### Total Words and Proportion of Pronouns in Each Category

To assess whether PWDs and their spousal caregivers differed in total words spoken and proportion of pronouns in each category spoken, two-way (caregiver versus PWD × male versus female) analyses of variance (ANOVA) were conducted for total words spoken and each pronoun category. Results indicated that PWDs used significantly fewer total words than caregivers ( $F_{1,108} = 38.66, p < 0.001$ ; PWDs:  $M = 545.65, SD = 258.66$ ; caregivers:  $M = 878.98, SD = 260.62$ ). There were no sex differences, as indicated by nonsignificant main effects for sex and nonsignificant interactions between the 2 factors.

For proportion of pronouns, results revealed that PWDs used a significantly greater proportion of *I*-pronouns than caregivers ( $F_{1,108} = 21.03, p < 0.001$ ; PWDs:  $M = 0.57, SD = 0.20$ ; caregivers:  $M = 0.41, SD = 0.16$ ) and a significantly smaller proportion of you-pronouns ( $F_{1,108} = 25.34, p < 0.001$ ; PWDs:  $M = 0.26, SD = 0.13$ ; caregivers:  $M = 0.42, SD = 0.19$ ). No differences were found between PWDs and caregivers for proportion of we-pronouns ( $F_{1,108} = 0.008, p = 0.930$ ). There were no sex differences, as indicated by nonsignificant main effects for sex and nonsignificant interactions between the 2 factors.

### Pronoun Use and Caregiver Well-Being

As shown in Table 2, analyses revealed that after controlling for caregiver sex and PWD cognitive functioning, lower proportions of both PWD we-pronouns ( $B = 2.84, SE(B) = 0.71, \beta = 0.45, p = 0.000$ ) and caregiver we-pronouns ( $B = 2.23, SE(B) = 0.99, \beta = 0.28, p = 0.036$ ) were associated with lower levels of caregiver well-being. Additionally, higher proportions of PWD I-pronouns ( $B = -1.78, SE(B) = 0.62, \beta = -0.35, p = 0.006$ ) and caregiver you-pronouns ( $B = -1.50, SE(B) = 0.70, \beta = -0.28, p = 0.038$ ) were associated with lower levels of caregiver well-being. There was no relationship between caregiver proportions of I-pronouns and PWD proportions of you-pronouns and caregiver well-being.

Thus, our hypothesis that less use of we-ness pronouns would be associated with lower caregiver well-being was fully supported (for both PWD and caregiver we-pronouns). However, our hypothesis that greater use of separateness pronouns would be associated with lower caregiver well-being was only partially supported (supported for PWD I-pronouns and caregiver you-pronouns, but not for caregiver and PWD you-pronouns or caregiver I-pronouns).

### Role of Caregiver Marital Satisfaction

For each of the 4 types of pronouns that were associated with caregiver well-being (i.e., PWD I-pronouns, caregiver you-pronouns, and PWD and caregiver we-pronouns), we conducted a path analysis to determine whether caregiver marital satisfaction explained the association. Results indicated that caregiver marital satisfaction did not explain the associations between pronoun use and caregiver well-being for any of these pronoun categories.

## Discussion

The use of pronouns by caregivers and PWDs during discussions about areas of conflict can provide valuable insights into aspects of their relationship that are important for understanding caregiver well-being. The present study found that less use of we-pronouns by both PWDs and caregivers was associated with lower levels of caregiver well-being. These findings supported our hypothesis that less use of we-ness pronouns would be associated with lower caregiver well-being. Partial support was also obtained for our hypothesis that greater use of separateness pronouns would be associated with lower caregiver well-being; this relationship was found for greater use of PWD I-pronouns and caregiver you-pronouns only. Use of you-pronouns by the PWD as well as I-pronouns by the caregiver were not associated with caregiver well-being. Examining the pattern of these latter findings, it appears that greater use of pronouns by the caregiver and the PWD that refer to the PWD (i.e., when PWDs use I-pronouns or caregivers use you-pronouns, they are referencing the PWD) are associated with lower caregiver well-being, but pronouns that refer to the caregiver are not associated with caregiver well-being.

Our finding that less use of we-ness pronouns is associated with lower caregiver well-being is consistent with prior findings. Lower use of we-ness pronouns has been associated with a range of negative outcomes in both healthy couples and in couples coping with addiction and illnesses other than dementia [20, 22, 26, 27, 30, 32]. The use of we-ness pronouns reflects a sense of partnership and togetherness that highlights the salience and importance of the relationship to the partners. In these couples, partners often view themselves as members of a team that can face life's struggles together and thus reduce the stress and strain on each individual [25]. Low levels of we-ness pronouns suggest low levels of partnership, togetherness, and working together, which is a formula for worse caregiver well-being. This relationship between we-ness and well-being may be strongest in late life when social networks shrink and close famil-

ial and spousal relationships become more important [16]. For caregiver-PWD couples, reduced social contacts associated with older age, the demands of caregiving, and the disabilities of PWDs can further increase the caregiver vulnerability to loss of a sense of partnership and togetherness in the caregiver-PWD relationship [50].

Our other finding that use of pronouns that refer to the PWD was associated with lower caregiver well-being may reflect the insidious and progressive nature of dementia and other neurodegenerative diseases. As these diseases progress and the symptoms worsen, the PWD increasingly withdraws from their social world, causing the relationship with the caregiver to recede into the background. This can increase the stress and strain on caregivers, who may feel that their partner in life is disappearing and is being replaced by a person who is increasingly dependent and needy. Greater use of I-pronouns by PWDs may also reflect the increasing self-focus seen in PWDs with some forms of dementia [51]. This self-focus can lead to reduced interactions with and declining interest in other people, including close family members [52]. When PWDs lose interest in others, caregivers may feel an increasing loss of connection and greater isolation [19], which in turn can lead to lower levels of well-being and to significant mental health issues.

### *Strength, Limitations, and Future Directions*

Strengths of this study include assessing interaction quality via an objective measure (i.e., pronoun use by caregivers and PWDs); focusing on the caregiver-PWD relationship; using a semi-naturalistic unrehearsed conversation between spouses about an important relationship issue; including PWDs with a range of neurodegenerative diseases; and using a composite measure of caregiver well-being that encompassed a number of aspects of caregiver functioning. Limitations include a moderate sample size; measuring pronoun use in a single conversation; and measuring pronoun use and caregiver outcomes at a single point in time (which is not optimal for determining temporal relationships among variables or how associations change with disease progression).

Future studies with larger sample sizes, multiple conversations or other samples of pronoun use, additional aspects of language use (e.g., emotion words), additional potential mediators (e.g., pre-disease pronoun use, pre-disease closeness), and longitudinal designs would be extremely useful in exploring how pronouns and other features of language are linked to individual differences in vulnerabilities to the adverse effects of caregiving. Future research should also examine pronoun use during couple

interactions in conjunction with other known risk factors for declines in well-being, including PWD behaviors (e.g., disinhibition, aggression) and caregiver characteristics (e.g., ethnicity, income) [3, 4, 10].

## Conclusion

We examined pronoun use during semi-naturalistic conversations between PWDs with neurodegenerative diseases and their spousal caregivers. Results indicated that less use of we-pronouns by both PWDs and caregivers and greater use of pronouns that referred to the PWD (PWD I-pronouns and caregiver you-pronouns) were associated with lower levels of caregiver well-being. These results suggest that assessing pronoun use can be a useful way to monitor the nature and quality of the connection between relationship partners, which can contribute significantly to our understanding of the interpersonal aspects of dementia caregiving.

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## Statement of Ethics

The participants (or their legal guardians) provided their written informed consent. The study protocols were approved by the Institutional Review Boards of the UCB and the UCSF.

## Disclosure Statement

The authors declare no conflict of interest.

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## Author Contributions

D.E. Connelly, A. Verstaen, and R.W. Levenson developed the study concept. D.E. Connelly performed and provided oversight for the context coding, processed the data, and wrote the first draft of the manuscript. D.E. Connelly and C.L. Brown analyzed the data. All authors contributed to revisions of the manuscript. R.W. Levenson supervised all phases of the project.

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