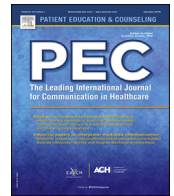




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Conversations between Latina mothers and their child's mental health provider: An observational study of shared decision-making regarding pediatric patient mental health needs



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ABSTRACT

Objective: To evaluate shared decision-making (SDM) and delineate SDM processes in audio-recorded conversations between language congruent Spanish-/English-speaking clinicians and parents of pediatric mental health patients.

Methods: Transcripts from audio-recorded consultations were rated using the 5-Item Observing Patient Involvement in Decision Making (Observer OPTION⁵) instrument. One hundred encounters between seventeen clinicians and 100 parents were rated. Interrater reliability for total score was 0.98 between two trained coders (ICC range: 0.799–0.879).

Results: Scores ranged between 0 and 70 on a 100-point scale, with an average total Observer OPTION⁵ score of 33.2 (SD = 17.36). This corresponded to modest success at mutual shared decision-making. Clinicians and parents both showed effort at identifying a problem with treatment options and engaging in team talk. However, preference elicitation and integration were largely lacking.

Conclusion: The present sample performed on par with other populations studied to date. It expands the evaluation of observed SDM to include Latino patients and new clinician populations.

Practice implications: Use of the Observer OPTION⁵ ^{Item} instrument highlights that eliciting and integrating parent/patient preferences is a skill that requires attention when delivering culturally competent interventions.

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1. Introduction

Historically, medical visits were structured around physicians asking questions of patients during a process of information exchange [1,2], often leaving patients without enough time to ask questions as they transition to close the session. In response, the U.

S. National Research Council of the Institute of Medicine [3] has called for patient-centered care and shared decision-making (SDM) to improve the quality of healthcare and patient outcomes. SDM is a communicative process by which practitioners and patients collaboratively reach healthcare choices by exchanging information regarding treatment options in light of the best available evidence and patients' values [4,5]. SDM interventions seek to engender patient empowerment and involvement [6] and increase patient-centered care, which is typically achieved by teaching patients relevant questions to ask regarding their care [7,8]. There is increasing evidence that SDM and collaborative

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healthcare practice, including mental healthcare, may foster patient engagement and promote better treatment adherence and outcomes [6,9,10].

The model for SDM differs within the context of acute versus chronic illness management [11] with regard to the frequency of visits, the expected longevity of the therapeutic relationship, and the degree of complexity in the treatment plan. In chronic disease care, decisions are rarely made within the context of a single patient-clinician encounter, and instead involve discussion with friends, family members, and members of a multidisciplinary treatment team [11, p. 8].

SDM is even more complex within the context of pediatric mental health care, as parents, their children, and therapists enter into an ongoing therapeutic relationship where treatment goals evolve over time and the preferences of both patient and parent may diverge from one another. The patient's behavioral or symptomatic concerns may change throughout treatment, as would how each party engages with one another. Moreover, such triadic interactions need to incorporate the preferences and goals of both the child and parent into the treatment plan [12]. SDM may support increased parent/patient participation and patient satisfaction and decreased decisional conflict in short-term interventions/ procedures [13], and also be especially suitable in the context of chronic illnesses, including psychiatric or developmental disorders, which require treatment across multiple sessions [14].

Additionally, SDM in parent-clinician communication has been postulated to offer mechanistic insight into racial/ethnic health disparities [15]. Health disparities exist for Latinos and other underserved populations, such that Latino children with mental health needs are half as likely to use services compared with children in white, non-Latino families [16]. Specifically, Latino families report struggles with accessing specialty healthcare services for their children and experience service dissatisfaction [17]. Latino populations experience more resistance to adopting a biomedical model of illness and higher stigma surrounding the use of antidepressant medications [18], as well as higher treatment dropout rates among pediatric patients [19]. Finally, there is some evidence that patient-provider communication is poorer among Latino adult primary care patients than in the general population, even in language-concordant sessions. These results may be driven by differences in communication style and patient preferences among this population [20].

Most research on SDM in mental healthcare correlates treatment outcomes with subjective ratings of patient involvement or treatment satisfaction as reported by clinicians, patients, or in the case of pediatric patients, their parents [21]. However, self-reported SDM or treatment satisfaction may not reflect demonstrated SDM skill in clinical encounters. Data from patient-reported measures of SDM typically provide scores at the upper end of scales while independent assessments of behavioral SDM as documented by audio- or video-recordings of clinical encounters rarely indicate high performance [22]. Although some research has evaluated the third-party assessment of decision talk by an independent rater within the context of ongoing psychiatric practice [23–25], very little observer-rated SDM has been conducted with parents making treatment decisions about pediatric mental healthcare [26]. Moreover, to our knowledge, no observer-rated SDM has been published in the area of Latino mental healthcare. Therefore, the present study provides an objective evaluation of SDM among Latino populations seeking psychotherapeutic treatment for their children, and qualitative coding offers insight into what SDM looks like in pediatric populations where the parent, patient, and provider are present during mental healthcare visits.

2. Methods

This paper uses the 5-Item Observing Patient Involvement in Decision Making (Observer OPTION⁵) instrument [[22]] to evaluate 1) the presence of SDM in 100 audio-recorded mental health treatment visits, and qualitative coding to document 2) the presenting problems communicated and issues that facilitated or hindered collaborative problem-solving during these visits. Using predetermined codes and emergent themes, the paper presents the communicative landscape of collaborative SDM while accounting for several parties' values, preferences, scheduling considerations and barriers to achieving those outcomes. It adds to the literature on observed behavioral activation as it influences SDM and patient-centered care [27]. Furthermore, by studying an ethnic minority that experiences significant health disparities, it contributes to the literature on healthcare quality by using an observer-rated SDM instrument to move beyond self-report.

2.1. Setting and participants

Data are drawn from participants enrolled in a randomized controlled trial (RCT) of behavioral activation taught through the MePrEPA curriculum (meaning *metas, preguntar, escuchar, preguntar para aclarar* [goals, questioning, listening, questioning to clarify]) versus participation in non-directed social support groups ($n = 184$) [28]. Participants were Latino parents whose children were receiving mental health services at a community-based, outpatient clinic in the southeastern United States. The clinic works to provide comprehensive, culturally competent mental health services and it primarily serves low-income, Spanish-speaking clients. In the RCT, the mean age of the focal child was 11.38 (range = 3–23 years). Additional details about the study design are published elsewhere [28]. The study's intervention aimed to increase parent empowerment and increase underserved patients' attendance and retention in a group format by teaching parents strategies to ask information-gathering questions [29] and knowing where to seek help. After participation in the RCT, study staff audio-recorded one visit with each consenting parent to objectively measure implementation of lessons learned. All recordings were transcribed verbatim.

The current analysis is based on a random subsample of clinician-parent conversations ($n = 100$) from the original study. Visits with fathers were excluded ($n = 14$) given the small number of fathers present in the sample. From the 170 remaining transcripts, the authors used a random number generator to select 100 visits between clinicians (MA-level counselors, clinical social workers, and psychiatrists) and participating mothers. Transcripts included 81 psychotherapy sessions, two intake visits, and 17 medication management visits. Ninety-six transcripts were in Spanish, the remainder in English. Transcripts were coded and analyzed as recorded to preserve the data's original meaning. Sixty of the 100 participants received the activation intervention and 39 were assigned to the control group. One participant was excluded from the RCT's analyses because the child was over 22 years old. Clinicians were blind to parent group assignment and did not themselves undergo an intervention.

2.2. Procedure

2.2.1. Observer OPTION-5 instrument

The first two authors of the paper are bilingual and served as the raters of all data analyzed. They used the Observer OPTION⁵ instrument [26], where trained raters independently measure patient involvement in illness management and treatment decisions while taking the multiparty nature of the medical encounter into account. The Observer OPTION⁵ instrument

consisted of five items described below (Table 1), each of which received a score between 0 and 4 that corresponded to the level of communicative effort observed/ displayed. That score was then rescaled to a total score between 0 and 100 per the Observer OPTION⁵ rater manual [30].

The Observer OPTION⁵ instrument is theoretically grounded in the notion that both the clinician and patient are experts regarding the communication of task-focused and socio-emotional content. The OPTION scale was originally designed for primary care visits in Wales [31] and is validated in English, French, German, Italian [32] and Dutch [33]. The instrument has been used with parents making treatment decisions about pediatric ADHD patients [25]. While the instrument's conceptual structure examines the process as guided by the clinician, for example assessing how "the clinician elicits the patient's preferences," subsequent publications have underscored the collaborative nature of such decision-making [34,35]. Therefore, the authors rated SDM as observed from both parent and clinician contributions to a decision process. To achieve this aim, the two raters evaluated each party's contribution to an element of SDM. For example, if a parent advocated for their child needing a tutor rather than ADHD medication and the clinician only offered a prescription for medication, the raters might score the parent's contribution to this item as a 15 and the clinician's contribution as a 5, for a total score of 10/20 possible points on that OPTION item.

First, raters assessed agenda setting [36] and whether a shared focus/goal setting emerged in the topics of the parent-provider conversation. When present in these time-limited encounters, raters used the predetermined codes from the OPTION⁵ to characterize the nature of the problem and analyze the amount of collaboration observed during the decision-making phase [37]. The 5 items in the modified OPTION instrument evaluate: 1) the clinician and parent agreeing that a decision must be made between alternate treatment or management options that exist (i.e., IDENTIFY), 2) both parties engaging in supportive team talk so the patient can deliberate about the options (i.e., TEAM TALK), 3) both parties sharing information regarding treatment options or checking understanding about the available options while determining which are deemed reasonable within the patient's lifeworld (i.e., GIVE INFORMATION), 4) either the clinician eliciting or the parent volunteering the patient's/ family's preferences in response to the options described (i.e., IDENTIFY PREFERENCES), and 5) both parties affirming and making an effort to integrate the client's voiced preferences into the decision(s) that is/ are made or the deferral of action with a timeline for follow up (i.e., INTEGRATE PREFERENCES). Recognizing that more than one decision may exist in a clinical encounter, each instance of identifying a problem requiring resolution was rated separately, and then an overall item score was assigned to each of the 5 items in the Observer OPTION⁵ measure.

The raters were trained in the administration of the Observer OPTION⁵ instrument using a CourseSite from the scale's creator. Afterward, the raters had three additional training sessions where they established a codebook and iteratively refined it for clarity and

reliability while administering the OPTION instrument on a sample of transcripts from this dataset.

The raters were then randomly assigned transcripts, which they coded in ATLAS.ti (V8). In addition to using the dyadic OPTION⁵ codes to quantitatively assess SDM, emergent themes were coded in order to understand the presence and involvement of the participating patient (and at times, other siblings), and categorize the presenting problem(s) voiced that motivated care-seeking behavior (Table 4). Regular meetings were held to resolve disagreement and discuss emergent themes.

2.3. Inter-rater reliability

A subset of 23 transcripts was double coded by two raters. The raters had very high reliability on the presence of SDM and total scores (Table 2), but there was inter-rater variability on individual items of the Observer OPTION⁵ instrument. When item-level disagreement arose between the raters' assigned scores for a transcript, the first author reviewed the session again and served as arbitrator to determine the final item-by-item score presented here.

Intra-class correlation, $ICC_{(3,2)}$, was calculated as specified by Shrout and Fleiss [38], for the case where all transcripts are coded by the same raters who are assumed to be the entire population of raters. Results indicate an excellent inter-rater reliability ($ICC = 0.982$) for the total score, and good inter-rater agreement (ICC range: 0.799–0.879) for individual OPTION items [39]. To assess correlation, Spearman Rho correlation coefficients were calculated due to the ordinal nature of the outcomes. The results suggest that there is a very strong, positive correlation between the scores of rater #1 and rater #2. SAS 9.4 was used for calculations.

3. Results

In the present sample, 90/100 transcripts included at least one instance of SDM talk regarding a behavioral concern or treatment decision requiring advice or action. Observer OPTION⁵ total scores ranged from 0 to 70 out of 100, with a mean of 33.2 on a 0–100 scale ($SD = 17.36$). Observer OPTION⁵ instrument scores showed a skewed distribution tending toward the middle range of possible totals, suggesting a modest to moderate effort in achieving SDM (Table 3). The authors assessed effects by group assignment (i.e., control vs. intervention) and found no between-group difference in the level of SDM displayed in a visit per the Observer OPTION⁵ instrument ($p = 0.426$).

Table 3 presents the extent of mutual effort parties exhibited for each component of SDM (by Observer OPTION⁵ item) when SDM was present. Integrating preferences (44.4%) and identifying preferences (34.4%) were the areas where no effort at SDM was most frequently observed. Parents and providers spent most of their efforts establishing support and discussing goals for the specific session or psychotherapy overall, and were highly skilled in doing so in 23.4% of cases.

During the rating process, it became clear that mothers voiced many complex needs or problems, only some of which transitioned

Table 1
Items included in the Observer OPTION⁵ instrument.

Item number – SDM dimension	Item description
Item 1 – IDENTIFY	Draw attention to, or re-affirm, that alternate treatment or management options exist for the identified health issue being discussed and recognize that the need for a decision exists.
Item 2 – TEAM TALK	Agree to engage in supportive team talk and information sharing so that the patient can deliberate on the options.
Item 3 – GIVE INFORMATION	Share formal as well as experiential information and check understanding of the available options while comparing alternatives.
Item 4 – IDENTIFY PREFERENCES	Identify, discuss, or construct preferences in response to the options described.
Item 5 – INTEGRATE PREFERENCES	Integrate the client's elicited preferences into the decision(s) made.

*Note: Each item is scored as follows: 0 = No effort observed, 1 = Minimal effort observed, 2 = Moderate effort observed, 3 = Skilled effort observed, 4 = Exemplary effort observed.

Table 2
Inter-rater reliability ($n = 23$ double-coded transcripts).

Score	Spearman Rho [*]	ICC ^{**}
Total	0.985	0.982
Identify	0.898	0.879
Team Talk	0.785	0.799
Give Information	0.856	0.868
Identify Preferences	0.850	0.878
Integrate Preferences	0.875	0.847

^{*} Spearman Rho is a measure of correlation only (not agreement), possible range -1 to 1.

^{**} ICC = Intra-class correlation coefficient is a measure of inter-rater reliability for continuous variables, possible range -1 to 1. A type 3, mixed effects ICC model was used.

into SDM talk of treatment options. Some mothers raised more than one problem, and others did not formulate a coherent request for clinician decision support. To contextualize the issues at stake, common concerns that were raised during visits are presented.

3.1. Reasons for care raised in the session

Mothers discussed a plethora of concerns with their clinicians, and some of these concerns became the inflection point for SDM talk (Table 4). The most frequently cited concern motivating treatment-seeking behavior in these sessions was alleviating acute psychiatric symptoms such as inattention, hyperactivity,

depression, or hallucinations ($n = 68$). In an additional 30 instances, school functioning was raised as a central topic of focus, although 70% of the sample's transcripts mentioned school behavior or educational achievement at some point. Evaluations of school performance were often discussed because report cards and child behavioral reports provided quantifiable indicators of child functioning over time. If a child's grades improved, it was cited as evidence that the treatment plan was working.

As evident in the transcripts, the presenting problem or request that mothers voiced was influenced by cultural/social considerations and some sociopolitical concerns that alternative treatment options could not solve. In the coded transcripts, some pediatric patients held non-biomedical beliefs that informed their interpretation of the problem, such as belief in Devil possession during an episode of psychosis. The safety of antidepressant or ADHD medications, especially in the case of young patients, was also particularly salient for several Latino families and decision talk helped understand preferences and reframe fears before parsing how to best proceed at this particular juncture. It is important to note that, consistent with the goals of the partner clinic, it was clear across transcripts that Latino cultural values infused the tone and content of both parties' contributions. For example, clinicians all spoke Spanish and often incorporated everyday conversation into their clinical visits to develop rapport and a low-stress environment. Moreover, mothers were active participants during their child's visit, often setting the course for a given conversation with the clinician.

Table 3
Extent of effort that participating clinicians and parents exhibited on Observer OPTION items where SDM was present ($n = 90$).

OPTION Item	No Effort Percent (N)	Minimal Effort Percent (N)	Moderate Effort Percent (N)	Skilled Effort Percent (N)	Exemplary Effort Percent (N)
Identify	3.3 (3)	36.7 (33)	51.1 (46)	8.9 (8)	0 (0)
Team Talk	10.0 (9)	12.2 (11)	54.4 (49)	17.8 (16)	5.6 (5)
Give Information	14.4 (13)	20.0 (18)	52.2 (47)	12.2 (11)	1.1 (1)
Identify Preferences	34.4 (31)	15.6 (14)	40.0 (36)	7.8 (7)	2.2 (2)
Integrate Preferences	44.4 (40)	32.2 (29)	18.9 (17)	4.4 (4)	0 (0)

Table 4
Presenting concerns raised in the dataset ($n = 100^*$).

Domain	Concerns Raised
Psychiatric symptom(s) ($n = 68$)	<ul style="list-style-type: none"> - Behavioral concern(s) - Disordered mood - Hallucinations - Body image issues - Suicidal ideation/ attempt - Trauma - Sleep
School functioning ($n = 30$)	<ul style="list-style-type: none"> - Behavior changes - Academic performance, including struggling with grades - Learning disability - Attentional problems - Bullying
Psychosocial distress ($n = 26$)	<ul style="list-style-type: none"> - Strained relationships or trouble with interpersonal communication - Changes in family dynamics or composition - Financial strain
Treatment regimen ($n = 19$)	<ul style="list-style-type: none"> - Initiation of medication - Medication management - Request to change psychotherapist
Sociopolitical concerns ($n = 9$)	<ul style="list-style-type: none"> - Detainment/ deportation of a family member, such as a parent or sibling - Social isolation felt by patient or their immediate family when their social support systems were weakened or absent in a new environment - Documentation status making it difficult to fill prescriptions or access better paying jobs that provide better access to care

^{*} Note: Some sessions raised more than one problem, and others were cut short before raising a coherent issue, so the total does not add up to 100.

4. Discussion and conclusion

4.1. Discussion

Data show that one or more instances of SDM occurred in 90% of clinic visits examined, as defined by the Observer OPTION⁵ instrument, indicating that in clinical practice with Latina mothers, both parents and providers demonstrate some level of SDM engagement. Prior research evaluating whether providers engage or involve families in shared decision-making is limited and much of it has been conducted in primary care clinics [40,41]. Thus, this study extends this line of research in two ways by focusing on pediatric mental health and on an underserved population demonstrating disparities in treatment engagement.

Elements of successful parent/patient involvement strongly aligned with examples of cooperatively addressing the contents of all five OPTION items and clearly delineating the next step in the child's treatment plan. How clinicians and their clients work together across these domains can facilitate communication, understanding, and engagement in therapy. Although these findings showed SDM engagement among under-resourced Latino families involved in mental healthcare, using a standardized observation tool and a detailed coding system focused on how it was enacted by both parents and clinicians, an imbalance remained across the Observer OPTION⁵ instrument's five elements. Study results show that a single mental health session is unlikely to contain all five of these domains, and when it does, it is unlikely that all five are executed with moderate to high quality by both parties. Specifically, 10 transcripts received a 10 or higher on all 5 items of the Observer OPTION⁵ instrument, indicating at least moderate effort on the part of both the clinician and parent to convey or confirm each aspect of SDM, and only 6 transcripts received a rating of "exemplary effort" (20) on one or more items. In general, transcripts were skewed toward lower mean scores, such that conversations regarding treatment plans for this sample of pediatric mental health patients were not wholly collaborative conversations and did not consistently transition to identify and integrate parental preferences. However, these results are still comparable to other populations studied to date, and simply indicate that there remains room for growth for all clinical encounters.

4.1.1. Strengths and limitations

This study contributed to understanding the process of how behavioral health decision-making can occur between a clinician and a parent. These data also focused on a Latino population in a new-destination, southeastern state, which provides a different environment from more established immigrant enclaves in New York and Florida. However, study participants were involved in a one-sided intervention, which means the parents were the beneficiaries of the activation intervention while the providers continued to use standard therapeutic techniques in their practices. In addition, the authors acknowledge that the use of a modified OPTION⁵ scoring system may have impacted the study's data. Nonetheless, the research team strove to test the validity of the data by calculating the levels of inter-rater reliability for the total score and the inter-rater agreement for individual OPTION items as described in the methods section. Moreover, the authors only coded content related to the focal child who was the identified patient, and this meant that some session content was not coded if it focused on other family members or the parents themselves. Thus, some of the low Observer OPTION⁵ scores reported might not indicate unsuccessful visits, but rather visits that focused on family therapy. Further, SDM is not always appropriate or necessary to address a particular patient's needs. At times, task delegation or

the provision of instrumental support may prove more helpful to the parent or patient. SDM's collaborative conversations require time and energy to process, and that may not be appropriate in emergency situations.

Furthermore, the authors did not report on how communication style differed by type of provider or reason for visit, and they did not separately analyze visits that were comprised of dyads versus triads (e.g., child was present or not). The present dataset excluded fathers and therefore cannot be generalized to Latino parents overall. Future research should explore how these factors impact the extent of SDM during the visits of Latino parents and mental health professionals.

Finally, this is a cross-sectional study with only one recording per participant. This serves as a strength and a limitation to the present study, in that it documents patients at different stages of the therapeutic relationship. Some recorded sessions were initial intake sessions while others had developed a strong therapeutic relationship over the course of months or years, and this may have made clients feel more or less comfortable sharing ideas – thereby being reflected in the audio-recorded transcripts as well. While this is a limitation for evaluating changes in SDM, it also provided an important opportunity to examine SDM conversations and patient-related concerns at different stages of treatment. Relatedly, routine clinical matters (e.g., completing symptom questionnaires, signing treatment contracts) can take a significant amount of time in a visit and break up the natural flow of the conversation, therefore the present scores may underestimate the clinicians' efforts over the full trajectory of care. Last, this study pertains to a pediatric Latino population with mental health needs and findings may not generalize to other populations. Despite these limitations, these data are unique and they offer an inside look at the conversations between underserved Latino families, their children, and service providers in a sample of 100 families. This information provides practice implications and can guide future efforts to culturally tailor SDM interventions for this population.

4.2. Conclusions

The Latina mother-clinician dyads in this sample achieved a mean Observer OPTION⁵ score of 33.2 on a 0–100 scale (SD = 17.36), performing within the range of other populations studied to date [32]. Our Latina mother-clinician dyads demonstrated higher SDM than older primary care patients and emergency department patients [42,43], and about the same as patients using specialty services [33,44] or those benefitting from patient activation interventions as more than half of our parents did [45]. Future work should explore the parent, patient, provider and practice-level characteristics that facilitate improved SDM as well as the areas where disparities exist. These results offer encouraging evidence that when parent-clinician discussions happen in a supportive setting where many parents have been encouraged to develop and express their activation skills through targeted intervention, their SDM scores are on par with other informed populations [45].

The study's robust sample size alongside the clinician population studied here, consisting of psychiatrists, licensed professional counselors, and clinical social workers, expands the existing findings on SDM as measured by the Observer OPTION⁵. While scores were in the higher range of other populations studied, findings highlight areas for improvement. More work is needed to expand the knowledge base regarding how to enhance patient-provider SDM [45,46]. The fact that these findings are generated from a behavioral health setting highlights the importance of pursuing SDM in behavioral health, within specialty as well as integrated care settings.

4.3. Practice implications

These findings have important clinical implications. Even in a group of Latina mothers with strong activation skills working with culturally adept clinicians, parents need assistance focusing their clinical conversations on the specific objectives of child treatment. While parents clearly have good insight about treatment strategies and how to adjust the treatment plan to best fit their family's life, they may not have a clear idea of the conversational objectives of each visit and their relative time constraints. This is information that providers can share easily. In contrast, providers will have little insight into contextual issues that are critical to understand the child's treatment progress without parent input. While TEAM TALK enabled such information sharing, this did not always translate to an integrated plan of action supporting enactment of the recommended interventions in real time. Future work should characterize the interpersonal and practice-level characteristics that facilitate or challenge SDM [46].

Given that these conversations were conducted in a clinic with bilingual and bicultural therapists, this information can guide future efforts to culturally tailor SDM interventions for this population. For example, therapists engaged in short conversations that promoted rapport and built *confianza* (i.e., a Latino cultural value of trust and reciprocity). While there was no comparison group in a non-culturally concordant clinic, the cultural match likely contributed to SDM in these encounters and future work should examine what cultural tailoring (including the tailoring of questioning and listening strategies by both parties) is most effective in promoting SDM in Latino populations.

In sum, this study further clarifies the extent of effective clinical communication among Latina mothers discussing mental health care for their child, an underserved population that is currently facing significant disparities. It underscores how important the mutual co-construction of clinical conversations is when discussing biopsychosocial treatment plans that do not consist of dichotomous choices. Moreover, these findings help address if and how patient-provider communication styles may impact patient outcomes, whether by increasing one's sense of accountability for illness management or by increasing the desirability of expected health impacts [47].

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Declaration of Competing Interest

All authors declare no conflicts of interest pertaining to this manuscript.

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