



ARTICLE



<https://doi.org/10.1057/s41599-025-05672-4>

OPEN

# Examining the linguistic and behavioural patterns of gender identity in women with dissociative identity disorder

Turkiah Alotaibi<sup>1,2✉</sup>, Norah Almusharraf<sup>1</sup> & Muhammad Imran<sup>1,3</sup>

Despite extensive psycholinguistic research on gendered language, investigations of how psychological gender identity shapes linguistic behavior in clinical populations remain scarce. Drawing on Lakoff's deficit model, which links hedges, tag questions and intensifiers to low authority and self-confidence, we explore gender-linked speech variation in dissociative identity disorder (DID). Publicly available interview transcripts from six women diagnosed with DID were examined, and the speech of their male-identity versus female-identity alters was compared. Qualitative thematic analysis showed that male identity alters predominantly employed hedges—markers of uncertainty—whereas female identity alters favored intensifiers and expressions of powerlessness. To quantify these differences, we ran regression analyses on feature frequencies; baseline rates of hedges ( $B = 1.54$ ,  $SE = 0.46$ ) and intensifiers ( $B = 1.92$ ,  $SE = 0.65$ ) were both reliably above zero, yet neither hedges nor intensifiers varied significantly by gender identity. These results highlight the influence of psychological gender on language use in DID and point to the need for further research into the cognitive drivers of these patterns.

<sup>1</sup>Prince Sultan University, Riyadh, Saudi Arabia. <sup>2</sup>King's College London, London, UK. <sup>3</sup>Department of English, Khazar University, Baku, Azerbaijan.  
✉email: [turkiah\\_saad.alotaibi@kcl.ac.uk](mailto:turkiah_saad.alotaibi@kcl.ac.uk)

## Introduction

Variation in speech patterns and linguistic features across social categories such as sex, class, race, and region has been well documented (Du, 2021; Aini et al. 2023), and scholars have shown how speakers deploy language to enact particular identities or personas (Mazzetto, 2024). Yet the specific role of an individual's internalized psychological gender identity, which is one's deeply held sense of being male, female, neither, or another gender, which may diverge from sex assigned at birth (Polderman et al. 2018; Singh and Zucker, 2021), remains unexplored. Most psycholinguistic studies treat gender as a "static", between-group variable, leaving open the question of whether moment-to-moment shifts in self-perceived gender might shape linguistic choices.

Dissociative identity disorder (DID) offers a unique within-subject "natural experiment" for examining this question. Characterized by two or more distinct, enduring personality states that sequentially govern behavior, often accompanied by memory gaps beyond ordinary forgetfulness (Beidel et al. 2018). DID allows us to compare within the same biological individual, the speech of male-identity versus female-identity alters. Under Lakoff's deficit model (1973), women's speech is said to feature hesitations, hedges, tag questions, and intensifiers, markers of uncertainty and reduced authority. Accordingly, we hypothesize that shifts in a DID patient's psychological gender identity will manifest as systematic changes in pitch variation, hedge frequency, and intensifier usage, such that each Alter's speech profile reflects its gendered sense of authority.

In this study, we analyze publicly available interview transcripts from six women diagnosed with DID. First, the regression analysis examined the frequency of hedges and intensifiers for each alter gender identity. Second, the thematic analysis identified patterns in pitch, intensifier use, and hedge deployment across alters. By focusing on psychological gender rather than biological sex, our within-subject design provides a novel test of Lakoff's deficit model and sheds light on the real-time interaction between identity and language use.

The paper is structured as follows. We begin by reviewing research on identity and language, focusing on sex-linked variation and the theoretical foundations of the deficit model. We then outline our data sources and analytic methods. This is followed by a presentation of both quantitative regression results and qualitative thematic findings. In the discussion, we consider the broader implications of our results and suggest directions for future research on gender, identity and linguistic difference.

## Literature review

**Theoretical overview.** Gender and language have long been intertwined in psycholinguistic debates, as researchers seek to understand how speakers draw on linguistic resources to enact social roles and identities. Early corpus-based and interactional studies documented broad tendencies; men often favor object-focused discourse, while women more frequently deploy relational and interactive strategies (Cameron, 1997; Holmes, 2008; Archer, 2019). Yet the generalizability of these sex-linked distinctions has been questioned (Del Giudice et al. 2012; Plug et al. 2021; Dewi et al. 2024), and few studies have addressed how an individual's internalized, psychological gender identity might shape moment-to-moment language use.

Robin Lakoff's deficit model (1973) remains a cornerstone of gendered communication research. Lakoff argued that women's language is marked by features such as hesitations, hedges, tag questions, and intensifiers that index uncertainty or reduced social authority (Lakoff, 1973, 1975). Although early critiques targeted the model's reliance on introspective methods (self-

reported observations rather than empirical evidence), subsequent studies of mixed-sex conversation have repeatedly confirmed that women's speech includes tentative devices at higher rates than men's (Zurairi et al., 2022; Alzamil et al., 2023).

**The use of high pitch.** This study examines three discourse-pragmatic features—pitch, intensifiers and hedges—that have been ideologically linked to gender speech in psycholinguistic literature (Lakoff, 1973, 1975; Van Bezooijen, 1995; Hiramoto, 2010). Lakoff's (1975) foundational work on "women's language" suggested that features such as rising intonation on declaratives (i.e., high pitch) and intensifiers (e.g., *really*, *so*) signal speaker tentativeness and function to mitigate assertiveness. These markers were argued to reflect and reinforce women's subordinate social positioning. For instance, a rising terminal in a statement like "*It's cold today, isn't it?*" can signal a request for validation and a lack of confidence (Lakoff, 1975).

While Lakoff's framework was influential in identifying power-laden speech patterns, her conclusions were based primarily on anecdotal observations and have since been critiqued for lacking empirical breadth. More recent studies have shown that although women do tend to use a higher pitch on average than men (Krahé and Papakonstantinou, 2020; Balachandra, 2021), this difference stems not only from anatomical variation, such as vocal tract length and vocal fold mass (Hart et al. 1990), but also from sociocultural conditioning. Cross-cultural studies, for example, reveal that Japanese women speak with significantly higher pitch than their Dutch counterparts, a phenomenon attributed to differing gender norms and expectations surrounding femininity and deference (Van Bezooijen, 1995). Likewise, Hiramoto (2010) demonstrated how women actively manipulate pitch to align with culturally endorsed feminine identities, further supporting the view that pitch is a socially mediated, gendered resource.

**The use of hedges and intensifiers.** Previous research has examined the use of hedges and intensifiers as discourse-pragmatic features closely tied to gendered communication styles. Hedges, such as "*maybe*, *I think*, and *it seems*," are generally defined as linguistic devices that attenuate the speaker's commitment to a proposition (Bonvillain, 2019). These features have often been associated with women's speech, based on the assumption that socialization processes encourage women to be more polite, indirect, and conflict-avoidant. Early theoretical models, particularly Lakoff's (1975) Deficit Model, argued that hedging reflects women's subordinated status, as it reduces assertiveness and limits speaker authority.

However, the gendered distribution of hedges has been subject to critical re-evaluation. Corpus-based studies, such as Schmauss and Kilian (2023), found minimal overall differences in hedge usage between men and women, though some variation emerged in the specific types of hedges employed. Other studies, such as Mohajer and Jan (2015), argued that men may avoid hedging due to a desire to project decisiveness and authority, suggesting that the use of hedges may be influenced by gendered expectations around confidence rather than frequency alone.

Intensifiers, degree modifiers that amplify or scale the force of an expression (e.g., *really*, *so*), have likewise been discussed as ideologically gendered features. Hanafiyeh and Afghari (2014), in a study of Iranian speakers, reported that women employed significantly more intensifiers than men, often in conjunction with hedges. These findings appear to reinforce Lakoff's view that women's speech is characterized by a combination of emotional expressiveness and mitigated assertiveness. Yet other studies highlight contextual variability. Ladegaard (2012) demonstrated

that in male-dominated professional settings, women often adopt stronger, more assertive linguistic styles in order to align with workplace norms. Such findings complicate essentialist notions of “women’s language” and point instead to the adaptive nature of gendered communication.

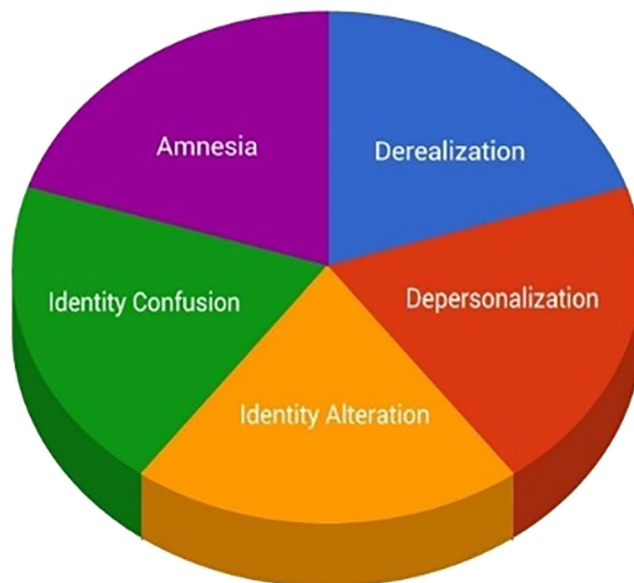
The frequent appearance of hedges and intensifiers in gendered discourse has thus come to represent more than just a stylistic choice; it reflects a deeper interplay between linguistic behavior and power dynamics. Following this perspective, the current study explores how speakers diagnosed with dissociative identity disorder (DID) may use hedges and intensifiers to perform internally differentiated gender identities. By analyzing speech across alters that self-identify with different genders, we investigate how each identity negotiates authority, confidence, and emotion through discourse. For example, a male-identified alter may deploy hedges to convey caution or reflection, whereas a female-identified alter may emphasize intensifiers to assert presence or manage interpersonal rapport. This approach aligns with constructivist perspectives on gender, viewing speech as a dynamic site of identity performance rather than a static marker of biological sex.

**Dissociative identity disorder and gender identity.** Dissociative identity disorder (DID) is conceptualized as a severe, trauma-based disruption in the integrative functions of identity, memory, cognition, affect, and self-perception (North, 2015; Rutkofsky et al. 2017). Etiological research, grounded in DSM-IV criteria, consistently implicates chronic childhood trauma, particularly extreme bullying or sexual abuse, as the primary causal factor (Simeon et al. 2002). Furthermore, Simeon and colleagues found that 95% of children who later developed multiple identity states had experienced sexual trauma, a replication evident across diverse cultural contexts (Xiao et al. 2006) and reinforced by links between abuse and dissociative symptoms (Kisiel and Lyons, 2001). On this basis, many clinicians regard DID as a complex manifestation of post-traumatic stress disorder (Spiegel, 1984).

Clinically, DID presents through an alternation between a “host” personality and one or more “alters,” each with distinct behavioral, mnemonic, and affective patterns (Fundukian and Wilson, 2008). This switching is theorized as an adaptive coping mechanism, enabling dissociation from overwhelming experiences (Coons, 1988). Bowman et al. (2005) argue that traumatic events (especially abuse by trusted caregivers) are defensively compartmentalized into the subconscious and later re-emerge as autonomous alters. These alters often vary in memory access, self-image, and gender identity (Piper and Merskey, 2004). Moreover, ~50% of female-assigned DID patients develop at least one male-identity alter (Rosik, 2012), and female-identity alters frequently serve as intra-system communicators to relay internal system dynamics to the host (Orlof et al. 2021). Alter may even adopt distinct vocal qualities or languages that align their speech with unique psychological profiles (Domin, 2020).

Physiological indicators of identity switching can include shifts in handedness, vocal-quality changes, and seizure-like episodes (Coons and Milstein, 1986; Scropo et al. 1998). Cognitively, DID is associated with atypical information processing and altered reality perception, though much evidence relies on self-report, raising validity concerns given trauma survivors’ tendencies toward mistrust and low self-confidence (Dorahy et al. 2016; Lewis et al. 1997). These features often manifest as trauma-related fixed beliefs rather than formal delusions (Martinez et al. 2020). The DSM further specifies depersonalization (a sense of detachment from one’s mind or body), derealization (feeling

## The Five Core Components of Dissociative Disorders



Source: Handbook for the Assessment of Dissociation: A Clinical Guide. Steinberg (1995).

**Fig. 1 The Five Core Components of Dissociative Disorders.** This pie chart illustrates the five core components of dissociative disorders: Derealization (blue), Depersonalization (red), Identity Alteration (orange), Identity Confusion (green), and Amnesia (purple).

the external world is unreal), identity confusion (persistent uncertainty about self-concept), and identity alteration (observable shifts in behavior) as hallmark symptoms (Steinberg, 2001) (see Fig. 1).

Although extensive clinical and neuropsychiatric studies have detailed DID’s traumatic origins, switching mechanisms, and physiological correlates, few studies have systematically examined how alters’ distinct gender identities influence their linguistic behavior. By analyzing pitch, hedge use, and intensifiers across male- and female-identity alters in six women with DID, the present study fills this gap—treating speech as an index of internalized gender and power dynamics within dissociative systems.

**The current study.** This study addresses a critical gap in psycholinguistic research by centering psychological gender identity (rather than biological sex) as a determinant of linguistic variation. The specific objectives are:

- *Isolate psychological gender effects:* Establish a within-subject design to examine how shifts in internal gender identity influence three linguistic features—intensifier use, hedge frequency, and pitch modulation, across twenty-three distinct gender-identity states in six women diagnosed with dissociative identity disorder (DID).
- *Link language to clinical criteria:* Explore the relationship between these linguistic markers and the DSM-defined symptoms of DID (e.g., identity alteration, depersonalization), assessing how discourse-pragmatic and prosodic features reflect and construct the internal dynamics of dissociative states.

**Table 1 The Patient's Information.**

	Female-identity	Male-identity	Clinician(s)
Participant 1	0	4	Dr. Remy Aquarone
Participant 2	4	1	Dr. Nick Bendit
Participant 3	3	1	Dr. Richard Davis and Dr. Colin Ross
Participant 4	1	3	Dr. George Blair-West and Paul Stimulus
Participant 5	1	0	Did not mention the names of their doctors but had clinical DID diagnoses
Participant 6	4	1	
Total	13	10	

**Table 2 Sources for the dissociative identity disorder video dataset.**

Documentary/Interview title	Channel/program name	Program/channel focus
All of Me: Living with dissociative identity disorder	7NEWS spotlight/Sunday night	Investigative current-affairs profiles
Woman with seven different personalities–	60 min Australia	In-depth human-interest journalism
The woman with 15 personalities	Real stories	Independent documentary storytelling
Woman with 2500 personalities says they saved her from shocking child abuse–	60 min Australia	In-depth human-interest journalism
What it's like to live with dissociative identity disorder (DID)	MedCircle	Expert-led mental-health education and discussion
DOCS: The woman with 7 personalities	Truly	True-life documentaries focused on personal journeys

### Research questions.

1. How do intensifiers, hedges, and pitch variation differ across the distinct male-identity and female-identity alters within the same individual?
2. To what extent do these linguistic patterns correspond to the dissociative and behavioral profiles specified in the DSM for DID?

By achieving these objectives and answering these questions, the study will clarify how real-time shifts in psychological gender identity manifest in speech and will establish a detailed framework for investigating language–identity interactions in complex psychopathology.

### Methodology

**Participants.** Six women with a formally diagnosed dissociative identity disorder (DID) comprised our sample. We initially screened seven English-language documentaries and interview transcripts on YouTube, excluding one subject who did not exhibit clear gender-based alter switching. The remaining six participants yielded 23 distinct alters—thirteen identifying as female, ten as male. Participant profiles varied: for example, Participant 1 presented only male alters (0F, 4M), Participant 5 only a female alter (1F, 0M), and the other four individuals each exhibited at least one alter of both genders. All diagnoses were confirmed by licensed mental-health professionals (see Table 1). To control for language proficiency, five participants were native English speakers (18 alters: 9F, 9M), and one was a second-language speaker (5 alters: 4F, 1M). Focusing exclusively on women aligns with Lakoff's deficit model and reflects the preponderance of female cases in public-domain DID research (Rosik, 2012; Orlof et al. 2021). In the analysis, we use “men” and “women” to refer to participants' biological sex, and “male-identity” and “female-identity” to specify the alters' psychological gender.

**Data collection.** We constructed a within-subject dataset from six publicly available, professionally produced interviews and documentary transcripts (≈3 h total), each featuring sequential dialog

between women diagnosed with DID and their alters. The videos (collected over the past two decades) were identified via a systematic YouTube search using both the historical and contemporary names of the DID disorder (“*Dissociative Disorders*,” “*Dissociative Identity Disorder*,” “*Multiple Personality Disorder*,” “*Split Personality Disorder*”). Inclusion criteria were: English-language recordings from verified public-broadcast channels and clear evidence of gender-identity switches within individual patients; we excluded personal vlogs and any clips lacking unambiguous transitions. The details of the six sources are presented in Table 2.

**Study design and data analysis.** In addition to examining raw frequency of hedges and intensifiers, this study employed a three-pronged analytic strategy, quantitative statistics, deductive thematic analysis, and acoustic measurement, to capture how gender identity alters index power and emotion through language.

**Quantitative analysis.** Descriptive statistics and inferential tests were conducted in SPSS to compare hedge and intensifier frequencies across female- and male-identity alters. Hedges (e.g., “*maybe*,” “*I think*”) and intensifiers (e.g., “*really*,” “*so*”) were first counted for each alter, then normalized by total utterances. Means and standard deviations were calculated to summarize usage patterns, and Pearson correlation coefficients assessed the strength of association between each feature and alter's gender identity. This statistical approach allowed us to quantify whether linguistic mitigation (hedges) or emphasis (intensifiers) varied systematically with internalized gender roles.

**Deductive thematic analysis.** To contextualize these quantitative findings, we applied a structured thematic analysis framework (Nowell et al. 2017). Transcripts were segmented by alter and annotated in NVivo 10 according to: (1) Alter gender identity (female vs. male), (2) presence of target features (hedges, intensifiers), (3) DSM-5 dissociative symptoms (e.g., derealization, identity alteration). After familiarization and open coding, codes were organized into candidate themes linking linguistic markers to dissociative behaviors. For instance, instances of hedging co-



Table 3 Descriptive analysis of the participants' hedge and intensifier usages.				
Participant	Hedges mean (SD)	Range	Intensifiers mean (SD)	Range
1	9.60 (12.30)	34	9.80 (14.60)	38
2	1.66 (2.49)	7	2.83 (3.67)	10
3	6.60 (9.76)	26	11.40 (15.40)	41
4	0.80 (0.74)	2	2.20 (2.92)	8
5	62.50 (59.50)	119	47.50 (39.50)	79
6	2.83 (5.89)	16	5.16 (9.38)	26

occurring with descriptions of derealization were grouped, as were intensifier-laden utterances paired with identity-alteration narratives. The themes were refined through iterative comparison to ensure consistency within and distinction between categories.

**Acoustic measurement.** Because transcripts omit prosodic nuance, pitch and other paralinguistic cues were extracted in Praat (Boersma and Weenink, 2020). Audio tracks were exported as WAV files and annotated with multilayer Text-Grids to isolate host versus alter segments. A batch script then computed, per utterance, mean  $F_0$  (pitch floor 75 Hz, ceiling 500 Hz), pitch range (max–min  $F_0$ ), mean intensity and dynamic range, speech rate (syllables/s from vowel onsets/off-sets) and voice quality (jitter, shimmer via point-process analysis). These acoustic metrics were merged with transcript-based counts for each alter, enabling cross-modal statistical modeling of how prosody aligns with hedging and intensification in different gendered identities.

By integrating quantitative frequency counts, thematic linkage to clinical criteria, and fine-grained acoustic profiling, our methodology provides a comprehensive view of how psychological gender identity shapes both what is said and how it is delivered in DID.

Results

**Quantitative analysis.** We began by compiling hedge and intensifier frequency for each alter into a structured dataset. Descriptive statistics are summarized in Table 3. On average, alters produced approximately 13 hedges per individual ( $M = 13.12$ ,  $SD = 15.11$ ) and 13 intensifiers per individual ( $M = 13.14$ ,  $SD = 14.24$ ). However, when aggregated by gender identity, male-identity alters accounted for 45 hedges in total, compared to 33 for female-identity alters, whereas female-identity alters produced 35 intensifiers versus 22 from male-identity alters. These totals suggest a formulaic pattern in the deployment of mitigation versus emphasis devices—mirroring prior findings that, across contexts, speakers tend to rely on a relatively small set of pragmatic markers (Wolfson, 1981).

To quantify the predictive power of gender identity on linguistic features, we ran linear regressions with gender as the predictor (Table 4). Although baseline rates for hedges ( $B = 1.54$ ,  $p = 0.003$ ) and intensifiers ( $B = 1.92$ ,  $p = 0.007$ ) were significantly above zero, gender identity did not significantly predict feature counts (hedges:  $B = -0.77$ ,  $p = 0.247$ ; intensifiers:  $B = -0.15$ ,  $p = 0.869$ ). Pearson correlations likewise indicated only modest associations between gender identity and both hedging ( $r \approx 0.20$ ,  $p = 0.003$ ) and intensification ( $r \approx 0.15$ ,  $p = 0.010$ ).

Moreover, although both hedges and intensifiers occurred at robust rates across all alters, neither feature was systematically modulated by the alters' gender identity. These findings offer nuance to commonly held assumptions about gendered 'powerless' versus 'emphatic' speech styles and suggest that individual

Table 4 Coefficient for sig. in the variable hedge and variable intensifier.					
Outcome	Predictor	B	SE	t	p
Hedges	Constant (Intercept)	1.54	0.46	3.36	0.003
	Gender (male vs. female)	−0.77	0.65	−1.19	0.247
Intensifiers	Constant (Intercept)	1.92	0.65	2.94	0.007
	Gender (male vs. female)	−0.15	0.92	−0.17	0.869

Dependent variable: hedges and intensifiers.

dissociative identities deploy these discourse-pragmatic tools in a more nuanced manner.

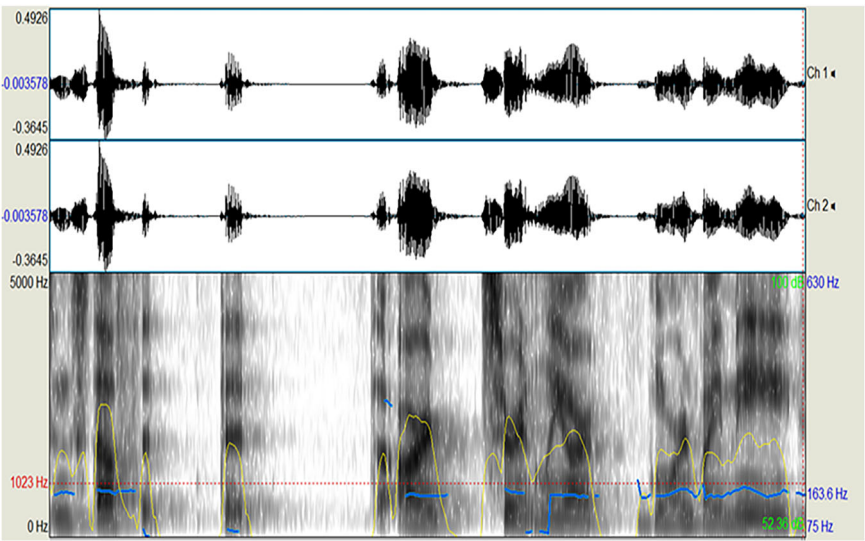
**Acoustic analysis.** Prosodic measurements extracted via Praat (Boersma and Weenink, 2020) revealed gendered pitch contours consistent with anatomical and sociocultural influences. Female-identity alters exhibited a higher mean fundamental frequency ( $M \approx 250.2$  Hz) compared to male-identity alters ( $M \approx 164.6$  Hz), while male-identity alters showed a broader pitch range (see Figs. 2 and 3). These patterns align with established research on sex-linked pitch differences (Hart et al. 1990; Krahé and Papakonstantinou, 2020).

**Thematic analysis.** In this part of the analysis, we integrate the qualitative findings alongside the quantitative findings to show how hedge and intensifier usage manifests in the utterances of the alters. Table 5 presents the five hedging subthemes for *male-identity alters* and the four intensifier subthemes for *female-identity alters*.

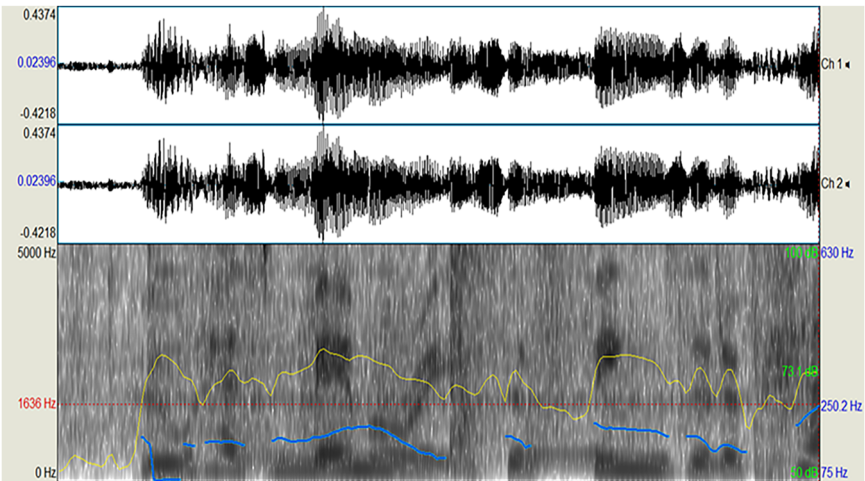
**Theme 1: Hedges (male-identity alters).** Although hedges are often associated with “women’s language,” within our DID context, male-identity alters produced a clear dominance of hedging devices ( $M = 20$  vs. 10;  $p = 0.003$ ). We identified five subthemes. (1) *Uncertainty*: Utterances coded under this subtheme focus on tentativeness. For example, participant 1, male-alter A (asked about self-image; hesitant tone stated): “I am a Prince Charming type I think.” The hedge “I think” signals a lack of confidence in this alter’s self-perception, echoing documented identity-integration challenges (Watkins and Watkins, 1998). (2) *Low self-image*: Language here conveys negative self-evaluations tied to gender embodiment. For example: participant 1, male-alter B (asked about others’ views; reflective tone stated): “You probably see me as everyone sees us...”. This utterance explicitly portrays a male identity trapped in a female body, illustrating internal conflict.

Furthermore, (3) *Identity confusion*: These expressions reveal fragmentation and distress. For example, participant 2, Male-Alter A (asked about identity; distressed tone stated): “...I don’t know; it kind of feels like I am going to die.”. We coded this as a dissociative expression consistent with Steinberg’s (2001) criteria. (4) *Derealization*: Markers of detachment from reality surface in language. For example, participant 6, Male-Alter A (asked about worst moments; flat tone stated): “...I think it can’t get any worse.” (5) *Delusional belief devices*: Fixed or irrational self-ascriptions appear here. For example, participant 4, Male-Alter A (asked to describe self; matter-of-fact tone stated): “I think I’m a bit of a dark horse.”.

These themes mirror DSM-5 dissociative symptoms (Steinberg, 2001) and Lakoff’s Deficit Model (1975) tie between hedges and uncertainty. While hedging traditionally indexes reduced authority among women, in DID male-identity alters may use hedges in ways that reflect internal dissonance between experienced gender and bodily identity.



**Fig. 2 Acoustic analysis for the female-identity alter (F<sub>0</sub> up to ~250 Hz).** Top panel: Waveform of the speech signal in Channel 1; Middle panel: Waveform of the speech signal in Channel 2; Bottom panel: Spectrogram showing frequency (0–5000 Hz) with pitch contour (yellow), formant tracks (blue), and intensity shading in grayscale.



**Fig. 3 Acoustic analysis for the male-identity alter (F<sub>0</sub> up to ~164 Hz).** Top panel: Waveform of the speech signal in Channel 1; Middle panel: Waveform of the speech signal in Channel 2; Bottom panel: Spectrogram showing frequency (0–5000 Hz) with pitch contour (yellow), formant tracks (blue), and intensity shading in grayscale.

Table 5 Themes defined during the deductive thematic analysis.		
Linguistic features	Themes	Examples
Hedges (male-Identity)	Uncertainty	"... I am a Prince Charming type I think"
	Low self-Image	"You probably see me as everyone sees us ...."
	Identity confusion	"I see Paul right now. I see a little bit of me, [and] I don't know; it kind of feels like I am going to die."
	Derealization	"I hate my job; I hated sending others out to suffer, and I think it can't get any worse."
	Delusional beliefs	"I think I'm a bit of a dark horse."
Intensifiers (female-identity)	Identity alteration	"... in the sun-tanned kind of look, fluffy hair that's kind of, always spiky."
	Strengthening of feelings	"... She's just inside. I have to bring it."
	Traumatic experience	"It's like you do not die, but you do not really live either."
		"When dad started to abuse the little girl, I sang some little nursery rhymes and made her feel comfortable."
	Mistrust	"My mommy has lots of good friends like Alex; he's really good to me."
		"I remember some really creepy things; one of my abusers got me pregnant."
		"People at school would throw Paul's books on the floor and do just mean things, and I wouldn't stand for that."

**Theme 2: Intensifiers (female-identity alters).** Female-identity alters showed significantly greater intensifier usage (35 vs. 22;  $p = 0.010$ ). Four subthemes capture how intensification functions in their narratives: (1) *Identity alteration*: Intensifiers signal of a split in self-experience. For example, participant 2, Female-Alter A (asked about internal experience; assertive tone stated): “She’s just inside. I have to bring it.” The intensifier “just” highlights the presence of dissociative experiences. (2) *Strengthening of feelings*: Reinforced emotional states emerge via intensifiers. For example, participant 2, Female-Alter B (asked about feelings; resigned tone stated): “...you do not really live either.”. The “really” here emphasizes emotional detachment and hopelessness (Hanafiyeh and Afghari, 2014; Dorahy et al. 2016).

Furthermore, (3) *Traumatic experiences*: Recollections of abuse are linguistically intensified. For example, participant 4, Female-Alter A (asked about childhood events; somber tone stated): “When dad started to abuse the little girl, I sang some little nursery rhymes...”. This pattern aligns with trauma-narrative structures in DID (Piper and Merskey, 2004). (4) *Mistrust*: Skepticism and vigilance are marked by emphatic modifiers. For instance, participant 5, Female-Alter A (asked about abuse memories; emotional tone stated): “I remember some really creepy things; one of my abusers got me pregnant.” For example, participant 3, Female-Alter A (asked about school life; tense tone stated): “People at school would throw Paul’s books on the floor and do just mean things, and I wouldn’t stand for that.” Intensifiers like “really” and “just” here index increased interpersonal caution. These qualitative patterns mirror the quantitative finding that female-identity alters use more intensifiers than male-identity alters. In the DID context, intensifiers serve as powerful tools for expressing affective intensity, asserting personal conviction, and enacting relational defenses in female-identity narratives.

## Discussion

The gender differences in language use have long been debated among linguists. While some scholars argue there are no absolute differences (Colley et al. 2004), others, such as Robin Lakoff, have proposed systematic linguistic patterns in women’s versus men’s speech. Lakoff’s influential deficit model argues that women’s language includes more hedges, tag questions, and other features traditionally perceived as less authoritative (Lakoff, 1975). Moreover, other linguistic scholars challenged and refined her model. Cameron (2005) critiques binary framing, which emphasizes that gendered language should be understood within broader social and sexual identities, shaped by intersecting power structures. Holmes (2013) expands this by positioning hedges and intensifiers along a politeness–power continuum, interpreting them as interpersonal strategies rather than inherently gendered markers. Moreover, Tannen’s (1990) distinction between “rapport talk” and “report talk” furthers this by describing affiliative versus informational styles that reflect speakers’ relational intentions and perceived authority.

The findings empirically validate key arguments of Lakoff’s model while acknowledging the limits of our sample size ( $N = 6$  participants, 23 alters). The regression analysis showed that male identity alters tended to use fewer hedges than female identity alters, but this difference was not statistically significant ( $B = -0.77$ ,  $SE = 0.65$ ,  $t = -1.19$ ,  $p = 0.247$ ). Similarly, gender did not predict the use of intensifiers ( $B = -0.15$ ,  $SE = 0.92$ ,  $t = -0.17$ ,  $p = 0.869$ ) (see Table 3). Rather than dismissing these non-significant results, we interpret them as a result of low statistical power; with only 6 participants, even moderate effects are unlikely to reach the conventional alpha level of 0.05. In fact, the raw counts reveal that male-identity alters used 45 hedges compared

with 33 used by female-identity alters, which suggests a practical difference that merits further study. This unexpected pattern, in which male-identity alters hedged more often than female-identity alters, challenges the idea that hedging is traditionally associated with women’s speech and points toward the influence of context or individual personality.

Nevertheless, descriptive data reveal meaningful trends. Male-identity alters averaged 7.0 hedges ( $SD \approx 15.8$ ), while female-identity alters averaged 20.7 ( $SD \approx 23.1$ ). For intensifiers, male-identity alters averaged 6.5 ( $SD \approx 10.1$ ) versus female-identity alters’ 19.9 ( $SD \approx 19.2$ ). These contrasts, though underpowered, confirm Lakoff’s (1975) view that tentative features such as hedges reflect lower perceived authority and that intensifiers serve to amplify assertions when speakers feel less powerful (Zurair et al., 2022). Unlike previous research comparing intra-group conversation (e.g., Bonvillain, 2019; Hanafiyeh and Afghari, 2014), our study extends this work into the intra-individual conversation of different gendered identities, revealing how these features manifest within individual systems.

Acoustic analysis via Praat revealed that female-identity alters had significantly higher mean pitch values and narrower pitch distributions, while male-identity alters showed greater pitch variability. These results confirm known anatomical differences in pitch—women tend to have higher vocal pitch due to physiological structures (Hart et al., 1990; Krahé and Papakonstantinou, 2020). However, the broader variability among male-identity alters challenges a purely biological account. Instead, this pattern aligns with Van Bezooijen’s (1995) cultural model, which suggests that prosody is shaped by gender identity and social role, not just anatomy, particularly relevant in DID, where vocal modulation appears to reflect internalized gender scripts.

Thematic analysis revealed distinct patterns in hedging and intensifier use. Male-identity alters’ frequent hedging (e.g., “I think,” “I am not sure”), which corresponds with the theme of uncertainty. Although hedging is typically associated with women’s speech (Hanafiyeh and Afghari, 2014), its frequency among male-identity alters supports Lakoff’s view that hedging signals perceived lower power and aligns with Holmes’s (2013) interpretation of hedges as context-dependent politeness strategies. This finding suggests that hedging is driven more by relational positioning than by biological sex, a dynamic especially salient in the internal hierarchy of DID systems.

The language of female-identity alters reflects more complex emotional and psychological content. The identity alteration subtheme revealed dissociative self-referencing consistent with DSM-5 descriptions of identity disruption (Steinberg, 2001). The strengthening of feelings subtheme captured emotionally charged expressions, aligning with evidence of emotion regulation difficulties in trauma-affected populations (Dorahy et al. 2016; Lewis et al. 1997). Additional themes—traumatic experiences and mistrust—highlighted deep-seated interpersonal injuries and relational caution, echoing known difficulties in attachment and trust among individuals with dissociative disorders.

From a linguistic standpoint, the increased use of intensifiers among female-identity alters reflects both emotional intensity and perceived powerlessness. As Lakoff theorized, intensifiers function to compensate for perceived low status. Tannen’s (1990) “rapport” style helps contextualize this further; female-identity alters’ expressive language, mirrors affiliative, emotionally laden communication, whereas male-identity alters’ more restrained intensifier use, aligns with Tannen’s “report” mode. In the context of DID, intensifiers appear to serve as emphatic tools—amplifying speech to convey urgency, conviction, or unresolved trauma (Dorahy et al. 2016; Lewis et al. 1997).

Future research should expand sample sizes to increase statistical power, incorporate longitudinal designs to track linguistic



change during therapy, and explore cross-cultural samples to investigate how cultural norms shape gender expression and language in DID. Through such extensions, we can continue uncovering how language reflects, constructs, and negotiates the complex realities of gendered psychological experience.

**Limitations.** Several limitations must be considered when interpreting the findings of this study. First, the interviews analyzed may have been partially pre-planned or shaped for public presentation, as all data were drawn from publicly available YouTube content. This introduces the possibility of performance bias, where alters may present themselves in ways aligned with expected or desired narratives. Consequently, some claims made by the gendered alters may have limited reliability.

Second, the study's narrow sample scope restricts generalizability. With only six participants (consisting of 10 male-identity and 13 female-identity alters), all biologically women, the statistical results are presented descriptively and should be interpreted with caution. While the patterns observed are consistent and compelling, they should not be assumed to represent broader DID populations without further validation.

Third, the reliance on online media sources introduces potential sampling bias. Unlike clinical interviews, YouTube content may be selectively edited or influenced by factors such as audience engagement or self-presentation goals, which could affect linguistic authenticity. Although the longitudinal consistency of these videos (spanning two decades) adds plausibility to the findings, the influence of media format remains a limitation.

Finally, while the deductive thematic approach is appropriate, including inter-coder reliability metrics and example coding frameworks would enhance the study's reproducibility and methodological transparency. Future research could benefit from applying a broader range of linguistic and discourse-analytic tools, as well as collecting data from controlled, clinician-led interviews to explore whether different contexts yield similar or divergent linguistic patterns.

## Conclusion and recommendations

This study extends Lakoff's Deficit Model into the psychological context of dissociative identity disorder (DID), representing for the first time that shifts in the psychological gender identity (distinct from biological sex) correspond with systematic changes in language use. By integrating Praat-based acoustic analysis, quantitative measures of hedges and intensifiers, and deductive thematic analysis, we found that male-identity alters tended to use more hedges (indexing tentativeness and lower perceived power), while female-identity alters employed more intensifiers (signaling emphatic, power-compensating speech). These findings offer empirical support for Lakoff's foundational claims while showing that gendered speech patterns emerge not from biological anatomy but from dynamically constructed internal identity processes.

Our results suggest that gendered power dynamics (captured linguistically) are not merely interpersonal but intrapsychic. This challenges purely biological or binary accounts of gendered language and highlights the need to consider context, trauma, and identity formation in understanding speech behavior in DID. Looking forward, future research should examine whether acoustic features like pitch range can serve as diagnostic or therapeutic markers of alter identity, and whether shifts in hedge and intensifier usage might help clinicians track identity transitions over time. We also encourage replication in male-bodied DID populations and in non-English linguistic communities to test the cross-cultural and cross-linguistic robustness of these patterns.

## Data availability

No datasets were generated or analyzed during the current study.

Received: 23 January 2025; Accepted: 29 July 2025;

Published online: 12 August 2025

## References

- Aini N, Djatmika D, Sumarlam S, Kristina D (2023) Hedge markers: a study of politeness and gender in media interaction. *Int J Soc Cult Lang* 11(3):226–241
- Alzamil WA, Ibrahim UM, Alabdulkareem R, Almusfir MF, Alqasem MA, Ahmed EM, Alkasabi MT (2023) Factorial validity of the self-compassion scale among female University students: A comparative study between Saudi and Egyptian cultures. *African J Reproductive Health* 27:88–100
- Archer J (2019) The reality and evolutionary significance of human psychological sex differences. *Biol Rev* 94(4):1381–1415. <https://doi.org/10.1111/brv.12507>
- Balachandra L, Fischer K, Brush C (2021) Do (women's) words matter? The influence of gendered language in entrepreneurial pitching. *J Bus Venturing Insights* 15:e00224. <https://doi.org/10.1016/j.jbvi.2021.e00224>
- Beidel DC, Frueh BC (eds) (2018) *Adult psychopathology and diagnosis*, 8th edn. John Wiley & Sons
- Boersma P, Weenink D (2020) Praat: doing phonetics by computer [computer software]. Version 6.1.37. <http://www.praat.org/>
- Bonvillian N (2019) Language, culture, and communication: The meaning of messages. Rowman & Littlefield
- Bowman ES, Spiegel D, Jack L, Willson S (2005) Recovered memories, hypnosis, and dissociation. *Curr Psychiatry* 4(3):2–3
- Cameron D (1997) Performing gender identity: Young men's talk and the construction of heterosexual masculinity. In S. Johnson & U. H. Meinhof (Eds.), *Language and masculinity* (pp. 47–64). Blackwell Publisher
- Cameron D (2005) Language, gender, and sexuality: current issues and new directions. *Appl Linguist* 26(4):482–502
- Colley A, Todd Z, Bland M, Holmes M, Khanom M, Pike H (2004) Style and content in emails and letters to male and female friends. *J Lang Soc Psychol* 23(3):369–378. <https://doi.org/10.1177/0261927X04266811>
- Coons PM (1988) Psychophysiological aspects of multiple personality disorder: a review. *Dissociation: Prog Dissociative Disord* 1(1):47–53
- Coons PM, Milstein V (1986) Psychosexual disturbances in multiple personality: characteristics, etiology, and treatment. *J Clin Psychiatry* 47(3):106–111
- Del Giudice M, Booth T, Irwing P (2012) The distance between Mars and Venus: measuring global sex differences in personality. *PLoS ONE* 7(1):e29265. <https://doi.org/10.1371/journal.pone.0029265>
- Dewi TC, Widyawati W, Rochmahwati P, Khasanah N (2024) Gender-based linguistic patterns in Quora apps: a comparative study. *SALEE: Study Appl Linguist Engl Educ* 5(1):79–96
- Domin S (2020) *Altered speech: a case-study of identity-driven speech in a Dissociative Identity Disorder system*. Scripps Senior Theses, 1768
- Dorahy MJ, Middleton W, Seager L, Williams M, Chambers R (2016) Child abuse and neglect in complex dissociative disorder, abuse-related chronic PTSD, and mixed psychiatric samples. *J Trauma Dissociation* 17(2):223–236. <https://doi.org/10.1080/15299732.2015.1077916>
- Du R (2021) A corpus-based gender study of hedges in spoken British English. K. Hu, J.-B. Kim, C. Zong, & E. Chersoni (Eds.), *Proceedings of the 35th Pacific Asia conference on language, information and computation*. pp 562–571. Association for Computational Linguistics
- Fundukian LJ (2008) *The Gale encyclopedia of mental health*, 2nd edn. Thomson Gale
- Hanafiyeh M, Afghari A (2014) Gender differences in the use of hedges, tag questions, intensifiers, empty adjectives, and adverbs: a comparative study in the speech of men and women. *Indian J Fundam Appl Life Sci* 4(2):1168–1177
- Hart J, Collier R, Cohen A (1990) *A perceptual study of intonation: an experimental-phonetic approach to speech melody*. Cambridge University Press
- Hiramoto M (2010) Utterance final position and projection of femininity in Japanese. *Gend Lang* 4(1):35–57
- Holmes J (2008) *Gendered talk at work: constructing gender identity through workplace discourse*. John Wiley & Sons
- Holmes J (2013) *Women, men and politeness*. Routledge
- Kisiel CL, Lyons JS (2001) Dissociation as a mediator of psychopathology among sexually abused children and adolescents. *American J Psychiatry* 158(7):1034–1039
- Krahé B, Papakonstantinou L (2020) Speaking like a man: women's pitch as a cue for gender stereotyping. *Sex Roles* 82(1–2):94–101. <https://doi.org/10.1007/s11199-019-01049-2>
- Ladegaard HJ (2012) Rudeness as a discursive strategy in leadership discourse: culture, power, and gender in a Hong Kong workplace. *J Pragmat* 44(12):1661–1679. <https://doi.org/10.1016/j.pragma.2012.07.003>
- Lakoff R (1973) Language and woman's place. *Lang Soc* 2(1):45–79. <https://doi.org/10.1017/S0047404500000051>



- Lakoff RT (1975) Language and woman's place: text and commentaries. Harper & Row
- Lewis DO, Yeager CA, Swica Y, Pincus JH, Lewis M (1997) Objective documentation of child abuse and dissociation in 12 murderers with dissociative identity disorder. *Am J Psychiatry* 154(12):1703–1710. <https://doi.org/10.1176/ajp.154.12.1703>
- Martinez AP, Dorahy MJ, Nesbit A, Palmer R, Middleton W (2020) Delusional beliefs and their characteristics: a comparative study between dissociative identity disorder and schizophrenia spectrum disorders. *J Psychiatr Res* 131:263–268. <https://doi.org/10.1016/j.jpsychires.2020.08.003>
- Mazzetto S (2024) Fostering National Identity Through Sustainable Heritage Conservation: Ushaiger Village as a Model for Saudi Arabia. *Heritage* 8(1):4
- Mohajer L, Jan JM (2015) Preserving face and the use of hedges in masculine world of men. *Procedia Soc Behav Sci* 208:13–20
- North C (2015) The classification of hysteria and related disorders: historical and phenomenological considerations. *Behav Sci* 5(4):496–517. <https://doi.org/10.3390/bs5040496>
- Nowell LS, Norris JM, White DE, Moules NJ (2017) Thematic analysis: Striving to meet the trustworthiness criteria. *International j qualitative methods*, 16(1), 1609406917733847
- Orlof W, Rozenek EB, Waszkiewicz N, Szwczak B (2021) Dissociative identity (multiple personality) disorder in Poland: a clinical case description and diagnostic difficulties. *Adv Psychiatry Neurol/Postępy Psychiatrii Neurol* 30(3):213–218. <https://doi.org/10.5114/ppn.2021.109138>
- Piper A, Merskey H (2004) The persistence of folly: a critical examination of dissociative identity disorder. Part I. The excesses of an improbable concept. *Can J Psychiatry* 49(9):592–600
- Plug I, Stommel W, Lucassen PL, van Dulmen S, Das E (2021) Do women and men use language differently in spoken face-to-face interaction? A scoping review. *Rev Commun Res* 9:43–79
- Polderman TJ, Kreukels BP, Irwig MS, Beach L, Chan YM, Derks EM, International Gender Diversity Genomics Consortium (2018) The biological contributions to gender identity and gender diversity: bringing data to the table. *Behav Genet* 48:95–108
- Rosik CH (2012) Opposite-gender identity states in dissociative identity disorder: psychodynamic insights into a subset of same-sex behavior and attractions. *J Psychol Christ* 31(3):278–285
- Rutkowsky IH, Kahn AS, Sahito S, Aqeel N, Tohid H (2017) The neuropsychiatry of dissociative identity disorder: why split personality patients switch personalities intermittently. *J Cell Sci Ther* 8(2):1–8
- Schmauss LS, Kilian K (2023) Hedging with modal auxiliary verbs in scientific discourse and women's language. *Open Linguist* 9(1):20220229
- Scroppo JC, Drob SL, Weinberger JL, Eagle P (1998) Identifying dissociative identity disorder: a self-report and projective study. *J Abnorm Psychol* 107(2):272–284
- Simeon D, Guralnik O, Knutelska M, Schmeidler J (2002) Personality factors associated with dissociation: temperament, defenses, and cognitive schemata. *Am J Psychiatry* 159(3):489–491
- Singh D, Zucker KJ (2021) A follow-up study of boys with gender identity disorder. *Front Psychiatry* 12:632784
- Spiegel D (1984) Multiple personality as a post-traumatic stress disorder. *Psychiatr Clin North Am* 7(1):101–110
- Steinberg M (2001) Updating diagnostic criteria for dissociative disorders: learning from scientific advances. *J Trauma Dissociation* 2(1):59–63
- Tannen D (1990) You just don't understand: Women and men in conversation. New York: Ballantine Books
- Van Bezooijen R (1995) Sociocultural aspects of pitch differences between Japanese and Dutch women. *Lang Speech* 38(3):253–265. <https://doi.org/10.1177/002383099503800303>
- Watkins JG, Watkins HH (1998) The management of malevolent ego states in multiple personality disorder. *Dissociation* 1(1):67–72
- Wolfson N (1981) Compliments in cross-cultural perspective. *TESOL quarterly*, 15(2), 117–124
- Xiao Z, Yan H, Wang Z, Zou Z, Xu Y, Chen J, Keyes BB (2006) Trauma and dissociation in China. *Am J Psychiatry* 163(8):1388–1391
- Zuraig W, Mashaqba B, Alahboul SS, Huneety AI (2022) Jordanian women are “sort of like” less assertive than Jordanian men, aren't they? *Int J Commun Linguist Stud* 20(1):83

## Acknowledgements

The authors would like to thank the Research and Initiatives Center (RIC) at Prince Sultan University for its financial and technical support.

## Author contributions

TA (first author): Conceptualization of the study; collection and organization of data; original draft of literature review; writing and interpreting the findings. NA (second author): Revising the literature review; analyzing the data. MI (third author): Provided critical revisions to the data and formatting.

## Competing interests

The authors declare no competing interests.

## Ethical approval

This study did not involve direct interaction with human participants or the collection of personal data. All materials analyzed were publicly available, non-copyrighted media interviews accessible through open sources. As such, ethical approval was not required. Nonetheless, the study adhered to established ethical standards for research using publicly available data, in accordance with Prince Sultan University's research ethics policy and the principles of research integrity and respect for persons.

## Informed consent

Informed consent was not applicable to this study, as no data were collected directly from human participants. The data used comprised publicly available, non-copyrighted media interviews that do not include private or identifiable personal information. All sources have been fully cited and acknowledged in the reference list.

## Additional information

**Correspondence** and requests for materials should be addressed to Turkiyah Alotaibi.

**Reprints and permission information** is available at <http://www.nature.com/reprints>

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

© The Author(s) 2025, corrected publication 2025