

Auslan and Matukar Panau: A modality-agnostic look at quotatives

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Investigations of quotatives are essential for understanding how humans talk about talking. However, comparison of quotatives and other communicative phenomena have been hampered by theoretical paradigms that privilege Western, spoken, conventionalised forms of communication while marginalising others, including signed languages, visible bodily actions, vocal depiction, and non-Western communication practices more generally. Here we demonstrate how corpus typology methods can redress some of these biases and provide insights on how languages work and why they differ. We investigate the quotatives used by five pairs of Auslan signers and five groups of Matukar Panau speakers undertaking a narrative problem-solving picture task.

We find that the signers and speakers in our study used almost unilaterally direct forms of quotatives. However, both groups preferred direct quotation of different narrative elements, with Matukar Panau speakers preferring to quote dialogue and thought, while Auslan signers preferred to quote action and dialogue. We employ a novel “expressivity index” to reveal a range of user variability within each language group. This study demonstrates how a modality-agnostic framework of comparative semiotics is useful for advancing our understanding of inter- and intra-language variability, while enriching our understanding of direct quotation in both signed and spoken language interactions.

1. OUR APPROACH

1.1 REPORTED UTTERANCES/QUOTATIVES

A central aspect of human communication is talking about talking: how we do “speech within speech, utterance within utterance, and at the same time also *speech about speech, utterance about utterance*” (Vološinov 1973: 115). The ways in which this is done depends on the communicative repertoires shared between interactants and the semiotic resources available within given spatiotemporal contexts, in addition to embodied and/or language-specific possibilities for organisation (Kendon 2014; Kusters et al. 2017). For example, hearing speakers talking face-to-face may use conventionalised spoken words within a vocal depiction of how these words were perceived or believed to be uttered, while also visibly mimicking the actions done by

the depicted speaker (Clark & Gerrig 1990; Blackwell et al. 2015). Deaf signers may use conventionalised manual signs within a visible bodily depiction of what was said or done, while also indexing other referents within the space in front of their body (Metzger 1995; Dudis 2011). Deafblind signers communicating via co-articulated tactile signing practices may even physically collaborate with others' bodies, recruiting and guiding the willing bodies of their partner into the depicted action as if it were happening in real time (Mesch et al. 2015; Edwards 2015). In short, there are a wide range of communicative practices and potentialities we can draw upon when talking about talking.

Regardless of the specific combinations of communicative repertoires and semiotic resources used, all are enchronically organised within tightly coordinated composite utterances (Enfield 2009). These strategies for talking about talking enable us to achieve multiple outcomes within interactions. For example, they enable us to report, quote, recreate and mimic the actions, dialogue and thoughts of ourselves and others from different viewpoints, thus facilitating the presentation of different perspectives within discourse (e.g., Perniss 2007; Dancygier & Sweetser 2012; Ferrara & Johnston 2014; Kurz et al. 2019). They facilitate creative performance and maximise intersubjective engagement, as well as enabling us to signal epistemic authority and other stances to any evaluations expressed through the act of quoting (e.g., Schifffrin 1981; Myers 1999; Holt 2000; Niemelä, 2010; Ingridis & Aronsson 2014; Iwasaki 2015; Shaw 2019). They also enable us to depict and index the actions, dialogue and thoughts of ourselves and others, in addition to – or instead of – describing them using more conventionalised strategies (Clark 2016; Hodge & Cormier 2019). This facilitates richer and different characterisations of prior events than might otherwise be possible.

Strategies for talking about talking also tie into more global strategies of language use such as how we do reference and achieve discourse cohesion. In other words, how we understand who did or said what to whom, how and when (e.g., Chafe 1976; Givón 1983; Du Bois 1980; Evans et al. 2018a; 2018b; Frederiksen & Mayberry 2019; Hodge et al. 2019). There are also likely many other as-yet unknown reasons for why these strategies are used and how, which may only be revealed when we actively work to centre marginalised voices and consider local ideologies of language and communication practices (see e.g., Turner 2010; Ellis et al. 2019; Kusters et al. 2017; Dingemane 2018; Mufwene 2020; Braithwaite 2020). Overall, comparative investigations of quotatives across interactions and languages offer a rich entry point into understanding how and why social relations may shape the evolution of specific “stabilised constructional patterns” of language use (Vološinov 1973: 116; see also LaPolla 2003; Levinson & Enfield 2006; Spronck 2019; Dingemane 2019).

Throughout this paper we refer to *quotatives* or *reported utterances* to refer to this aspect of communication in the field of linguistic typology. Although both terms originated within the spoken language literature and neither are neutral with respect to mode of expression, they are slightly more inclusive than the traditional term *reported speech*, which is not an appropriate or accurate term for talking about signed language phenomena. When a deaf signer quotes another deaf signer, she is reporting and demonstrating content attributed to someone else, but she is not often reporting an act of speaking done using the sounds produced with one's vocal cords. Indeed, the term *reported speech* is an example of a typological category with an inherent bias for a specific mode of communication. This has been described as “modality chauvinism” in the language and communication sciences (Braithwaite 2019: 161). We need to find ways to challenge this bias, so that signed languages and other

marginalised communication practices are no longer excluded. Unfortunately, the field currently lacks a clear term that both captures how signers report utterances and facilitates comparison with the prolific descriptions of reported speech or thought done by speakers that are already available. We hope this chapter instigates further thought and discussion on these points.

1.2 QUOTATIVES IN SPOKEN AND SIGNED LANGUAGE LINGUISTICS

Speakers of spoken and written languages may coordinate a wide range of spoken and/or written forms to signal a shift in time and perspective in reporting or quoting self or others' utterances. Some of these forms may be highly conventionalised, such as modifications to spoken or written tense, subject or object agreement forms, and/or deixis. Such conventionalised strategies have received extensive attention from linguists and have been variously described as *reported discourse* (Güldemann 2008), *direct speech* (Evans 2013), and *reported speech* (Spronck & Nikitina 2019). These terms refer to reported utterances where there is: (a) some change in perspective from the speaker to some other role, including the speaker in some non-present moment; and/or (b) use of specific conventionalised forms to signal this shift, e.g., spoken or written deixis, tense and/or person agreement forms that signal an utterance as occurring outside the present moment.

Less conventionalised and highly improvised forms may also be incorporated into time and perspective shifts, such as by physically embodying another role to depict their perspective for the utterance moment, with or without framing this depiction conventionally. Both signers and speakers make use of these strategies. For example, deaf signers may re-enact the facial expression and bodily actions of a character in a narrative, while directing manual forms and deictic actions towards meaningful locations in the signing space in front of their body as if they were that character (e.g., Winston 1991; Metzger 1995; Earis & Cormier 2013; Cormier et al. 2015). Similarly, hearing speakers may re-enact both the vocal and visible properties of a reported event, as in the utterances "I was like '[choking/gagging sound]'" (D'Arcy 2015: 44), or the utterance "I got out of the car, and I just [demonstration of turning around and bumping his head on an invisible telephone pole]" (Clark & Gerrig 1990: 782). These kinds of utterances also often incorporate conventionalised forms, and have been variously described in the spoken and signed language linguistics literature as *demonstrations* (Clark & Gerrig 1990; Bavelas et al. 2014), *constructed dialogue* and *constructed action* (Tannen 1986; Metzger 1995; Cormier et al. 2013; Ferrara & Johnston 2014), *perspective shift* (Janzen 2004), *role shift* (Sandler & Lillo-Martin 2006; Herrmann & Steinbach 2012; Ebert 2018; Quer 2019), *quotations* (D'Arcy 2015), *multimodal constructions* (Blackwell et al. 2015), and *multimodal character viewpoint* (Stec et al. 2017).

However, researchers across the communication sciences differ widely in the paradigms and methods for investigating how these reporting or quoting actions are done (see e.g., Spronck & Nikitina 2019, and related commentaries). One consequence is that quotatives done by hearing speakers and deaf signers are often analysed and described differently, with different emphasis given to different aspects of the quotation. This makes it difficult to compare quotation across different languages and interactions (e.g., deaf/deaf, hearing/hearing interactions) and thus to undertake typological comparisons that are not biased towards some forms of expression, while excluding others.

Indeed, few comparative studies have been undertaken (see Rayman 1999; Marentette

et al. 2004; Earis & Cormier 2013; Quinto-Pozos & Parrill 2015; Herrmann & Pendzich 2018; Janzen 2022; Quinto-Pozos, Parrill & Coons 2022; Parisot & Saunders 2022; Vandenitte 2021, 2023). A general consensus is that deaf signers use visible forms in their reported utterances more often than hearing speakers use visible forms, and that visible quotation is the main strategy that deaf signers use to report action and dialogue. Some researchers claim that for some signers in some contexts, it is the only strategy (e.g., Quinto-Pozos 2007). It has also been suggested that deaf signers' strategies for visible quotation are more conventionalised and systematic compared to the visible strategies preferred by hearing speakers, especially regarding the use of specific forms. In other words, speakers do not use visible forms as much as signers – but when they do, speakers tend to rely on more improvised forms of depiction. Consequently, there may be more intra-language variation when quotatives are compared across signed and spoken languages (see Shaw 2019; Vandenitte 2019 for more discussion).

Most comparative studies have been limited by small sample sizes and a lack of naturalistic data. It has also been difficult to operationalise modality-agnostic methods of comparative analysis. Hence, a major challenge for the field is reconciling data that privileges spoken forms of communication with data that analyses quotation as a multimodal construction, where all the meaningful forms of signalling involved in the quoting are considered. A crucial question remains unanswered: when form is not used as a defining property for identifying instances of reported utterance (cf. typologies of *reported speech*), are there more similarities than differences in how speakers and signers report utterances?

One recent study that resolved these methodological problems looked at a signed language and a spoken language and found that differences in the frequency of use of certain articulators may be linked to articulatory constraints, along with factors such as different causal frames (Vandenitte 2023). Vandenitte undertook a corpus-based comparison of quotatives produced by hearing speakers of Belgian French and deaf signers of LSF (Langue des Signes de Belgique Francophone; see Meurant 2015). He found that visible quotation (“constructed action”) is more prevalent in the LSF data compared to Belgian French, and that deaf signers used more visible articulators to signal quotation when compared to hearing speakers, who could draw on the availability of voice. He also found that both groups tended to prefer a similar hierarchy of articulators: head > gaze > face > torso > hands > lower half of body for LSF and head > gaze > hands > torso > face > voice > lower half of body for Belgian French. Belgian French speakers' use of voice quality to construct actions was relatively infrequent, and most likely used for constructed dialogue. Despite these nuanced differences, the LSF signers and Belgian French speakers overall used similar articulators to create their quotations.

Here we build on this approach by comparing how visible and/or audible quotatives were signalled during interactions between pairs of deaf Auslan signers and pairs of hearing Matukar Panau speakers. We analyse corpus data from the multilingual Social Cognition and Parallax Interview Corpus (SCOPIC) archive (Barth & Evans 2017)¹.

1 Documentation and early development of the Auslan and Australian English archive and corpus was supported by Australian Research Council (ARC) funding to Trevor Johnston, Adam Schembri, Kearsy Cormier and Onno Crasborn (DP140102124). Archiving was supported by UK Arts and Humanities Research Council funding to Kearsy Cormier (AH/N00924X/1). Annotation of the Auslan

This archive documents recordings of interactions between speakers and signers of more than 20 languages as they collaborate on the Family Problems Picture Task (San Roque et al. 2012). During this task, friends and family members look at a series of 16 drawings of characters represented in scenes that deal with alcohol consumption, abuse, imprisonment, redemption, relationships, and reconciliation. In pairs, people first see the picture cards one by one in a set random order. They are asked to describe each picture card to the other person. After describing all the cards, the pair then work together to arrange the cards in an order that makes sense to them. They then tell a narrative of the story to a third person who comes in at the end of the task. A major benefit of using this task for cross-linguistic analysis is that it can be used with many different language communities, especially within endangered, non-Western language contexts. This task constrains factors such as discourse topic, while not strongly constraining people's linguistic choices.

Using a sample of the Auslan and Matukar Panau data archived in SCOPIC, we further annotated each instance of quotation to capture the following methods involved in quoting: (a) conventionalised manual signs, (b) conventionalised spoken or mouthed forms, (c) facial expressions, (d) improvised hand actions, (e) head movements, (f) improvised mouth movements, (g) eye gaze, (h) torso movements, and (i) voice quality. We wanted to know what kinds of quotatives were used by these signers and speakers, i.e., did they report actions, thoughts and/or dialogue. We also wanted to know more about the quoting strategies possible in each language and whether we could describe and compare these strategies in a modality-agnostic way. Consideration of how signers and speakers signal quotatives would enable us to build a richer picture of why we do it and what this says about language variation and diversity (see Spronck 2019; Hodge & Cormier 2019). We used audiovisual recordings and ELAN transcriptions to annotate and analyse the composite strategies (e.g., combinations of speech, vocal depictions, manual conventional signs and/or bodily actions) and articulators used (e.g., voice, hands, eyes, face, body, etc.). Finally, we ask whether the distribution of strategies used to create multimodal quotatives differs across languages and/or across individuals, and what this means for linguistic typology more generally.

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2. LANGUAGES

2.1 AUSLAN

2.1.1 ETHNOLOGY

Auslan (British Sign Language family) is the most widely used deaf community signed language in Australia. Auslan has evolved from late eighteenth-century BSL (British Sign Language) via deaf immigrants and teachers of the deaf from Britain who established the first deaf schools (Johnston & Schembri 2007). Auslan has since developed within social networks of deaf signing families, residential schools for deaf children, and social groups such as religious organisations and state deaf societies (see Schembri et al. 2010; Carty 2018). Conservative estimates put the number of profoundly deaf signers in Australia at 6,500 (Johnston 2004). However, the number of people who use Auslan every day is assumed to be much higher. During the 2021 Australian Census, approximately 16,000 people reported Auslan as a language other than English used at home (Australian Bureau of Statistics 2021).

Auslan is a quintessentially face-to-face language (via sight and/or touch) with no native written orthography (Johnston 1996). Most Auslan signers use English for written or typed communication, and many signers also know other signed languages such as ASL (American Sign Language), ISL (Irish Sign Language) and/or spoken/written languages such as family heritage languages, e.g., Arabic, Croatian, Lao (see Willoughby 2012). Other “shared” (deaf-oriented) and “alternate” (hearing-oriented) signed languages are also used by deaf and hearing Aboriginal and Torres Strait Islander Australians (see Kendon 1988; Green 2014; Bauer 2014). Our understanding of how Auslan is used by deaf Aboriginal and Torres Strait Islander people is still unfolding (see Jackson 2015; Ellis et al. 2019; Green, Meakins & Algy 2022).

Auslan is characterized by extensive sociolinguistic and other language variation. The main reason is that less than 3% of deaf children are born into Auslan-signing families and therefore experience uninterrupted, intergenerational language transmission (Johnston 2004). Furthermore, the people and communities who use Auslan are extremely diverse. Auslan signing communities include deaf children and adults who have experienced language deprivation in early childhood, due to being denied access to language, socialisation and education (see Hall 2017). It includes high numbers of deaf adults who learned to sign much later in life via non-traditional language learning pathways, such as through deaf and hearing social networks after transition to adulthood (i.e., “new signers”, de Meulder 2019). It also includes even higher numbers of hearing adults learning Auslan because their family member or friend is deaf, or motivation to pursue an interpreting career, and/or out of interest. These factors all influence the evolution of Auslan and affect possibilities for conventionalisation and language standardisation across communities of Auslan signers.

2.1.2 SIGNERS IN THIS STUDY

This study includes data from five pairs of Deaf Auslan signers ($n = 10$) from Melbourne who were filmed undertaking different activities. All signers are native signers who learned Auslan from their primary caregivers from birth, or early childhood signers who learned Auslan from their peers before age 10. Individuals in each pair are siblings, friends and/or colleagues, and all pairs already knew the Deaf

native signer who facilitated and was present during their session. Signers range from age 30 to 65 and most hold tertiary qualifications such as Graduate Diploma or Bachelor of Arts. At least one signer in each pair is widely known and respected for their signing skills, especially with respect to story-telling skills, and some are also experienced Auslan teachers and/or community leaders. Data for this particular study came from the first part of the SCOPIC task: describing picture stimuli cards.

2.2 MATUKAR PANAU

2.2.1 ETHNOLOGY

Matukar Panau is a spoken language (Oceanic family) of Papua New Guinea, used by around 300 speakers who live in two neighbouring, small coastal communities (Matukar and Surumarang), all living within 3 km² of each other. Matukar Panau speakers tend to be members of the community who are over 30 years of age, while younger speakers primarily use Tok Pisin, an English-based creole lingua franca of Papua New Guinea. As such, Matukar Panau is considered an endangered language. Many, especially older, speakers in the community are multilingual in neighbouring Papuan and other Oceanic languages through inter-marriage or contact as well as Tok Pisin. Many community members live through subsistence farming and fishing, small-scale markets and a few work in the nearby provincial capital of Madang or other nearby towns. Speakers are part of dense social networks and many communicate daily with one another. Like Auslan, the primary mode of transmission is also face-to-face. Matukar Panau speakers generally use Tok Pisin for written communication.

2.2.2 SPEAKERS IN THIS STUDY

This study includes data from five groups of Matukar Panau speakers ($n = 12$) filmed in Matukar. Tasks started with a pair of speakers and ended with three people, some of whom spoke more than others. Data for this particular study came from all three parts of the SCOPIC task: describing picture stimuli cards, organizing them and telling stories about them. All groups of speakers know each other quite well and most have strong family or clan ties. Speaker's ages were between 30-65. As this is a first research foray into describing the multimodal communication practices used by speakers of Matukar Panau, we confirmed our impressions of speakers in this specific dataset with other recordings that were not part of SCOPIC. We observed that specific people have their own individual styles that were noticeable in various recordings. Notably, three speakers in this dataset tend to use many more manual and bodily gestures than other speakers in their quotations. First, two men who are known jokers in the village: John Bogg, a former school teacher and Taleo Kreno, a clan leader. These two speakers, especially Bogg, tend to use a range of animated bodily actions that make their speech more lively. The other is Kadagoi Rawad Forepiso, a language care-taker and sister to Bogg, who is the primary consultant for the Matukar Panau documentation project. She is generally quite clear and careful with her language use, often incorporating many bodily actions into her speech, such as pointing with her hands, head, eyes, or chin.

2.3 LANGUAGE COMPARISON

Auslan and Matukar Panau, while seemingly quite different, are good candidates for comparison. Both of these languages have no native written system, but use ambient majority language writing systems instead: English for Auslan and Tok Pisin for Matukar Panau. Both are face-to-face languages at risk of language

shift/endangerment: Matukar Panau due to younger community members speaking Tok Pisin, and Auslan due to systemic pressures on the vitality of Auslan, including low numbers of native signers and high numbers of adult deaf and hearing learners. Auslan is used by many tight clusters of people in Australia, while Matukar Panau is used by two tight community clusters of Papua New Guinea.

There is existing research on multimodality and use of gesture in Auslan (see Green, Hodge & Kelly 2022 for a recent overview). Although there is no previous research of gesture in Matukar Panau, studies from other communities in Papua New Guinea illustrate that speakers use a range of bodily articulators for pointing such as finger pointing alongside lip pointing (Feldman 1986) and nose pointing (Cooperrider & Núñez 2012; Cooperrider et al. 2018). Several studies also note the importance of bodily actions in conjunction with speech for storytelling (Van Baal 1966; Pickford 2005; Kluge 2019). As far as the authors are aware, this is the first time a signed language has been compared with a spoken language that is not ambient for the signed language. Rather, this study takes a modality-agnostic decision to compare two languages that are ecologically similar in terms of their social networks and use, regardless of their mode. This may reveal insights on how unrelated languages pattern together, whether due to community structures or other social parameters and pressures.

Indeed, a very striking similarity between Auslan and Matukar Panau is the temporal and schematic structure of quotations. We describe these in detail in §3, but for now we present some typical examples below, noting that quotations in both languages are overwhelmingly “direct”. Canonical direct quotations (adapted from Evans 2013, “canonical direct speech”) do the following:

- Reproduce or reconstruct content created by the quoted person (or at least quotations are depicted as if they were the original form, although they are not usually verbatim)
- Include all purported linguistic particularities from the original, including vocal modulation, gestures, body movement, eye gaze, etc
- Signal deictically sensitive information (such as tense, locational deictic adverbs or points, or person agreement) from the perspective of the quoted person

Quotations may still be direct if they have most of the characteristics listed above and avoid “indirect” characteristics such as shifting perspective to the time and space of quoting and from the perspective of the quoter rather than the quotee. In a recent typological comparison of 13 languages, Auslan and Matukar Panau were seen to have much higher usage of direct strategies than eight other languages in the sample, further justifying them as good candidates for comparison (Barth et al. 2021).

Example (1) is from Auslan where we see the quotation is produced entirely from the perspective of the person being quoted – in this case, the central figure of the father depicted in the cards. The signer visibly enacts how the father refuses the offer of an alcoholic drink, and telling his friend that he is done with drinking. This token of quotation is unframed, because the agent was explicitly identified and framed with a lexical sign two utterances prior.

Example (2) is from Matukar Panau where we see the quotation in the person, mood

and aspect appropriate to the original time of speaking, rather than to the time of quotation. Further, the speaker shakes her head to signal dispreference, enacting the feeling and bodily actions of the person quoted.

(1) Auslan

SocCog-af01-PT_A_c12a, 00:48.1-00:50.1



visible enactment——|

STOP FINISH.GOOD STOP

"no, (I am) finished (with that drinking), no" (he said or did)

The father said to them, "No, I am done with that drinking."

PT visibly depicts the facial expression and body movements of the man refusing drink.

(2) Matukar Panau

SocCog-mjk10-ckd_ma_2, 3:58.5-4:00.0



visible enactment——|

"nga-mai-ye"

1.SG-negative-R:I:PFV

"I didn't want it,"

i bal

3.SG throw

he says.

Clara Kusos Darr visibly depicts the negating head shaking done by the man character refusing drink.

We take these reasons as a good basis for comparing these two languages, alongside our broader goal of doing modality-agnostic comparison. One major difference between Auslan and Matukar Panau is the prevalence of quotations. As explained above, the Auslan data analysed here comes from the first SCOPIC task (describing picture stimuli cards), while the Matukar Panau data comes from all three SCOPIC tasks (describing picture stimuli cards, organizing these cards, and telling stories about them). We have chosen to do this comparison by balancing the total number of quotations from each language (Auslan $n = 329$, Matukar Panau $n = 311$). As this is primarily an exploratory comparative study, we chose to compare across more or less equal number of tokens rather than equal number of tasks. We initially coded the same time of recordings (one hour) of data, but this did not include a comparable amount of Matukar Panau data. Over three hours of Matukar Panau data were coded to assess the same token numbers. This suggests that quotations are approximately three times more frequent in Auslan compared to Matukar Panau while doing the Family Problems task. It is important to keep this in mind as we compare the languages below.

3. MAJOR STRATEGIES OF QUOTATION

3.1 AUSLAN SPECIFIC STRATEGIES

3.1.1 DIRECT ACTION/DIALOGUE/THOUGHT

Direct quotation in Auslan is done via the visible bodily enactment of oneself or another's actions, thoughts and/or utterances. These quotations may be framed or unframed, and may or may not incorporate conventionalised forms such as lexical manual signs and English mouthings. In the Auslan data used for this comparative study, we identified 59 different quotation frames across 140 tokens of framed quotation. Three main strategies were used for framing quotations: verbal frames ($n = 69$), nominal frames ($n = 41$), and deictic frames ($n = 31$). Table 1 below shows the most frequent forms used in each of the three framing strategies identified in the Auslan data. There were also 191 tokens of unframed quotation, which are discussed below.

The most frequently used deictic frames are finger-pointing actions directed to the physical cards laid out on the floor in front of the signers, or otherwise directed to a meaningful location in the signer's signing space to index a referent ($n = 31$). This is the most common strategy and form that these Auslan signers use to frame their quotations, either immediately before or during the quotation. The majority are deictic-only frames (Example 3). Only one token of deictic framed quotation co-occurs with another element, albeit one that also has indexical qualities (Example 4). In this case, the signer prefaces his finger-pointing with the number two, to signal there are two people who did the subsequent action.

(3) Auslan

SocCog-asf05-TF_B_c12a, 01:48.0-01:53.3

[3]



visible enactment

PT:PROLOC	DS: CLOTHES-PARCEL	GOOD	CLOTHES
there-he	hand-over-parcel	good	clothes

In that picture, the prison guard goes, "Here you go," clean clothes.

TF visibly depicts the prison guard handing over a parcel of clothes to the man.

(4) Auslan

SocCog-asf02-CD_B_c12a, 07:32.7-07:33.7

[4]



visible enactment

TWO	KNOW	FINISH.FIVE
two-there	PT:PRO/LOC	
	“(saw) them (and) know (he) did (it)”	

Those two people there saw them and know he did it.

CD visibly depicts the two bystanders witnessing the man hitting the woman.

The most frequent nominal frames ($n = 41$) are single conventionalised manual forms such as MAN, LADY, POLICE, or longer descriptive noun phrases such as “that man”, “woman with her son”, “another little boy” (see Examples 5 and 6). The most frequent verbal frames ($n = 69$) include locution frames such as SAY and EXPLAIN, vision frames such as LOOK and VISUALISE, or more abstract vision simulative frames LOOK-SAME (lit. “it looks like...”) (see examples 7 and 8).

(5) Auslan

SocCog-asf02-FK_A_c12c, 0:22.9-0:25.0



visible enactment ————— |

JUDGE DISCUSS
 judge (he) discuss (with the woman)

The judge did, "talking with the woman."

FK visibly depicts the facial expression of the judge listening and talking to the woman.

(6) Auslan

SocCog-asf04-LK_A_c12a, 06:01.3-06:02.8



visible enactment ————— |

TWO DRUNK MAN CUP
 two drunk men repeatedly-force-drinks (to man)

Two of the drunk men "forcing drinks repeatedly" onto the other man.

LK visibly depicts the two drunk men forcing drinks onto the other man.

(7) Auslan

SocCog-asf04-JRB_B_c12d, 01:28.1-01:29.0



visible enactment ————— |

SAY AVOID.FIST
 (he) say repeatedly-resist (them)

He said, "no, no, no!"

JRB visibly depicts the man refusing drinks from his friends.

(8) Auslan

SocCog-asf01-PT_A_c12a, 02:00.9-02:01.9



visible enactment——|

LOOK THINK
 PT:PRO/LOC
 look (like) he-there thinking-hard
It looks like he is “thinking hard.”
PT visibly depicts the man thinking hard.

Frame type	Citation form	Translation	Token number
Deictic frame	POINT	‘him/her there’	31
Nominal frame	MAN	‘man’	5
	LADY	‘woman’	4
	POINT MAN	‘that man’	2
	POLICE	‘police’	2
Verbal frame	SAY	‘say’	23
	VISUALISE	‘imagine’	6
	LOOK SAME	‘looks like’	5
	LOOK	‘look’	4

Table 1: Types of Auslan frames, the most frequent forms used and their counts

3.1.2 UNFRAMED QUOTATIONS

Many of the Auslan quotations (more than half) do not have any deictic, nominal or verbal frames. These include tokens of quotatives that are unframed ($n = 101$, see Example 9). It also includes instances where an earlier frame essentially frames a series of quotations, but where not all quotations in that series each have a frame ($n = 90$, see Example 10).

(9) Auslan

SocCog-asf01-DP_B_c12a, 12:50.6-12:52.6



visible enactment—
 DS:CASH GIVE PT:POSS1SG POCKET MONEY BECKON
 lump-cash (you) give (me) my pocket money come-on
 “Come on, give me my pocket money.”

DP visibly depicts the man demanding money from his wife.

(10) Auslan

SocCog-asf03-JB_B_c12a, 11:25.8-11:30.2



visible enactment—
 NO PT:PRO1SG ONLY BUY PT:PRO1SG ONLY BUY
 no me only buy me only buy
 “No, I was only buying food from the man! I was only there to buy food!”

JB visibly depicts the woman protesting her innocence to the man.

SocCog-asf03-JB_B_c12a, 11:25.8-11:30.2



visible enactment—
 NO.STOP SWAP THAT’S-ALL
 no trade-items that’s-all
 “Okay? I was there to trade, that’s all!”

JB visibly depicts the woman protesting her innocence to the man.

3.1.3 INDIRECT QUOTATIONS

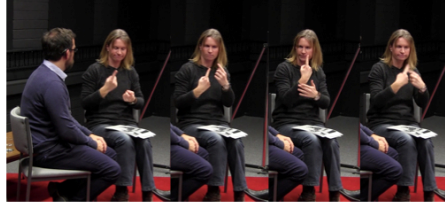
Auslan signers do not tend to use strategies for indirect quotation and this is reflected in the Family Problems data analysed here. There are very few tokens of indirect quotation where signers report actions, thoughts or utterances without also depicting and/or shifting perspective or time ($n = 22$, see Example 11). Analysis of strategies for indirect quotation in Auslan is beyond the scope of this paper, but it is likely that

Auslan signers draw on English strategies for indirect quotation.

(11) Auslan

SocCog-asf05-TF_B_c12a, 04:51.7-04:53.0

[11]



INFORM	HAPPEN	INFORM
(they say) explain	happen	explain
<i>They said tell them everything that happened.</i>		

TF does not depict any characters here, there is no quotation.

3.2 MATUKAR PANAU SPECIFIC STRATEGIES

3.2.1 LEXICAL CHOICE

In the Matukar Panau data analysed here, there are over 34 different predicates used for framing quotations in 220 examples of framed quotation. Unlike Auslan, these are almost all verbal or nominalised verbal predicates. There is one example of a deictic frame (see Example 12) and no examples of nominal framing. In this respect, Matukar Panau is quite different to Auslan. Table 2 below shows the 10 most frequent predicates used to frame Matukar Panau quotatives. These include emotion verbs as well as verbs of locution or cognition. It also includes as a few nominalized predicates such as *ilo girek* ‘thinking’. The predicate *ilo gire* is made up of an uninflected positional noun meaning ‘inside’ and the verb *gire* ‘write’. When not nominalised, the positional noun *ilo* is inflected based on who is thinking as in *ilo-n gire* for ‘she thinks’ or *ilo-m gire* for ‘you think’. *Ilo* is used as the site of other internal states such as *ilo uyan* ‘happy’ or *ilo nin* ‘sad’.

Frame type	Citation form	Translation	Token number
Verbal frame	<i>bal</i>	‘throw, say’	59
	<i>ilo gire</i>	‘think’	49
	<i>tuli</i>	‘tell (someone)’	39
	<i>gamuk</i>	‘talk’	13
	<i>pasi</i>	‘tell (something)’	9
	<i>kabiyai</i>	‘discuss’	7
	<i>pai</i>	‘yell, argue’	6
	<i>ilo haiyan</i>	‘be sad’	4
	<i>mai</i>	‘not want’	3
	<i>ilo girek</i>	‘thinking’	3

Table 2: Most frequent Matukar Panau quotation frames

(12) Matukar Panau

SocCog-mjk02-tk_jb_1, 06:20.3-06:22.0

[12]



PT:LOC	visible & vocal enactment—
<i>do main</i>	DS:HOLDING-DRINK
and PROX	“ <i>nga-ha-u main-e</i> ”
<i>and this one</i>	1SG-CL-1SG PROC-DEF
	“ <i>this is mine</i> ”

John Bogg visibly depicts the actions of the man claiming his drink while vocally depicting his speech.

Another interesting strategy are complex predicates that combine a nominalization of *ilo gire* ‘think’ with a verb such as *hun* ‘hit’, *ngale* ‘take’, or *nage* ‘do, put’ as in Example 13.

(13) Matukar Panau

SocCog-mjk06-eg_kb_2, 13:23.5-13:29.2

[13]



ilo gire-k uyan ngale-ndo
 inside think-NMZ good get-R:D
He gets good thinking,

“o ngau kagin main haun ti nga-nage-dop”
 oh 1.SG behaviour TOP again NEG 1.SG.S-do-IRR:D
“Oh I cannot do again this behaviour of mine.”

Eddie Gim does not depict anything here, the quotation is signalled via conventional speech forms only.

3.2.2 DIRECT QUOTATIONS WITH PRECEDING FRAMES

The categories of “direct” and “indirect” are helpful to classify quotations in Matukar Panau. In direct quotations, the quote is depicted as if these were the exact words used by the person quoted. Indirect quotation involves a shift in perspective from the purported time of speech, thought, etc., which in Matukar Panau, would be a shift in person, mood, tense, and aspect, and verb dependency to the time that the speech is quoted. In Matukar Panau, direct quotations have no subordinating complementizer between frames and quotation; the frame and quotation are simply juxtaposed one after the other.

Most frames occur before quotations, as seen in Example 14. In this example, there are a series of chained clauses (indicated by the medial dependent suffixes *-nge* and *-do*). The verb in the quotation, *bule*, could be considered the final clause in the chain². There is clear shift of person from the framing context (third person singular) to the quotation (first person singular). Kadagoi enacts this quotative through a sad voice quality, a hand gesture that seems to be dismissive of the husband referred to here, and an eye gaze that indexes the location of either the husband or police officers referred to earlier in the text.

2 Other clause chain examples show quotations as being separate from the rest of the sentence, in both syntax and prosody, cf. Mansfield and Barth (2021).

(14) Matukar Panau

SocCog-mjk01-krf_spw_3_5:18.8-5:25.5

[14]



PT:LOC PT:LOC PT:LOC PT:LOC
di-ngale-nge di-yau ar=lo di-nage-ndo h-an
 3.PL.S-take-SEQ:D 3.PL.S-go jail=LOC 3.PL.S-put-R:D
They take him away, put him in jail,

pain main ha-n ilo-n haiyan-do
 CL-3.SG woman TOP CL-3.SG inside-3.SG bad-R:D
his wife is sad and thinks,

vocal & visible enactment—
 “hanatwai nga-ha-u tamat manag bul-e?”
 why 1-CL-1.SG man like.that do-R:I:PFV
 “Why did my husband act like this?”

Kadagoi Rawad Forepiso depicts the woman’s plaintive voice and sorrowful body actions.

3.2.3 DIRECT QUOTATIONS WITH FOLLOWING FRAMES

There are several verbs that typically follow quotations, including the very frequent *bal* ‘throw, say’. We see again clear direct quotation in Example 15 below with *bal*. In this example, the speaker is talking about a quote from a third person talking about themselves and the quotation uses first person. Additionally, the description of the speech in is in realis and imperfect aspect, but the quoted material is in irrealis mood and future tense. In the quoted speech, the verb *ngamadomba* ‘I will sit/stay’ is independent (finite). It is not subordinated to the predicate of speech, nor is it dependent to the final verb in the clause chain with contains the predicate of speech. The predicate of speech *baldo* ‘throw-and’ is the first verb in a clause chain which is followed by another dependent predicate *ilom girendo* ‘think and’ before the final independent verb *madonggo* ‘sitting’. Therefore, the person, TAM and finiteness in the represented speech represents the portrayed time of speech. As gestural enactment in this example, Taleo changes the position of his body (torso) after the quotation and changes his voice quality from softer to stronger at the end of the quotation.

(15) Matukar Panau

SocCog-mjk02-tk_jb_1, 15:33.2-15:39.5

[15]



visible & vocal enactment—

PT:LOC PT:LOC PT:LOC
 “malal=te nga-ha-u nen ai, mam ai di-da ab=ate nga-mado-mba”
 village=LOC 1-CL-1.SG mother COP father COP 3.PL-COM house=LOC 1.SG.S-sit-IRR:IFUT
 “At the village I will sit at the house with my mother and my father,”

John Bogg visibly and vocally depicts the man’s speech and actions while pointing and looking at the picture card.

SocCog-mjk02-tk_jb_1, 15:33.2-15:39.5

[15]



i bal-do, ilo-n gire-ndo, mado-nggo
 3 say-R:D inside-3.SG think-R:DO sit-R:I:IMPV
he is saying, sitting and thinking.

3.2.4 DOUBLE-FRAMED QUOTATIONS

A handful of quotations ($n = 6$) in our Matukar Panau are framed by two predicates, one juxtaposed either side of the quotation. In example 16 we see a short, imperative quotation framed by *tuli* ‘tell’ and *bal* ‘say’. While enacting this quotation, Taleo strengthens his voice and holds up and shakes a finger while speaking.

(16) Matukar Panau

SocCog-mjk02-tk_jb_1, 22:41.7-22:44.2

[16]



vocal enactment ————— |

PT:LOC

do i tuli-nge
and 3 tell-R:I:PFV
And he told,

“ong awa-u nong” *i bal-e*
2.SG mouth-1SG hear 3 say-R:I:PFV
“Listen to my speech,” *he said.*

Taleo Kreno vocally depicts the man’s speech while pointing and looking at the picture card.

3.2.5 UNFRAMED QUOTATIONS

There are also many instances in the Matukar Panau dataset where quotations are not framed with any kind of predicate. Most of these can be contextualised as continuations from an earlier frame, where one verb frames a long series of quotations ($n = 70$), as for Auslan described in §3.1.1. above. However, as in Example 17, plenty of quotatives have no frame ($n = 94$). In this example, Mingkui Agid supports Clara Kusos Darr’s description of an event by quoting of one of the characters, but without any framing device. She does this by visibly enacting how the quoted character shakes her head to signal disappointment. Note that both speakers are jointly attending to the card, and the use of the visual information contributes to the construction and understandability of the message (cf. Enfield 2009).

(17) Matukar Panau

SocCog-mjk10-ckd_ma_2, 3:50.0-3:59.0



haun-da tamat aim di-da di-tor-dop
 again-COM man boy 3PL-COM 3.PL.S-go.around-D:IRR

The man and the boy walk around again,

nub lumi-k wai di-bul-dop
 beer drink-NMZ like 3PL.S-try-D:IRR

they are about to drink beer...

Clara Kusos Darr does not depict anything here, there is no quotation.

SocCog-mjk10-ckd_ma_2, 3:58.5-3:59.9



visible enactment———|
 “nga-mai-ye”
 1.SG-negative-R:I:PFV
 “I didn’t want it.”

Mingkui Agid visibly depicts the negating head shaking done by the man character refusing drink.

3.2.6 DIRECT ACTIONS / ACTION QUOTATIONS / ENACTED QUOTATION

The Matukar Panau dataset also has instances of direct actions, where a speaker visibly depicts an action or behaviour done by some referent in the narrative, either with or without speech. In Example (18) below, John Bogg enacts how the drinkers depicted in a card gesture to a character that he should come over and join them. John Bogg does this and then follows up with a verbal quotation meaning “come, drink beer with us!”. In our sample, we found 20 instances of direct actions from Matukar Panau speakers. None of them have a clear framing before the enactment with a verbal predicate, nominal phrase or pointing action. Almost all of these direct actions co-occur with speech, except for one (see Example 18 below). Thus, while these direct actions are not framed with conventional signalling, the speech elements provide ample context for interpreting the discourse context such as who is doing the actions.

(18) Matukar Panau

SocCog-mjk02-tk_jb_1, 17:14.8-17:19

[18]



	visible enactment	
	BECKON	
PT:LOC		
<i>aru main-angan di-gi-din-ago</i>		
two TOP-FOC 3PLP.S-call-3PL.P-R:I:IMPV		
<i>The two sing out,</i>		
	vocal enactment	
	“palum-ap, ngam ida nub ta-lumi!”	
	“come-D:IRR 1.PL.EXCL with beer 1.PL.INCL.S-drink!”	
	“come drink beer with us!”	

John Bogg points to the man's friends on the card and depicts their visible beckoning actions and speech.

3.2.7 INDIRECT QUOTATIONS

There are very few “indirect” quotations in Matukar Panau (only five in this dataset) and no standard way to formulate these. Indirect quotations seem to involve a partial shift of features from the time of expression to the time of the quote and involve the subordinator *main* ‘this/that’ or the simulative adverb *manig* ‘like this’. Example 19 shows an indirect construction of thought. The speaker describes a family, who is thinking that their father went to jail. If the construction was direct, the possessive pronoun *hadi* ‘their’ would be *had* ‘our (inclusive)’. This shows a person shift from the time of the purported thought to the time of quotation. The use of the realis mood and perfective aspect is appropriate to the purported time of thought, but may also be appropriate to the time of quotation as well. Example 20 is somewhat ambiguous as to whether it is direct or indirect because the perspective of speech matches the perspective of reporting in person, TAM and dependency. However, there is a subordinator between the frame and the quotation, which does not otherwise occur in Matukar Panau, so this may also be indirect quotation.

(19) Matukar Panau

SocCog-mjk01-krf_spw_2, 7:44.0-7:47.5

[19]



SWEEPING ACTION

manig ilo-di gire-nggo ha-di mam ar=lo y-a-we
 like.this inside-3.PL think-R.I.IMPV CL-3.PL father jail=LOC 3.SG.S-go-R:I.PFV
They are thinking like their father went to jail.

*Kadagoi Rawad Forepiso does not enact anything here, there is no quotation.
 She only uses a sweeping action to depict the act of going somewhere.*

(20) Matukar Panau

SocCog-mjk01-krf_spw_2_20180704, 8:01.0-8:06.3

[20]



eyebrow raising

ha-di nen ilo-n gire-nge main
 CL-3.PL mother inside-3.SG think-R:I.PFV COMP
Their mother is thinking that

gaun main di-ngale diy-a-go ar=lo di-nage-mbai
 police TOP 3.PL.S-get 3.PL.S-go-R:I.IMPV jail=LOC 3.PL.S-put-IRR:I:DESID
the policemen will take him and lock him up in the prison.

Sel Pain Wadom does not depict anything here, there is no quotation.

4. A CORPUS-BASED COMPARISON

4.1 CORPUS DATA

Our corpus data includes five sessions each of Auslan and Matukar Panau runs of the Family Problems Picture task. This resulted in 4.29 hours of digital video data from 22 people (10 Auslan signers, 12 Matukar Panau speakers). We identified and annotated 329 instances of direct quotation in 0.95 hours of Auslan data and 311 instances of direct quotation in 3.34 hours of Matukar Panau data. Figure 1 shows the distribution of quotations by the types of what signers and speakers indicate was uttered by the characters in the story: quoted action, dialogue, thought, or those that were ambiguous. It is clear that Auslan signers quote actions done by the characters in the picture task far more than Matukar Panau speakers, who do not often comment on or visibly depict actions. It may be that Matukar Panau speakers observe or imagine actions and gestures to a lesser degree than Auslan signers, because they do not have their attention continually directed to visible actions in the same way that Auslan signers do (see Slobin 1996; Johnston 1996). Another possibility is that the Matukar Panau speakers are more aptly described as co-present in these interactions, sitting

side by side and looking at the cards together while they are speaking to each other and story-telling, rather than face-to-face (see Ameka & Terkourafi 2019). This side-by-side configuration is partly due to the set-up of the audiovisual recording equipment, but is also a common seating arrangement used by Matukar Panau speakers generally.

It is also clear that Matukar Panau speakers often quote the thoughts of the characters depicted in the cards, whereas quoted thoughts are comparably infrequent in Auslan. This suggests the Auslan signers were concentrating on what was observable, rather than assigning unknowable thoughts to others, while the Matukar Panau speakers frequently and readily imagined the inner thoughts of characters. Indeed, a traditional means of dispute resolution in Matukar is to have long meetings that look at people’s problems from various angles. In these meetings, many ‘witnesses’ or involved parties will give their interpretation of events, as well as their opinions on the behavior and motives of affected people. Some of the difficult content in the family problems picture task were very familiar to people of Matukar, and it may be that they felt comfortable ascribing motivations and thoughts to characters in the same way that they would at meetings for people involved in disputes. Conversely, some of the Auslan signers expressed discomfort in relation to the events and problems depicted in the picture cards, especially since these cards so obviously depict a non-Western culture that is not their own. It is possible the Auslan signers’ quotation preferences reflect sensitivity to these issues. For example, not wanting to attribute thoughts and feelings to people and situations they have no authority to talk about, but sticking to just depicting what is visible on the cards.

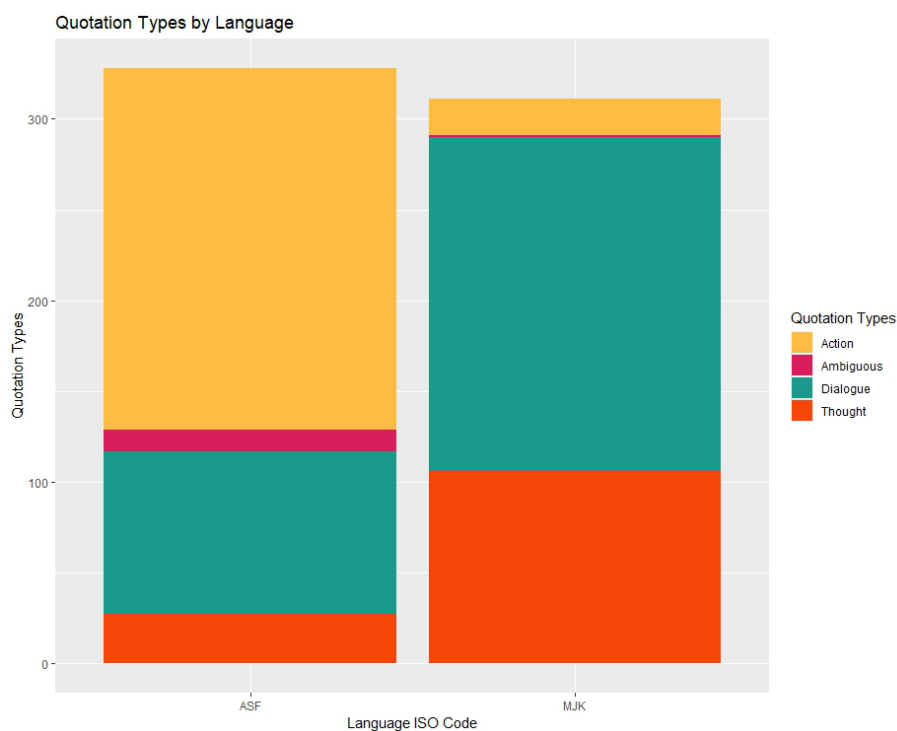


Figure 1. Auslan and Matukar Panau quotation types

Table 3 describes the articulators that we observed these signers and speakers using

and subsequently annotated in the data. These served as our coding guidelines, making it clear what to look for in video data of conversations. It should be clear that most articulator codes could be applied to both Matukar Panau and Auslan data, except for the codes “sign”, “speech”, “mouthing” and “voice”. In the next analysis section, we examine the number of articulators used by each participant in our study, and what kinds of articulators were used in their quotation.

Code	Description
eyes	Identifies that eye gaze was involved in enacting a role/character. If not tagged, it was often because the signer or speaker was either looking at the person they were talking to as part of the interaction, looking at the cards, or looking elsewhere and not to where the enacted character would be looking, for example.
face	Identifies that facial expression was involved in enacting a role/character, e.g., eyebrow and mouth movements such as frowning.
hand/hands	Identifies that non-conventional manual actions (either one or two hands) were recruited into the enactment. For Matukar Panau, this was primarily character viewpoint gestures. If not tagged, hands were either used to sign conventionalised forms while enacting, or were not used at all.
head	Identifies that head movements were involved in enacting a role/character, e.g., headshaking, looking upwards at something.
mouthing	Identifies that (for Auslan) English mouthing was involved in enacting a role/character, e.g., mouthing what was said. This annotation was exclusive to our Auslan data.
sign	Identifies that conventionalised manual signs were involved in enacting what was said, thought or done, and/or signalling a shift in role or perspective, such as via deixis. This is the type of lexical signalling that is typically discussed in the spoken language literature on reported speech. This annotation was exclusive to our Auslan data.
speech	Identifies that conventionalised spoken forms were involved in signalling enactment and/or signalling a shift in role or perspective, i.e., the forms typically described in the literature as signalling reported speech. This annotation was exclusive to our Matukar Panau data.

torso	Torso movement depiction of enacted role/character, e.g., body leans forward, backward, to the side, bolt upright, etc. The “head” tag was used in the case of head movement alone.
voice	Identifies that vocal patterns (pitch, prosody, speech rate) in the quotation deviate from the non-quoted portion of speech before or after the quotation. This annotation was exclusive to our Matukar Panau data.
not visible	Identifies the quotation as possibly having other signalling that is meaningful, but was not visible because it occurred off screen, for example.

Table 3. Guidelines for analysing and annotating quotatives in Auslan and Matukar Panau

4.2 ANALYSIS

In this section, we look at two main ways of comparing quotatives across individual people: (1) a novel expressivity index, and (2) a correlation heat map. We first calculated an average expressivity index for each individual in our study. This index captures the mean number of different bodily articulators a person used for each token of quotation. So if a signer used head movement, eye gaze and manual signs in a given quotation, they were using three articulators (with each token of quotation using least one articulator). Total articulator counts for all tokens were averaged for each person, to get a sense of what each person did across all their quotations in this study. Table 4 shows the expressivity index calculated for each individual, the task session number, and each person’s deviation from the overall mean of the language group (Auslan = 2.41, Matukar Panau = 1.69). Note that people in the same session interacted with each other. All individuals are labelled with an ISO code for the language they are using (ASF = Auslan, MJK = Matukar Panau) and their initials.

<i>Person</i>	<i>Session</i>	<i>Expressivity Index</i>	<i>Deviation from language mean</i>
MJK_RM	mjk03	1.00	-0.69
MJK_DY	mjk06	1.13	-0.57
MJK_EG	mjk06	1.20	-0.49
MJK_VK	mjk03	1.27	-0.42
MJK_MA	mjk10	1.33	-0.36
MJK_KB	mjk06	1.38	-0.31
MJK_BK	mjk02	1.43	-0.26

MJK_SPW	mjk01	1.50	-0.19
ASF_JRB	asf04	1.58	-0.83
MJK_CKD	mjk10	1.90	0.21
ASF_JB	asf03	1.95	-0.46
ASF_LK	asf04	2.06	-0.35
ASF_AJ	asf05	2.30	-0.11
ASF_FK	asf02	2.31	-0.10
ASF_DP	asf01	2.42	0.01
MJK_KRF	mjk01	2.55	0.86
ASF_NS	asf03	2.64	0.23
MJK_JB	mjk02	2.71	1.02
ASF_PT	asf01	2.74	0.33
MJK_TK	mjk02	2.85	1.16
ASF_CD	asf02	2.86	0.45
ASF_TF	asf05	3.26	0.85

Table 4. Expressivity index of each person

What we take away from this analysis is that, on average, Auslan signers used more articulators in their quotations compared to Matukar Panau speakers, but there is considerable variability within each language. We also see that we cannot make sweeping generalisations about deaf Auslan signers always using more articulators in their quotations compared to hearing Matukar Panau speakers. For example, Table 4 indicates that signer ASF_JRB has a low expressivity index compared to ten other Auslan signers and also four Matukar Panau speakers. On the other hand, speakers MJK_TK and MJK_JB both have higher expressivity indices than most of the Auslan signers. These individuals (Taleo Kreno and John Bogg) were in the same session and were mentioned in §2.2.2 as people who enjoy entertaining their captive audiences. We see that speaker MJK_KRF (Kadagoi Rawad Forepiso) also has a relatively high expressivity index, although her session partner (MJK_SPW) does not. Kadagoi was also mentioned earlier as a speaker who tends to be very clear and precise in her communication. The highest expressivity index is the only one over 3, calculated for signer ASF_TF. She is also a well-known storyteller and Auslan teacher who is also very clear in her communication. However, we would not like to assume it is simply one's narrative and/or entertainment skills that promote these higher expressivity indices, because many of the other Auslan signers are known to be skilled in these regards too, as well as being Auslan teachers and/or interpreters and translators. It is an open question why we see these distributions, one that we return to in our discussion.

Our second analysis is a heat map dendrogram created with *R* (R core Team 2021) package *pheatmap* (Kolde 2019). Heat map dendrograms combine two kinds of analyses: correlation heat maps and clustering dendrograms (see Figure 2). A correlation heat map is used to show how strongly entities in a matrix are associated. Each cell in our matrix represents a numerical value of how strongly a person and an articulator are associated. The color of the cell helps visualise the relative size of that number. In our heat map figures below, red is for “hot” to show a strong positive association and blue is for “cold” to show a strong negative association. Yellow shows no association. As shown by labels on the x-axis in Figure 2, we are essentially counting the number of times an articulator was used by each person to signal quotation, and then normalising these counts by centering and scaling the values (see Lucas et al. 2020). We group these measures by language user listed on the y-axis.

A clustering dendrogram is a tree-structure cluster representation. These are represented by the branches on the side and top of the heat map in Figure 2. Each branch shows which articulators (top dendrogram) and people (side dendrogram) are best grouped together. Lines connect the nodes that form clusters (King 2015). It is this clustering analysis that determines the order of people and articulators along the x-axis and y-axis of these figures. The package *NbClust* (Charrad 2014) was used to determine the ideal number of clusters for each heatmap we present below.

In Figure 2, we include all articulators that were coded in this data, despite some not being relevant to all participants. For example, speech and voice quality were used exclusively by Matukar Panau speakers, while sign and mouthing were used exclusively by Auslan signers. As seen on the y-axis, this resulted in a very clear and expected grouping of Auslan signers and Matukar Panau speakers. The Matukar Panau speakers obviously use more speech-based indicators of quotation (dark red for MJK & speech.N), whereas Auslan signers do not (blue for ASF & speech.N). However, more interestingly, we also see that all Matukar Panau speakers – especially the first seven listed – are highly reliant on speech articulations for quotation, whereas Auslan signers use a broader range of strategies, including their face, mouthing, eyes and head. The three Matukar Panau speakers that use more than just speech to express reported utterances are logically the three speakers that had higher expressivity indices: MJK_TK, MJK_JB and MJK_KRF.

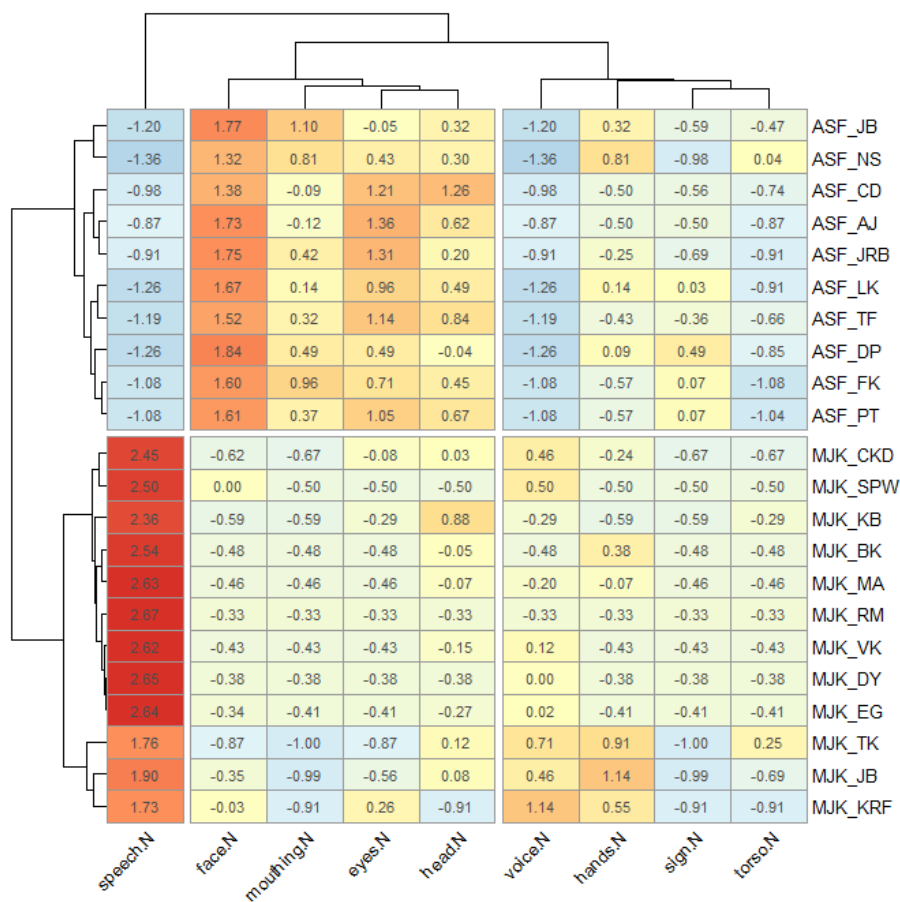


Figure 2. Heat map dendrogram for all people and articulators

In Figure 3, we remove the articulators that are not common to both language groups in order to determine if this between-language grouping remains. We see that our groupings shift somewhat, with our three highly expressive Matukar Panau speakers now being clustered with the Auslan signers. Auslan signers remain in one cluster. The articulators causing the most between-language differences are the higher use of facial expression and eye gazes in Auslan versus the higher usage of head and (character viewpoint) hand movements in Matukar Panau.

Within the two language groupings there is also individual variability. In the group of Auslan signers, ASF_NS, ASF_DP, and ASF_JB use facial expressions more than others, ASF_JRB and ASF_AJ have high rates of eye gaze usage. ASF_CD used more head movements than other signers. MJK_EG, MJK_VK and MJK_KB used more head actions than the other Matukar Panau speakers, and another group of speakers use more non-sign hand actions than the rest. In Figure 3, MJK_RM and MJK_DY are grey because these speakers did not use any of the articulators included in this matrix. In other words, they only used the speech and voice articulators that have been removed from Figure 3. These two speakers are highly reliant on speech articulation for doing direct quotation.

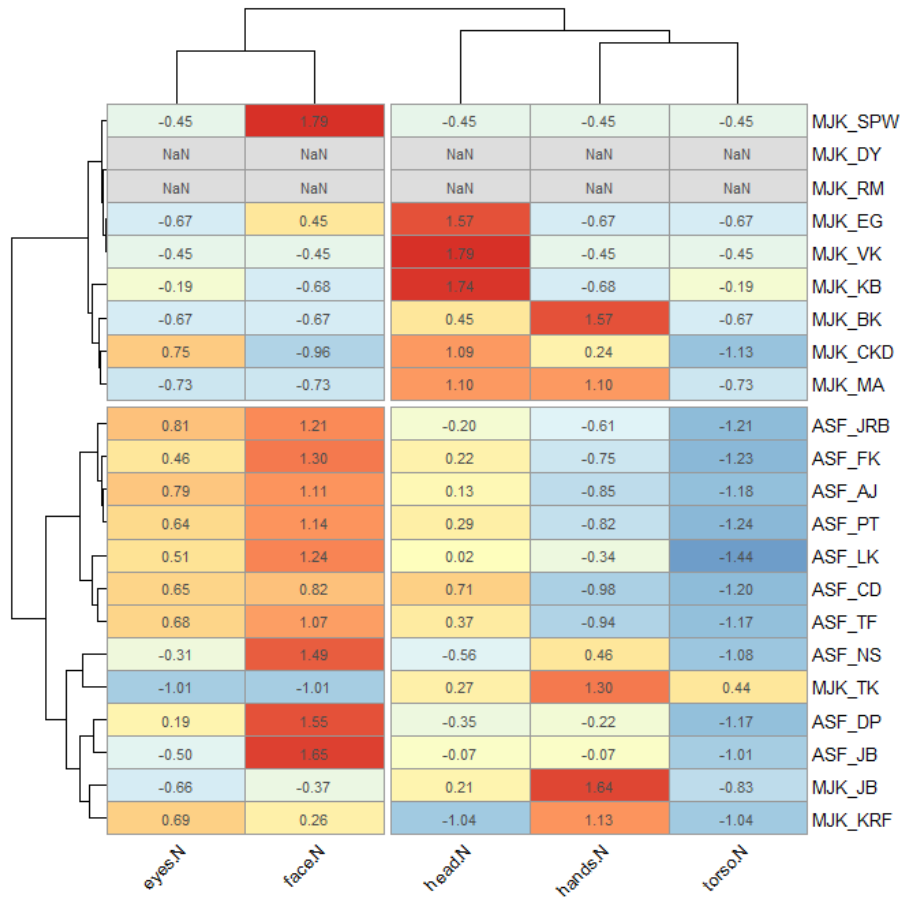


Figure 3. Heat map dendrogram for common enactment articulators and individuals

Finally, we present a heatmap in Figure 4 that includes only the articulators used exclusively by these signers or speakers, in order to understand the variability within the language specific groups. Again, these people fall into two clusters. Within the Auslan cluster, we see that ASF_JB, ASF_NS, ASF_JRB use fewer manual signs and more English mouthings compared to the other signers who participated in the task. In the Matukar Panau cluster, we see that MJK_KRF, MJK_TK and MJK_JB all use more voice quality in their quotations compared to the other speakers who participated in the task.

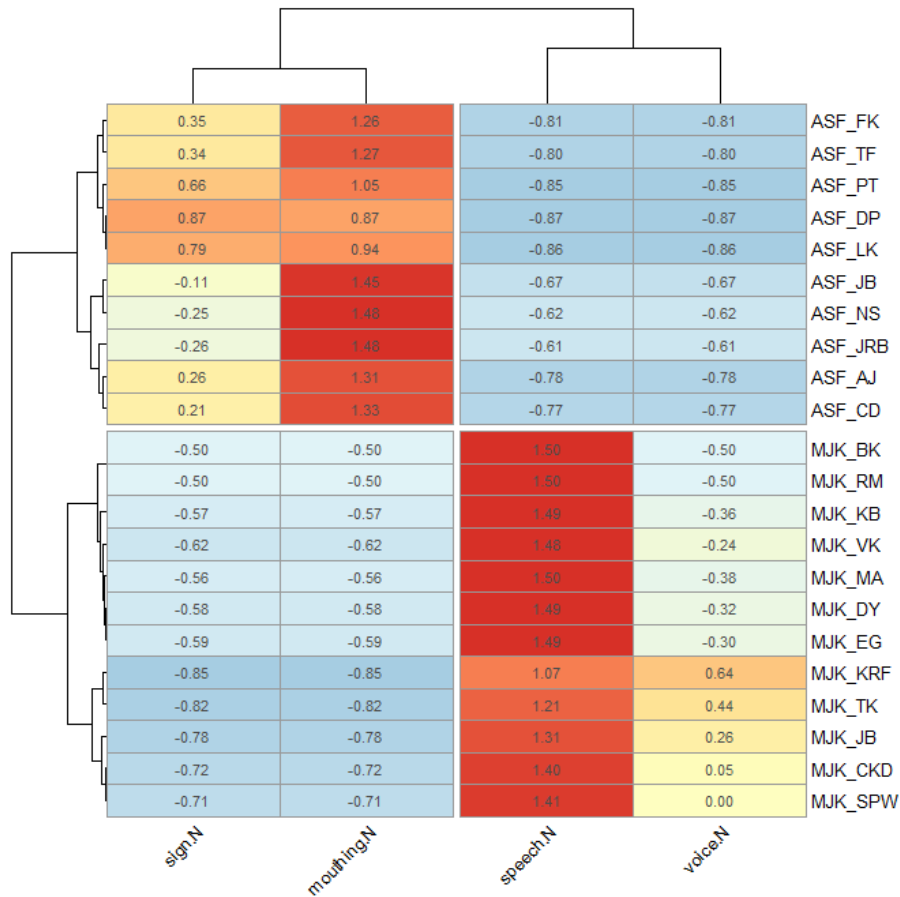


Figure 4. Heat map dendrogram for articulators used exclusively in Auslan or Matukar Panau

We think these results are interesting and worth further exploration across languages and people. It is clear that while the Auslan signers in this study preferred to quote actions and Matukar Panau speakers preferred to quote dialogue or thought, both made use of a range of bodily articulators, albeit in different ways. There was also individual variation within our different language populations in terms of the number of articulators and which articulators are recruited into reporting utterances.

5. DISCUSSION AND CONCLUSION

In this paper, we took a modality-agnostic look at how signers and speakers of two very different languages do “utterance about utterance” (Vološinov 1973: 115). We did this by coding any and all meaningful aspects of multimodal quotatives identified in co-present interactions between people doing the Family Problems task. We found both similarities and differences across languages and individuals, which we

summarise here and offer further thoughts on what we found.

Both Auslan signers and Matukar Panau speakers made frequent use of direct strategies for quoting by combining conventionalised spoken or signed forms with more improvised and context-dependent visible and/or audible depictions. In Auslan, these multimodal quotatives were typically framed using indexical and nominal frames, rather than verbal frames, while in Matukar Panau, verbal frames were most frequent. Yet all three types of frames were used by both groups, and often quotatives were done without any framing at all. Both Auslan signers and Matukar Panau speakers also coordinated a range of different bodily actions into their quotatives, including bodily and/or vocal depictions and indexical eye gazes, as well as conventionalised spoken or signed forms describing what was said, thought, or done.

The main differences relate to the frequency of quotatives, with Auslan signers making use of quotatives at least three times more often than Matukar Panau speakers. Unsurprisingly, the Auslan signers relied solely on visible articulators. Yet they also recruited a greater range of bodily articulators compared to the Matukar Panau speakers – even though visible articulators were also available to the Matukar Panau speakers in the shared spatiotemporal context of the Family Problems task. In other words, when Matukar Panau speakers did use visible articulators in their quotatives, they tended to draw upon a much smaller range than the Auslan signers.

We also found differences in the kinds of utterances quoted by the Auslan signers and Matukar Panau speakers. Quoted thoughts were fairly infrequent in Auslan, as most signers overwhelmingly preferred to quote actions. Sometimes they quoted spoken dialogue, as imagined between the characters depicted in the cards. Conversely, the Matukar Panau speakers frequently quoted the inner thoughts or spoken dialogue of the characters depicted in the cards, and rarely quoted their visible actions.

This difference may be explained by wider cultural practices, whereby the Matukar Panau tendencies for directly reporting utterances mirrors their local dispute-resolution strategies. It may also result from specific sensorial experiences, whereby the Auslan tendencies for directly reporting actions mirrors everyday preferences for visibly depicting those aspects of an event than are seen rather than heard. It is also possible that on some level the Auslan signers were responding to being asked to talk about depictions of people and culture clearly different to their own. This may relate to more general preferences for how signers and speakers of different languages and cultures prefer to signal epistemic authority and other evaluations on self and others' utterances (see §1.1). Other communicative functions of quotatives such as referential cohesion and factors such as communicative efficiency may also play a role, such as the potential for coordinated visible depictions involving reported actions to communicate comparably more complex information than without (see e.g., Slonimska et al. 2021).

However, we would like to emphasise that it would not be accurate to describe these differences as “modality effects”, as so often has been the case for other comparisons between signed and spoken languages (e.g., Meier et al. 2009, *inter alia*). Instead, the fact that Auslan signers do sometimes report the spoken dialogue of the depicted characters clearly demonstrates there is no constraint on signers doing this. The preference for Auslan signers to quote actions is not a fixed or obligatory preference, and the dispreference for reporting spoken dialogue is not an effect of Auslan being a so-called “language of the visual-gestural modality.”

Instead, this pattern is probably best understood as resulting from interactions shaped

by the sensory experiences of sighted people who are deaf or hearing. This aligns with what Shaw (2019) found after comparing face-to-face communication of deaf ASL signers and hearing US English speakers: there are more similarities than differences. Any differences most likely result from the sensorial demands of the interaction (such as the need for deaf people to continuously watch others' signing and/or visually gain attention), rather than language and/or modality specific reasons. The findings presented here highlight how modality chauvinism has such a tight grip on doing linguistic typology: it is only when we broaden the range of languages analysed to include signed languages used during interactions involving deaf people, that these visible communicative potentialities and preferences come to light (see also Kusters 2017 on what happens during interactions between people with sensorial asymmetries; and Vandenitte 2022 on how cross-linguistic comparisons can take us beyond modality effects).

Our analysis also found that the two language groups are not monolithic: there was a range of user variability within each language group, with specific signers and speakers using more or less visible bodily actions within their quotatives. Regarding the bodily articulators that Auslan signers recruit into their quotatives, it is also interesting that torso movements were rarely used, even though most pedagogies for teaching Auslan emphasise that one must shift from side to side in order to make clear who is doing or saying what (see e.g., Johnston & Schembri 2007: 273). The heat maps instead highlighted how important facial expressions are for quotatives in both Auslan and Matukar Panau, while the hands are either used mainly for signing and/or pointing. This problematises essentialist generalisations of "signers" doing one thing and "speakers" doing another. Instead, there are likely many factors influencing signer and speaker's choices, many of which are still unknown or not well understood, especially relating to the sociohistorical trajectories of different language ecologies (see Ferrara et al. 2022; Vandenitte 2022).

Together these findings demonstrate the advantages of corpus typology methods for cross-linguistic comparisons that include both signed and spoken languages. This method can be used to redress Eurocentric biases and modality biases in linguistic typology. From this, we can begin to see new lines of thought on the question why languages differ. For example, we can now consider more clearly the effect and social function of different physical forms for framing multimodal quotatives. We know that Auslan signers frequently use finger pointing actions to index a character on the picture card and then visibly enact what they did or said, but when Matukar Panau speakers use this strategy, do they do it for the same reasons or different ones? Does the availability of conventionalised speech forms support or allow Matukar Panau speakers to be more visibly "quiet" in their quotations while achieving the same effect, even though they can also see the cards in the same way as the Auslan signers? What might this say about how each language emerges from use? What does it say about different ideologies of a range of embodied communicative possibilities? Finally, what does it say about the causal frames of different conventions of use, including direct quotation (Enfield 2014; Vandenitte 2022)?

This study illuminates the need for corpus and typological studies to incorporate aspects of linguistic ethnography that are essential for explaining and understanding the patterns that emerge (see Hodge & Goico 2022). As Di Carlo and Good have recently argued, we "must overcome established, inertial scholarly assumptions around the ontology of what counts as a language" (Di Carlo & Good 2020: 47). The study presented here demonstrates that, in at least some contexts, people who use Auslan and Matukar Panau have as much in common as they do differences.

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