Like, it's important: The frequency and use of the discourse marker *like* in older autistic children

Rebekah Jones (iD)
James Madison University, Harrisonburg, VA, USA

Emily R Zane
James Madison University, Harrisonburg, VA, USA

Ruth B Grossman
Emerson College, Boston, MA, USA

Abstract

Background & Aims: Discourse markers, such as *well* or *like*, serve a variety of functions to support conversational reciprocity: filling pauses, aiding word-finding, and modulating turn-taking by holding the conversational floor. Previous research shows that autistic individuals use discourse markers less frequently than non-autistic (NonAu) peers; however, the discourse marker *like* has not been included in that research, despite its ubiquitous use by NonAu individuals, and despite the fact that *like* serves important pragmatic functions that are not encoded by any other discourse marker. Specifically, *like* signals to the listener that the content of upcoming speech is 1) Important/new; 2) Loose/approximate; 3) Reformulative; or 4) Quotative. The current study addresses this gap in the literature by comparing the frequency of discourse marker *like* use between older autistic and non-autistic children as well as exploring patterns of usage between the four *like* functions.
Methods: Twenty-one 10-to-17-year-old children on the autism spectrum and 20 NonAu peers—statistically matched on age, sex, IQ and language scores—engaged in a semi-structured interview with a researcher. Uses of discourse-marker *like* were identified from written transcripts of interviews and each use was categorized into one of the four functions.
Results: There were no significant differences in *like* frequencies between groups, nor were there differences in relative proportions of functions used by each group.
Conclusions: Research consistently indicates that autistic individuals use discourse markers significantly less often than their NonAu counterparts, but the findings from our study suggest that this pattern does not persist to all such markers. This group of older autistic children use *like* as often as their peers and use it to signify similar information about upcoming speech to their listener.

Keywords

autism spectrum disorders, expressive language, pragmatics, adolescents, school-age children

Use of the word *like* as a filler (e.g., "I'm, like, starving!") emerged in the mid-to-late 1900s as a dialectal feature of adolescents and young adults in Southern California and then quickly spread to the dialects of most American English speakers, regardless of geographic region and age (Siegel, 2002). However, despite the fact that *like* was quickly adopted into the speech of Americans of all ages and from all regions of the country, its association with adolescence, generally, and "Valley Girl" speech, specifically, persisted for years, and still affects perception of its use

Corresponding author:
Rebekah Jones, Communication Sciences and Disorders, James Madison University, 235 Martin Luther King Jr. Way, Harrisonburg, VA, USA.
Email: jone22ra@gmail.com

(Johnson, 1998; Mehren, 1999; McWhorter, 2016). In support of this, Hesson and Shellgren (2015) found that a speaker's *like* frequency negatively correlates with how others perceive their intelligence.

Like as a discourse marker

Despite the stigmatization *like* has received, there is evidence that it is quite useful. *Like* functions as a discourse marker, which means that it signals nuanced pragmatic information to one's listener (D'Arcy, 2005; Fox Tree, 2007; Fuller, 2003; Siegel, 2002; Underhill, 1988). American English speakers utilize many discourse markers, including *but*, *so*, *and*, *then*, *because*, *you know*, *well*, and *I mean*, and each of these markers serve pragmatic functions that are fundamental to discourse maintenance and conversational reciprocity (Gorman et al., 2016). Specifically, discourse markers fill pauses, aid in word-finding, relay uncertainty, and hold one's conversational turn by indicating that the speaker is making an intra-turn pause (Brennan & Schober, 2001; Goodwin & Goodwin, 1986; Irvine et al., 2016; Maclay & Osgood, 1959; Swerts, 1998). Although *like* is often left out of discourse marker research (Crible, 2017; Geelhand et al., 2020; Kyrstzis & Ervin-Tripp, 1999), analyses of *like* use show that the pragmatic information it encodes is not represented by other discourse markers, and, correspondingly, speakers use discourse marker *like* contrastively to others (Fox Tree, 2007; Odato, 2013). Specifically, *like* is used to convey four different messages about upcoming speech: looseness, focus, quotation, and revision. We detail each of these functions in the following.

First, discourse marker *like* can be used to indicate looseness, signaling that upcoming speech is not exact or approximate. For example, a speaker may say "I have like 100 pairs of shoes" to communicate that they have a relatively large collection of shoes. There are two interpretations of the phrase "like 100" in this example. The first is where *like* is synonymous with "approximately" (Fuller, 2003), and the speaker is attempting to provide an actual estimate of how many shoes they have (e.g., perhaps they own 96 pairs of shoes). The second interpretation of "like 100" is of exaggeration (i.e., the speaker owns many fewer than 100 pairs). This interpretation shows that the approximation use of looseness *like* can be used much more broadly than "approximately" can. For example, if a speaker owns 40 pairs of shoes (which is more pairs of shoes than many people own), it is appropriate for them to say they have "like 100 pairs" despite their not having anywhere near 100 pairs. However, it would be inappropriate for this same speaker to say that they owned "approximately 100 pairs of shoes." In this case, the difference between the actual number of shoes and the approximated number is beyond the appropriate reach of "approximately" so that the phrase "approximately 100 pairs" in this case

could be interpreted as a lie (unless the speaker otherwise noted that they were being facetious).

In other instances, looseness uses of the word *like* can signal hedging of an upcoming statement. A hedge "leave[s] [a] statement slightly open" by taking the exactness out of a speaker's word choice and, thus, "shield[ing them] in the case of refusal" (Underhill, 1988, p. 241). An example of hedging is the following: "Jim is, *like*, my favorite person." In this case, the speaker is not suggesting that Jim is approximately their favorite person nor are they exaggerating their fondness for Jim, but they are also not committing to saying that Jim is absolutely their favorite person. Similarly, the hedging use of *looseness like* can simply express uncertainty (Fuller, 2003), e.g., "I think Sarah works as a, *like*, dentist?" Just as the previous speaker did not want to commit to Jim being their favorite person, the speaker here is not committing to the fact that Sarah is a dentist.

A second function of discourse marker *like* is to signal focus. Focus markers are used to draw attention to upcoming speech, signaling that the speech represents information that is new to the listener, unusual, and/or important (Meehan, 1991; Underhill, 1988). For example, in the question "Could you, *like*, pay the water bill tomorrow, because they called and we're, *like*, in arrears?" both *like*s are serving to focus the listener on the information that immediately follows each *like*, as that information is important and—in the case of the latter *like*—the information is possibly new to the listener. Focus *like* can be used to signal information that elaborates, narrows in, and/or provides specification on a previous point. For example, consider *like*'s role in "He was really upset. Like, he couldn't catch his breath he was crying so much." Here, *like* is being used to elaborate on and exemplify the previous description ("really upset"). In other such examples, focus *like* is somewhat synonymous with "such as" (Meehan, 1991), and in these cases *like* is most obviously linked to its historical sense as a preposition (e.g., "I'm craving something salty. Like, popcorn.").

An interesting aspect of focus *like* is the fact that it fills a gap that otherwise exists in the pragmatic-syntactic interface of English; this gap is occupied in other languages, including Japanese, Korean, Tagalog, West African languages, and many others, by grammatical morphology. Japanese, for example, has two morphemes, *wa* and *ga*, that are used grammatically to mark topic and subject, respectively, but they are also used pragmatically to highlight new information (Kuroda, 2005; Ono et al., 2000). In such cases, both morphemes function as focus markers, and this function represents an established interface between morphosyntax and pragmatics in Japanese (Hara, 2006). In English, before the 1950s, when *like* began to be used as a focus marker, there was no lexical or grammatical equivalent to the focus particles used in languages like Japanese. This void may have (at least partially) motivated its provenance.

Like (along with a preceding copular verb) can also be used as a quotative marker (Blyth et al., 1990; Fuller, 2003; Romaine & Lange, 1991; Tangliamonte & D'Arcy, 2004). However, its use is broader than a verb such as 'say' is; not only can *like* signal a direct quotation, but it can also signal "[a speaker's] inner monologue, speaker attitude, or non-verbatim renditions of dialogue" (Fuller, 2003, p. 366). For example, in "I woke up with a headache and was like, 'I can't go to work today,'" *like* introduces the speaker's feelings about going to work. It is unclear whether the quoted language represents something the speaker said out loud or if it is inner monologue; the use of *like* is appropriate either way. In fact, quotative *like*'s meaning can vacillate not only between "say" and "think" but also "feel" or "behave/act." As such, it can introduce nonverbal information, like facial expressions and/or gestures, e.g., "I tripped in front of everyone and was like [speaker makes an embarrassed face and then covers her face with her hands][1]."

The three uses of discourse marker *like* described above —looseness, focus, and quotative—are included in all the literature on this word. But Fuller (2003) argues that there is yet a fourth sense of *like*, where it is used to signal reformulation. Participants in her study used *like* to revise and reformulate previously stated interview questions (e.g., "What kind of place do you live in? Like, do you rent an apartment, or do you own a house?") Fuller (2003, p. 368[2]). Such uses mean something like, "What I mean to say is…" and can also occur in declarative utterances. For example, if a speaker is trying to provide directions but is having trouble formulating the message, they may use *like* as a signal to the listener that upcoming speech represents a revision of what preceded it. For example, "You take a left at the next light, like, not right *at* the light… like, you pass the light before turning left." Each use of *like* marks a new attempt to rephrase what is previously said to convey the intended message. What makes this use different from the other three is that it not only signals something about the following speech (i.e., that it represents a revision or restatement), but it also signals something about *previous* speech (i.e., that it was unsatisfactory in some way).

In summary, the discourse marker *like*, which has historically been devalued by both listeners and speakers, serves to signal four aspects of upcoming discourse, and these rich pragmatic functions are not otherwise represented by any single English word. A speaker would need to utilize a litany of other lexical items and phrases if they wanted to eradicate *like* from their speech but still communicate the same information about upcoming discourse that *like* does.

The use of discourse markers in autism

Because discourse markers serve important (but arguably subtle) pragmatic functions, the appropriate use of such words may prove challenging for individuals who struggle with neurotypical conventions about conversation reciprocity and other aspects of pragmatics, such as individuals on the autism spectrum (APA, 2013).

Evidence that the use of discourse markers is divergent in autism comes from a substantial body of work on words that are used to fill pauses, specifically *uh* or *um* (Clark & Fox Tree, 2002; Engelhardt et al., 2017; Fox Tree, 2001; Lake et al., 2011; McGregor & Hadden, 2020). During a conversational exchange, if a speaker pauses, the listener may assume that the speaker has completed a turn and is ready for the listener to take the conversational floor. However, sometimes the speaker is pausing because they are formulating their next thought, or because they are attempting to access a word. In these cases, the speaker will fill or precede the pause with *uh* or *um*, and, by doing so, they are signaling that they are not ready to relinquish their conversational turn (Clark & Fox Tree, 2002; Fox Tree, 2007; Gorman et al., 2016; Lake et al., 2011). Because filled pauses provide information about the nature of upcoming speech (or the lack thereof, in the case of upcoming pauses) and information about the structure of the upcoming discourse, they should be considered a type of discourse marker (Fox Tree, 2007). Some work on *uh* and *um* use in autism finds that autistic[3] speakers simply use both less often than non-autistic (NonAu) speakers do. For example, Lake et al. (2011) compared rates of *uh* and *um* between autistic children and non-autistic peers. They found that autistic children were less likely to fill their pauses (i.e., they used both *uh* and *um* less) than NonAu children. In fact, autistic children used silent pauses as frequently as NonAu children produced *uh* and *um*, which the authors interpreted as suggesting that autistic children used silent pauses "in the place of filled pauses" (Lake et al., 2011, p. 137). Based on the increased rate of unfilled pauses in autistic children's conversations, Lake et al. (2011) suggest that autistic children are less sensitive than NonAu children to the listener's mind, and specifically to the fact a silent pause can be interpreted by the listener as a signal that the speaker is relinquishing their turn. Thus, autistic children may unintentionally encourage their listeners to start talking, even when they want to hold the floor[4].

In fact, *uh* and *um* are used in complementary distribution, where *um* typically precedes longer pauses than *uh* does (Clark & Fox Tree, 2002). Because of this distributional difference, research subsequent to Lake et al. (2011) elected to examine autistic speakers' use of *uh* and *um* separately. The findings from this research have been fairly consistent: Autistics and non-autistics show comparable rates of *uh* use, while autistic speakers use *um* significantly less frequently (Gorman et al., 2016; Irvine et al., 2016; McGregor & Hadden, 2020). Further, *um* rate has also been shown to negatively correlate with autism traits (and, therefore, positively associate with neurotypical

expectations of social-communication norms), while no such relationship exists for *uh* rate (Irvine et al., 2016). Because of the association between *um* use and autism characteristics, Irvine et al. (2016) explain differing patterns of usage for *um* vs. *uh* in autism as depending on the former being a "listener-oriented" filled pause while *uh* is a "speaker-directed" filled pause. They argue that autistic individuals struggle to attend to their listener's needs and are therefore less likely to utilize *um*.

There is very little work on how autistic speakers use other discourse markers besides *uh* and *um*. In fact, as far as we are aware, there is only one study that has done this. Geelhand et al. (2020) examined discourse marker[5] use while children on the autism spectrum told narratives and compared their use to non-autistic peers. They found that autistic children used these markers less often than non-autistic peers. However, it remains to be seen whether this pattern extends to other types of discourse (like conversations or interviews) and importantly, for our purposes, whether these patterns extend to the discourse marker *like*, as these authors did not include *like* in their analysis.

Current study

The current study attempts to address a gap in the literature by examining the use of discourse marker *like* by autistic and non-autistic children and adolescents as they answer questions about themselves in a conversational context. We specifically focus on *like* for several reasons. One is simply its frequency; the discourse-marker *like* is prolific within the speech of older children and adolescents, which means any conversational interaction is likely to yield many tokens of *like* (at least in our NonAu group). Further, if we find that older autistic children and adolescents use *like* less frequently (as we hypothesize), this would have important implications for social integration. The use of *like* is part of the social-communication code of older children and adolescents; therefore, children who use it less often may be perceived as not fully belonging to their peer group. Another reason we focus on *like* is because it has four distinct pragmatic functions, which allows us to analyze and compare subtype use between diagnostic groups. If there are differences in the proportional uses of certain subtypes between participant groups, this would signal *specific* areas of pragmatics that are divergent between groups.

Not only can such a detailed analysis of *like* provide insight into specific areas of pragmatics that may differ across autistic and NonAu children, but it is hoped that this analysis and the resulting findings will yield clinical implications as well. Training manuals for language sample analysis procedures traditionally guide users to code discourse markers, including *like*, as mazes (see for example the standard transcription conventions for SALT® Software, Miller, 2010). This thereby prevents

their inclusion in the calculation of MLU and other typical measures of expressive language ability (TNW, etc.). While this may be appropriate for measures of morphosyntactic language development in young children (like MLU), ignoring *like*'s use entirely prevents clinicians from analyzing a potentially helpful indicator of expressive pragmatic and sociolinguistic skills.

We ask the following research questions: 1) Do older children and adolescents on the autism spectrum use *like* significantly less frequently than non-autistic (NonAu) peers? 2) Do autistic children show differing proportional frequencies in *like* subtypes (reformulation, focus, looseness, and quotative) as compared to NonAu peers?

With regards to our first research question, we predict lower rates of *like*, *overall*, in our autistic group because previous literature reports less frequent use of listener-directed discourse markers in this population. The second research question builds on the first, by exploring whether autistic children and adolescents use *like* differently than NonAu peers, in terms of how frequently they use *like* to signal its four distinct discourse functions. This question is purely exploratory, as there is not enough relevant background literature for us to form hypotheses about which subtypes might be more or less frequent in either group, let alone how proportions might differ between groups. Finally, as a post-hoc analysis, we compare *uh* and *um* rate between groups to determine whether this specific set of participants in this particular discourse context show the same *uh/um* rate differences that have been captured in other examinations of autistic and NonAu groups in other types of discourse contexts (Irvine et al., 2016; Gorman et al., 2016; McGregor & Hadden, 2020). We predict proportionally higher *um* rates by NonAu speakers, as this has been reported previously. If this result is borne out, we can be more confident that *like* findings are not attributable only to the specific nature of the current study, including discourse type, discourse partner, and participant selection criteria.

Methods

Participants

Twenty-one (21) children on the autism spectrum (17 males; 4 females) and twenty (20) NonAu children (11 males; 9 females) participated, aged 10–17 years. Groups were statistically equivalent in age, sex, IQ scores, and standardized language scores (all $ps > 0.1$). See Table 1.

Participants were recruited via newspapers, local magazines, the Internet, local schools, local advocacy groups for families of children on the spectrum, and word of mouth. In order to participate, all children had to have acquired English as a native language, along with meeting the following criteria: earning a score above 85 on both the *Kaufman Brief Intelligence Test-2nd Edition* (K-BIT-2;

Table 1. Data are shown as mean ± standard deviation or as *n*s and are compared by *t*-tests or fisher exact tests

Characteristic	Autistic (*n* = 21)	Non-autistic (*n* = 20)	Test Statistic	*p*
Age (years)	13.53 ± 2.30	13.24 ± 2.50	*t* = 0.45	.66
Sex (*n* = female:male)	4:17	9:11	n/a (Fisher exact test)	.10
K-BIT 2 standard scores	115.90 ± 19.90	112.00 ± 14.33	*t* = 0.72	.47
CELF-5 standard scores	110.76 ± 17.80	112.95 ± 14.99	*t* = −0.43	.67
SCQ	20.10 ± 6.73	2.50 ± 2.70	*t* = 11.08	<.001
ADOS-2, module 3 (*n* = 14)	9.64 ± 2.68	n/a	n/a	n/a
ADOS-2, module 4 (*n* = 7)	11.29 ± 1.11	n/a	n/a	n/a

Kaufman & Kaufman, 2004) and the *Clinical Evaluation of Language Fundamentals, Fifth Edition* (CELF-5; Wiig et al., 2013), no significant hearing loss, no psychiatric or developmental condition (aside from autism, for autistic participants). Participants recruited for the NonAu group were excluded if they had an autistic sibling. To confirm autism diagnosis for autistic participants, the *Autism Diagnostic Observation Schedule, Second Edition* (ADOS-2) was administered by a research-reliable ADOS administrator (Lord et al., 2012). Additionally, caregivers from both groups completed the *Social Communication Questionnaire-Lifetime* (SCQ; Rutter et al., 2003). Potential participants in the NonAu group were excluded if they earned a score above 15 on the SCQ.

This study was approved by the Emerson College Institutional Review Board in Boston, Massachusetts. Informed consent was obtained in writing from participants who were over the age of 12 and all participants' parents or guardians. All participants were asked for verbal consent before each research task was conducted and were compensated with Amazon gift cards for participation.

Procedures

Participants engaged in a double interview (Winner, 2002), where they first were interviewed by a research assistant (RA) and then reversed roles and interviewed the RA. During the portion when they served as the interviewee, participants were asked the same series of interview prompts in identical order. The interview prompts were as follows:

1. Can you tell me what you like to do for fun?
2. Tell me about your family.
3. Can you tell me about a cool trip or vacation you have been on?
4. Tell me about the hardest or your least favorite part of school.

RAs were encouraged to respond naturally to participants' answers to these four prompts (asking follow-up questions and making comments based on participant responses), which meant that the four above prompts represented the only part of the interview/conversation that was scripted. Once a natural end to this portion of conversation was reached, the participant was asked to look at a series of photographs of the RA as prompts for potential topics. The participants then asked questions of the RA until they did not have any further questions and the interview was concluded. A video camera was positioned on each side of the interview table so that both the RA and the participant were video recorded.

Analysis

Coding. After all participant interviews were completed, RAs transcribed the interviews from video recordings. Only transcriptions from the first half of the interview, in which the participant was the interviewee, were included for *like* coding. We excluded the second half of the interviews (when participants interviewed RAs) from *like* coding for several reasons. First, in the participant-led portion of the interviews, there was less uniformity in both the length (ranging from 4 to 14 min) and semantic content (as participants could ask about anything they wanted), as compared to the RA-led portion. Second, participants talked much less in the second half of the interviews, as their job was to ask (rather than answer) questions. Thus, there were less opportunities for *like* use in the second portion of interviews.

Initially, the first author identified all discourse marker *like*s in all transcripts of the first halves of the double interview. Afterwards, she and another researcher coded each *like* for one of the four subtypes. To train the second researcher to distinguish between these subtypes, the first author created a mock transcript that contained several examples of discourse marker *like* being used to convey each of the four functions. Together, the first author and other coder went through the mock transcript and discussed why each of the *like*s represented each subfunction. Once the second researcher was confident in their ability to recognize all four subtypes, both coders began coding *like*s in earnest.

To prevent bias, neither coder was aware of participants' diagnoses during coding. The first author completed all coding before reliability coding began. Another researcher coded *like* in a random assignment of 20% of the total

number of transcripts (n = 8). We estimated reliability between *like* does by calculating Cohen's Kappa (McHugh, 2012) for each subtype. We selected this relatively conservative measure of reliability due to the novelty of this coding scheme. Cohen's Kappa for the four categories ranged from fair to almost perfect agreement: Codes for quotative *like* showed strong agreement (0.816); loose codes showed substantial agreement (0.689); focus showed moderate agreement (0.538); reformulation codes achieved fair agreement (0.346). Table 2 provides examples of each of the four subtypes from participant transcripts.

Statistical analysis. The total frequency of *like*, per child, was calculated in proportion to the total number of words (TNW) that each participant produced, resulting in a proportional rate of *like* (i.e., *like*/all words). Converting *like* use to proportions (vs. raw frequencies) allowed us to control for differences in interview length. To compare *like* use between groups, we conducted a repeated-measures 2 × 4 (Participant Group × *like* Subtype) ANOVA.

Results

Table 3 presents raw frequencies and proportions of *like* use within each group. See also Figure 1.

A 2 × 4 (Group × *like* Subtype) repeated-measures ANOVA showed neither a significant main effect of group ($F_{(1, 39)} = 0.811$, $p = .373$, ges = 0.010) nor a significant interaction between group and *like* subtype ($F_{(4,156)} = 0.915$,

$p = .461$ after using a Greenhouse-Geisser correction, ges = 0.010). There was a significant effect of *like* subtype ($F_{(4,156)} = 49.630$, $p < .001$ after using a Greenhouse-Geisser correction, ges = 0.398), reflecting lower rates of reformulation and quotative *likes*, as compared to focus and looseness *like* in both groups. ANOVA results are presented in Table 4. A post-hoc Tukey HSD test found that rates of quotative and reformulation *like* were each significantly lower than looseness and focus ($p < .0001$ for all four comparisons).

There was no significant difference between rates of focus and looseness *like* ($p = .713$) or between rates of reformulation and quotative *like* ($p = .924$).

Finally, post-hoc *t*-tests were conducted to compare the use of *uh* and *um* between participant groups. We calculated *um*:*uh* + *um* ratios, based on previous analyses (Gorman et al., 2016; Parish-Morris et al., 2017), and then used a two-tailed *t*-test to compare these ratios between groups. Results showed that *um*:*uh* + *um* ratios were significantly smaller for autistic participants than NonAu participants (autistic *m* = 0.60; NonAu *m* = 0.72, $t = -2.265$, $p = .029$), even though the number of *uh* and *um* tokens were not statistically different between groups (*uh*: autistic group *m* = 7.904; NonAu group *m* = 4.45, $t = 1.589$, $p = .1204$; *um*: autistic group *m* = 13.714; NonAu group *m* = 13.85, $t = -0.025$, $p = .98$).

Discussion

As described in the introduction, there is research examining discourse marker *like* usage by non-autistic speakers (D'Arcy, 2005; Fox Tree, 2007; Fuller, 2003; Meehan,

Table 2. Example participant utterances coded as different subtypes

Main Subtypes	Subcategories	Examples
1. Looseness	1a. Approximation	(1a) "I've been playing hockey for about like six, five years"
		(1a) "In her like…twenties…"
	1b. Hedging	(1b) "She grew up like outside Boston…as like…a Catholic I think I don't know"
		(1b) "It [is] like my favorite city"
		(1b) "…I think she like…found hippie culture and like…fell in love with it so she became like a Hindu"
2. Focus	2a. New information	(2a) "Like I wouldn't really say anything in school is hard for me to do"
		(2a) "Like the uh when we were crossing the border um… the guard was there"
		(2a) "Um… Talking Tom… it's like you have to take care of this cat"
	2b. Example/ elaboration	(2b) "I skateboard because it's fun like obviously if I go to a camp and there's a competition … I'll do it"
		(2b) "Uh Lego video games like Lego batman or Lego batman 3"
		(2b) "Well actually like I like to play video games uh…like Pokémon and Super Smash Brothers"
3. Quotative		(3) "I was like (*makes funny face*)[9]"
		(3) "But when I told my mother about it she's like…he didn't tell me about this"
4. Reformulation		(4) "I was trying to…jump…into a ramp like instead of just dropping in I jumped before I was going down"
		(4) "… I wouldn't really say anything in school is hard for me …like if I\\\\[10] if a teacher gives me something … that doesn't… like if I'm not learning anything from it?"
		(4) "Can this be a trip coming up or something… like in the future?"

Table 3. Means and standard deviations for raw frequencies of *like* use (and proportions of TNW in parentheses) within groups

Group	like subtype									
	looseness		focus		quotative		reformulation		total	
	M	SD	M	SD	M	SD	M	SD	M	SD
Autistic	7.33 (0.01)	5.62 (0.01)	6.86 (0.01)	7.29 (0.01)	1.05 (<0.00)	2.01 (<0.00)	1.62 (<0.00)	3.44 (<0.00)	16.86 (0.03)	14.05 (0.02)
Non-autistic	9.05 (0.02)	10.63 (0.02)	8.80 (0.01)	11.97 (0.02)	0.80 (<0.00)	1.70 (<0.00)	1.50 (<0.00)	1.54 (<0.00)	20.15 (0.03)	21.90 (0.03)
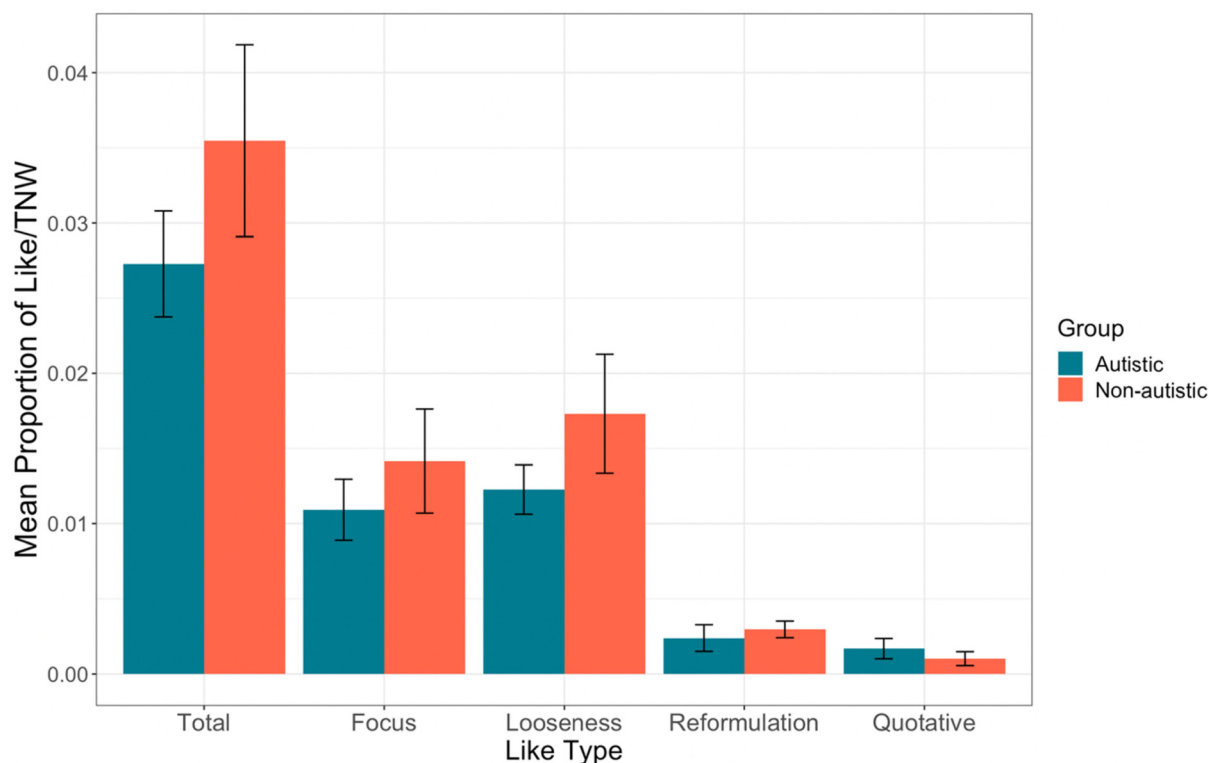
Figure 1. Group comparison of overall and subtype use

1991; Miller & Weinert, 1995; Odato, 2013; Siegel, 2002; Underhill, 1988), but to our knowledge there are no studies examining its use by autistic speakers. The current research has addressed this gap by examining *like* use, overall, and *like* subtypes by older autistic children. By focusing our efforts on *like*, we hoped to highlight the pragmatic significance and versatility of a word that has traditionally been coded as a filler and/or maze by both clinicians and researchers who use language sample analysis techniques to assess linguistic skills in clinical populations. Our results find—in contrast to other research on discourse markers in autism—that there is no significant difference in the overall use of *like* between diagnostic groups or in the relative proportions of *like* subtypes between groups. We address each of these findings in the following.

Overall frequency

Previous research finds differences between use of discourse markers in children on the autism spectrum compared to NonAu peers (Gorman et al., 2016; Irvine et al., 2016; Lake et al., 2011; McGregor & Hadden, 2020). Specifically, research on *um* and *uh* has found that *um* is used significantly less frequently by autistic children compared to NonAu peers (Gorman et al., 2016; Irvine et al., 2016; McGregor & Hadden, 2020). In contrast, our findings suggest that *like* is as prolific among the speech of older autistic children and adolescents as it is in the speech of their NonAu peers. This suggests that there are differences between *um* and *like*, which encourages the use of the latter (but not the former) by autistic individuals. In

Table 4. ANOVA results

Predictor	df_{Num}	df_{Den}	Epsilon	F	p	η_g^2
Group	1.00	39.00		0.81	.373	.01
Like Type	1.75	68.09	0.44	49.63	.000	.40
Group × Like Type	1.75	68.09	0.44	0.75	.461	.01

support of this, the children in our study on the spectrum did use *um* proportionally less often than their NonAu peers (as has been found in previous literature), despite using *like* as often.

As discussed in the introduction section of this manuscript, *um* is a listener-oriented discourse marker (as opposed to speaker-oriented), which means that it is used to benefit the listener (Engelhardt et al., 2017; Lake et al., 2011). This aspect of *um* (the fact that it is listener-oriented) has been used as an explanation for why it is less commonly used by autistic speakers. However, *like* is also a listener-oriented discourse marker (Engelhardt et al., 2017; Irvine et al., 2016; Lake et al., 2011), so our findings suggest that listener-oriented discourse markers are not generally elusive to autistic individuals. Fox Tree (2007) demonstrates that *like* and *um* are in complementary distribution, which shows that these terms are not interchangeable. Thus, one potential explanation for different patterns of use between *um* and *like* is that there are differences in the specific listener-oriented functions these terms convey.

Specifically, *um*'s listener-oriented role is to hold the conversational floor when the speaker needs to pause without relinquishing their turn (Lake et al., 2011). In contrast, *like* does not help organize turn-taking, but instead provides the listener with information about the content of the upcoming message (e.g., looseness *like* informs the listener that the following language represents an approximation or an exaggeration). Therefore, it is possible that *um*'s specific use to signal turn maintenance—and, as such, its use to manage turn-taking—is what makes it less accessible for this population. This seems aligned with a previous findings that autistic individuals show differences with turn-taking (Bone et al., 2013; Kaczmarek, 2002; Kim & Clarke, 2015; Ying Sng et al., 2018). Similarly, a recent paper from our lab finds that this same group of autistic children also produce back-channeling less often than their NonAu counterparts (Matthewman et al., 2021). One explanation for this is that—when they are acting as the listener—they do not pick up on moments when the speaker pauses for a moment while still holding the floor. These are the moments when a backchannel is warranted; the speaker pauses to formulate thoughts and/or to check in with their listener's comprehension, and the listener fills that gap with a brief verbal/nonverbal signal (e.g., saying "mmhmm" or nodding) to convey to the speaker that: a) they are following along with the speaker's message; b)

they recognize that the speaker is still holding the conversational floor.

Combining the results of Matthewman et al. (2021) and the current study, we find that whether these children are acting as listeners or as speakers, they respond differently to turn-taking cues, specifically those where a speaker is pausing between ideas/utterances/clauses but still desires to hold the floor. In contrast, our *like* findings show that older autistic children and adolescents are adept at using the discourse marker *like*, despite its representing complex and nuanced pragmatic information (Fox Tree, 2007; Fuller, 2003; Underhill, 1988). We argue that our results represent a pragmatic strength in autism that has heretofore gone unnoticed.

This brings us to another possible explanation for the fact that we find as frequent *like* use (but less frequent *um* use) by our participants on the spectrum, as compared to NonAu peers: interactional context. Not only do *um* and *like* serve different functions, but they also seem differently affected by interactional context. For example, speakers use *like* more frequently when they are talking with friends (i.e., people who are perceived as peers) than they do with speakers who hold a position of authority, while *uh* and *um* is used more generally, with both friends and authority figures (Fox Tree, 2007).

Two aspects of the current paradigm may have made it less amenable for *like* use (at least for some participants): 1) each participant's interlocutor was a research assistant, rather than a friend; 2) participants engaged in a double interview (Winner, 2002), rather than a conversation. Combined, these factors may have discouraged participants from using *like* as often as they would in an informal conversation with peers. Beginning with discourse partner: Research assistants were all at least five years older than participants. Further, their role as researchers required them to engage with participants in an authoritative manner; they directed participants to perform a variety of tasks and even paid them for their time (with Amazon gift cards) at the end of the research session. Moving on to discourse type: the use of an interview (it was even labeled as such to participants) may have created a more formal context than a conversation would. Although previous research does find that individuals frequently use *like* during interviews (Fuller, 2003), this research does not compare *like* frequency between interviews and other less formal contexts, so it is unclear whether the same person would use *like* as often in a formal interview as they would talking with friends.

Putting these factors together, the power differential between participants and their interlocutor, along with the discourse type (an interview rather than a conversation) may have discouraged the use of *like* by some participants, and perhaps more strongly for NonAu participants. While we have not discovered research that examines how autistic individuals adjust linguistic form/content (i.e., shift registers) to

meet the needs of different sociocultural contexts, research on other types of communicative behaviors, like emotional facial expressions, finds that autistic individuals are less likely to follow "display rules" that neurotypicals use to guide the degree to which one should express emotions in a particular context (Barbaro and Dissanayake, 2007; Scheeren et al., 2010; Zane et al., 2018). Thus, another explanation for similar *like* usage between participant groups in the current study may be that NonAu participants may have used *like* less than they would in other contexts, while participants on the spectrum used *like* as often as they always do. That is, if we had examined *like* use while participants engaged with not only a peer, but specifically a friend, we may have found the group differences we predicted, where autistic participants use *like* less than NonAu counterparts, simply because NonAu individuals would have increased their usage of *like* in such a context.

Subtype proportions

Our overall-use findings show that *like* is used as frequently by older autistic children as it is by their NonAu peers. The subtype findings strengthen this picture, since the relative proportions of each *like* subtype are statistically equivalent between groups. This suggests that children on the autism spectrum not only use *like* as often as their NonAu peers do, but also that each group uses *like* in similar ways. In the current study, children in both groups used focus and loose *like* significantly more often than quotative and/or reformulation *like*. Although we did not have hypotheses regarding which subtypes would be more or less common in autistic discourse, there are two patterns of use that surprised us, nonetheless: 1) Infrequent use of reformulation *like*; 2) Frequent use of focus *like*.

Despite not having specific hypotheses related to subtype proportions in either group, there were several reasons to suspect that—if autistic participants were going to favor any 'like' subtype—they would show a preference for reformulation. Research finds increased rates of repetitions, reformulation, and/or revision in the speech of children on the spectrum when they are performing various language tasks, including storytelling and conversation (Irvine et al., 2016; Lake et al., 2011; Shriberg et al., 2001; Suh et al., 2014[6]). Because discourse markers, specifically *like*, are one way a speaker can signal that they are struggling with word finding or formulating an upcoming thought (Swerts, 1998), this would suggest that autistic individuals, who have been shown in studies to frequently revise and repeat, would rely on the reformulation function of *like*. Further, studies find that autistic individuals exhibit lower executive functioning (EF) skills than NonAu peers (Blijd-Hoogewys et al., 2014; South et al., 2007; Van Eylen et al., 2015), and research shows that filled pauses, reformulations, and revisions negatively correlate with EF ability (Engelhardt et al., 2013). In short, autistic

individuals tend to reformulate/revise their speech more frequently than neurotypical individuals (perhaps because of challenges with EF), and this would seem to motivate a relatively high reliance on reformulation *like* for this group. However, our results did not support this preference.

We offer two possible (and related) explanations for this. First, rates of reformulation *like* were strikingly low in both groups, suggesting that marking reformulation is not a common way for anyone to use the discourse marker *like*[7]; thus, low rates of reformulation *like* by autistic participants may simply reflect a larger pattern where no one uses this *like* subtype very often. Secondly, we did not measure overall rates of revision/reformulation in this study. Therefore, it is possible that autistic children were indeed revising/reformulating their language more often than the NonAu group was (as has been found in previous work), but they just did not use *like* to signal these revisions. They may have used other discourse markers to do so[8]), or they could have revised speech after an unfilled pause. In short, because neither group seemed to use *like* to signal a revision, we interpret the lack of difference in rates of reformulation *like* to reflect the fact that this is simply a rare use for this word and not to reflect low rates of reformulation, generally (for either group).

In addition to low frequencies of reformulation *like* amongst autistic participants, another surprising finding was their high rates of use of focus *like*. Focus markers, including *like,* introduce information that is new and important to the discourse. As such, using them requires that the speaker be aware that upcoming information is new to the conversation and new to the listener. This awareness not only entails an accurate and up-to-date representation of the conversation thus far, but it also arguably entails theory of mind (ToM) skills, since the speaker must attend to what the listener already knows and what is new information to them. All of this should prove challenging for autistic individuals. As mentioned earlier, research finds that autistic individuals show weaker EF skills than NonAu peers, including working memory skills (Engelhardt et al., 2013; Kercood et al., 2014). Thus, maintaining a precise representation of previous discourse should be challenging for autistic individuals, simply because of a lower working memory capacity. This has been used as an explanation for other discourse differences in autism, including inappropriate and ambiguous referencing (Arnold et al., 2009). Beyond challenges with working memory, a large body of research finds that autistic individuals show differences on ToM tasks (Baron-Cohen, 1995; Kimhi, 2014). Like EF skills, ToM differences have also been implicated in research on referential skills in discourse (Kuijper et al., 2015; Novogrodsky & Edelson, 2015). Such differences might also affect autistic individuals' recognition of when a focus marker is needed, as they may not identify upcoming information as new or important to their listener.

Despite the aforementioned reasons for suspecting challenges with focus in autism, our results show that older children on the spectrum use the focus subtype at similar rates to that of their NonAu peers. We provide two possible explanations for this finding. First, we did not test either EF or ToM skills for any of our participants. Thus, even though previous research demonstrates lower scores on EF and ToM metrics by individuals on the spectrum as compared to non-autistic individuals, it is possible that this was not true for our specific group of autistic participants. Further, because we did not measure either EF or ToM, we cannot actually determine whether there were correlations between either factor, and the use of focus *like* in either group. That is, while there are reasons to suspect that better EF/ToM skills would support the use of focus markers, including focus *like*, we do not have any evidence to show that these factors in fact relate to one another. Further, it is possible that higher EF/ToM skills would not result in higher frequencies of focus *like* but would instead result in more appropriate use of focus *like*. This brings us to our second explanation for why we do not see differences in frequencies of focus *like* between groups. It is possible that autistic individuals—perhaps due to lower EF and/or differing ToM capacity—do not use focus *like* in the same way that NonAu participants do, even though they use focus *like* frequently. As we did not code for the appropriateness of *like* use or the use of any *like* subtype, we cannot speak to whether autistic participants produced focus *like* (or any *like*, for that matter) in expected contexts (i.e., contexts when NonAu participants would use it). Thus, some participants could have been using focus *like* to signal information that was not actually new to the conversation, and—vice versa—there may have been opportunities for participants to use focus *like* when they neglected to do so. Future studies should examine the appropriateness of *like* use in autism: not only whether its use is functionally appropriate in the discourse, but also whether its position within an utterance (according to both syntactic and prosodic structure) is predictable. Frequent use of *like* in functionally and/or structurally inappropriate ways could overwhelm the message and cause breakdowns in communication between autistic and NonAu individuals.

Limitations

There are several limitations to the current study. The first is the fact that data used for coding were written transcripts, rather than audio or video recordings. This prevented intonational and prosodic cues from being considered. While pauses of one second or longer were included in the transcript, as well as facial expression and several suprasegmentals (e.g., exaggeration, dramatic slowed speech, purposeful change in pitch), shorter pauses and more subtle pitch contours were not transcribed. This meant that it was impossible to code for more subtle aspects of *like* use, including whether it followed/preceded pauses of similar lengths in each group and whether the speech that preceded/followed a particular prosodic contour. Future work should examine *like* similarly to the ways *uh* and *um* have been analyzed, including pause length differences and syntactic environments. Further, we urge future researchers to consider ways of capturing how the speaker's intonation impacts interpretation of *like*'s subfunction.

Secondly, the double interview paradigm used in the current study represents a very particular discourse context that may not offer a reliable sample of language use in other contexts (e.g., conversations with peers). Previous research on discourse markers in autism (usually *um* and *uh*) has often suffered from a similar limitation. While researchers have utilized a wide variety of discourse tasks to explore usage, almost all research examines the way that participants engage with either a research assistant or test administrator (in the case of ADOS conversations, for example) (de Marchena & Eigsti, 2016; Engelhardt et al., 2017; Geelhand et al., 2020; Gorman et al., 2016; Irvine et al., 2016; Lunsford et al., 2010; Parish-Morris et al., 2017; Wechsler, 1997), just as we did in the current study. These authors, like us, find that *um* use is less frequent in autism. Even though *um* is argued to be used generally, no matter the conversational partner (Fox Tree, 2007), it is possible that *um* usage patterns in each group would look different if participants were recorded speaking to someone who is not in a position of authority. Future research on the use of other discourse markers by autistic speakers should more carefully consider features of the context and the interlocutor rather than making conclusions about autistic usage overall.

Conclusions

These limitations notwithstanding, the current study provides evidence that older autistic and non-autistic children demonstrate similar use of a discourse marker that serves multiple, nuanced pragmatic functions, despite well-established differences in other pragmatic behaviors between these two groups. This result represents a heretofore unrecognized communicative and pragmatic strength in this population, since *like* is highly frequent in the speech of adolescents and young adults and since *like* indexes multiple important discourse functions. These findings suggest that instead of simply viewing discourse markers as mazes or speech disruptions in language samples, clinicians and researchers should consider that the use of these words may represent a potential strength in pragmatic skills. The four distinct functions of like (to revise, to quote, to focus, and to approximate) points to the value of analyzing how and why and with whom an individual is using this discourse marker. A clinician can determine specific areas of pragmatic strengths and weaknesses by determining which one(s) a child uses,

which they do not, and which they possibly overuse or use inappropriately. Further research is needed to explore the potential of discourse marker analysis as a means to enrich our understanding of the pragmatic profile of autistic individuals and to inform assessment and intervention planning. Researchers and clinicians are encouraged to examine the use of like and other discourse markers in varying discourse contexts and with different discourse partners.

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ORCID iD

Rebekah Jones [iD] https://orcid.org/0000-0002-6872-2830

Notes

1. In some dialects, the verbs 'say' and 'go' can be used similar to 'be like'. For example, if a man saw a spider and gasped, someone else could relay the story of their reaction as 'He sees the spider and he <u>says</u> [gasp]' or 'He sees the spider and he <u>goes</u> [gasp].'
2. Example questions are adapted from the quoted interview in Fuller (2003).
3. Bottema-Beutel et al. (2021) outline methods for avoiding ableist language in research on autism. They encourage the use of identity-first language (e.g., "autistic individuals" versus "individuals with autism/ASD"), as a majority of autistic advocates prefer it. They also suggest describing comparison groups as "non-autistic", unless those groups have undergone extensive testing to ensure they are not neurodivergent (in which case they can be described as "neurotypical"). We adopt their suggestions in this manuscript.
4. Whether autistic children signal their aim to hold the floor by other means (e.g., facial expressions or gestures) is not

addressed in this paper, but it seems possible, since the authors describe the experimenters who acted as interlocutors as finding it "very awkward to simply wait for [autistic] participants to resume speaking" (Lake et al., 2011, p. 139). This suggests that interlocutors did somehow recognize that some silent pauses were not meant to signal a turn's end; otherwise, there was no need to wait.
5. Called "discourse-*structuring*" markers in this study.
6. Lake et al. (2011) found a lower rate of reformulations and a higher rate of repetitions in autistic participants.
7. As far as we are aware, there is no previous work that has compared the relative frequencies of different uses of discourse marker 'like', so we cannot be sure whether our findings -- which suggest that marking reformulations/revisions is a relatively uncommon use of 'like' -- reflect the way 'like' is used in other discourse contexts and/or by other populations.
8. Perhaps 'you know' or 'I mean' (Furkó & Ábuczki, 2014).
9. Even though video recordings were not available during "like" coding, gestures, laughter, and salient facial expressions were included in the transcriptions provided to coders.
10. Backslashes (//) indicate restart or correction mid-word.

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