Language matters in British newspapers: A participatory analysis of the Autism UK Press Corpus

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Keywords

autism, newspapers, language, stereotypes, stigma, acceptance

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Community brief

Why is this an important issue?

Newspapers frequently portray autistic people in a negative and stereotypical way, emphasizing their challenges and weaknesses instead of their needs and strengths. Also, newspapers frequently use language and terminology that does not respect how autistic people wish to be addressed. Newspaper language can have a negative impact on the mental well-being of autistic people and hinder their acceptance.

What was the purpose of this study?

This study looked at how autistic people perceive the language newspapers use to portray them. It also looked at how autistic people perceive the language of newspapers with different reporting styles (broadsheets vs. tabloids), political orientation (left- vs. right-leaning), and changes over time.

What did the researchers do?

We asked five autistic people to look at 1,000 quotes about autism from British newspapers, published from 2011 to 2020. The autistic experts didn't know which newspaper the quotes were from or when they had been published. They rated each quote based on two things: warmth and competence. Warmth referred to how much autistic people were portrayed as friendly, trustworthy, sincere, tolerant, and kind, while competence referred to how much autistic people were portrayed as intelligent, efficient, ingenious, knowledgeable, and powerful. The coders also indicated how confident they felt about these judgments.

What were the results of the study?

The autistic experts rated most quotes as having low warmth and low competence. Quotes referring to “autism” in a general way, without referencing autistic people, tended to be rated low on warmth and competence. Furthermore, quotes using identity-first language, e.g., "autistic person", tended to be rated higher in warmth and competence than those using person-first

language, e.g., "person with autism". Quotes from broadsheets were seen as conveying similar warmth and slightly higher competence than quotes from tabloids. There was no difference between left and right-leaning papers and no clear pattern of change over time.

What do these findings add to what was already known?

This study shows that, according to autistic raters, the recent British press portrays autistic people in a negative way. It also highlights the important role of terminology that the press uses to refer to autistic people. The findings provide subtle evidence that broadsheets offer a slightly more positive representation of autistic people than tabloids. But they challenge the idea that portrayals of autistic people in newspapers have become more positive over time.

What are potential weaknesses in the study?

One potential weakness is that the individual experts sometimes differed in how they felt about individual quotes. These differences, as well as potential differences between autistic and non-autistic people, should be examined in future research.

How will these findings help autistic adults now or in the future?

The findings suggest that newspapers should take steps towards representing autistic people in a more positive way, to shift attitudes toward autistic people in society. They also highlight the importance of language and terminology, and that autistic people should be involved in guiding newspapers towards promoting more inclusive views.

Abstract

Background: Language around autism plays a crucial role in shaping public attitudes towards autistic people. The use of identity-first vs. person-first language, and impersonal references to autism can affect how autistic people are perceived. These factors should impact the representation of autistic people in newspapers, where negative and stereotypical representations are often perpetuated. **Method:** We asked five autistic people to judge the sentiment towards autism and autistic people in 1,000 quotes from British newspapers (2011 – 2020). The coders, who did not know the newspaper title and time of publication, made their judgments based on two dimensions, warmth and competence, from the Stereotype Content Model (SCM). We examined the overall judgments of warmth and competence and considered variations in language context and terminology, such as the use of impersonal references to autism, or identity-first and person-first language. We also examined potential differences between broadsheets and tabloids, left- and right-leaning newspapers, and changes over time. **Results:** The majority of quotes from British newspapers fell under a low warmth and low competence area within SCM. Furthermore, impersonal references to autism tended to be rated lower in warmth and competence than references linking autism to an individual, while identity-first language was judged higher in warmth and competence than person-first language. Quotes from broadsheets were assigned similar warmth and slightly higher competence than quotes from tabloids. However, left-leaning and right-leaning papers did not differ regarding warmth and competence and there were inconsistent changes over time. **Conclusion:** Our study confirms that the portrayal of autistic people in British newspapers tends to be negative. According to autistic raters, associating autism with a person and using identity-first language is linked to more positive representations. While we found subtle variations in sentiment related to reporting style, our study shows little progress over time towards more positive portrayals.

Introduction

Language and culture play a pivotal role in shaping human thought. One of the main mechanisms through which this relationship operates is framing.[1-4] Broadly speaking, framing

refers to the process by which information is presented or communicated through specific linguistic and cultural means, and how this may influence the way we think about or comprehend a particular topic, issue, situation, or event. Framing is particularly important for the public understanding and conceptualisation of mental health and disability, including autism. The construct of autism is, in part, shaped and constituted by shared social meanings. This is an ongoing and interactive process, in which the common understanding and language around autism within society are reflected in its cultural dynamics.[5-6] Furthermore, the language that society uses to understand autistic people both shapes and is shaped by the way autistic people are perceived and constructed.

Language around autism is especially important for the neurodiversity movement, which advocates for the acceptance of autistic people and their representation in all aspects of life.[7-10] Without ignoring that autism can also be a disability with biological and genetic etiology,[11-14] the neurodiversity movement posits that disability arises from inadequate accommodations in physical, cognitive and social environments, including attitudes and stereotypes that are implied and perpetuated through language.[15]

The debate surrounding the appropriate terminology for referring to autism and autistic people often centers on the choice between identity-first ("autistic person") and person-first ("person with autism") language.[16-19] Studies have shown that autistic people generally prefer identity-first language, while family members and professionals tend to favor person-first language.[20-24] Cultural variations may also exist, with some studies indicating preferences towards person-first language in Dutch-speaking populations,[25] but identity-first language in French-speaking ones.[26]

Concerns have been raised about the potential negative consequences of person-first language, which may reinforce the perception of autism as something separate from the person themselves.[16-17, 27] or as something undesirable one could combat without considering the person who attached to it.[30] Identity-first language, on the other hand, is seen as empowering and allows autistic people to reclaim labels associated with stigma.[21, 31-32] Moreover, the adoption of person-first language was initially intended to promote a more “humanized” view of autistic people,[18] however, a preliminary study by Gomes[33] suggested it may have limited effectiveness in achieving this goal.

Another important issue related to the impact of language on perceptions towards autism relates to making references to autism rather than autistic people. McGuire[30] and Farahar[34] highlight the potentially problematic role of this impersonalisation of autism into an object outside of a person. This potentially provides a language-mediated distance between the person and the condition and allows people to discuss autism as if the person is not there, or as if it does not have consequences for autistic people.

Impersonal references to autism are prevalent in research. A recent mixed-method study on researchers' attitudes towards autistic people and autism[35] found that researchers who used these references described autism as a disorder, disease or condition, and tended to locate suffering and impairment as an inherent characteristic of autistic people, rather than seeing autism as a difference, disability or as a minority neurotype and recognising the role of society in the emergence of disability. Furthermore, the use of "amorphous" references to autism offered some researchers the linguistic means to allude to research goals such as the prevention and eradication of "autism", which would be unpalatable for the autism community and anyone embracing the neurodiversity movement, and thus normalize violence for autistic people. Thus, impersonal references to autism are suggested to be more dehumanizing than both identity-first and person-first language, which recognise autism as a distinctly human phenomenon (albeit to varying degrees given the semantic separation present in person-first language; as discussed by Botha).[16]

The way researchers talk about autism and the ideas they express often transfer to public discourses of autism, often through sources like the press.[36] The press is a powerful societal institution, which both reflects and shapes public attitudes and beliefs towards them through the setting of an agenda of "newsworthy" issues,[37] as well as the frames used to refer to people or social groups.[2, 38-40] A large body of research has highlighted the biased and often inaccurate portrayal of autism in newspapers, which perpetuates ableist and stereotypical views towards autistic people.[41-47] One of the studies, Karaminis et al.,[46] investigated the portrayal of autism and autistic people in UK newspapers from 2011 to 2020, analyzing all the documents that made references to autism and autistic people in 10 national newspapers during this period (The Autism UK Press Corpus, k = 23,742 documents). Newspapers frequently emphasized the challenges and difficulties associated with autism, employed negative language, and focused predominantly on

boys.[46] These representations gradually evolved over time towards including more diverse age and gender groups, and difference-based descriptions of autistic people, although this shift was limited to broadsheets and left-leaning newspapers.[46]

The current study

In this study, we sought to extend the work of Karaminis et al.[46] in three important ways. First, we examined attitudes towards autism and autistic people (Research Question 1) using an alternative empirical methodology and stronger models of community involvement. Specifically, we asked a group of autistic adults to judge the sentiments conveyed in a sample of quotes from the Autism UK Press corpus based on the Stereotype Content Model (SCM),[48-49] a prominent theoretical framework for the study of stereotypes towards social groups. The SCM suggests that there are two key dimensions that determine perceptions and attitudes towards both individuals and groups, namely warmth and competence.[48] Warmth can be defined as the degree to which a person or a group is perceived as friendly, trustworthy, sincere, tolerant, and kind. Competence can be defined as the degree to which a person or a group is seen as intelligent, efficient, ingenious, knowledgeable, and powerful.

Furthermore, the SCM proposes that the way a person or a social group is perceived on these two dimensions determines emotional reactions towards them and, eventually, maps onto interpersonal and intergroup behaviors and dynamics ("Behaviors from intergroup affect and stereotypes": BIAS map). Given that the SCM has been extensively validated and has been shown to reliably predict stereotypes toward various groups in diverse cultural contexts,[50] we hypothesized that the two-dimensional model would offer new insights into the sentiments and perceptions towards autism in British newspapers, relevant to promoting the acceptance of autism and autistic people.

Second, we investigated the role of language and terminology by examining how sentiments vary when making impersonal references to autism or using identity-first versus person-first language (Research Question 2). Finally, we examined whether sentiment ratings varied according to reporting style (broadsheet vs. tabloids), political orientation (left- vs. right-leaning newspapers) and time (from 2011 to 2020) (Research Questions 3-5).

Overall, we hypothesized that our approach would capture the tendency of newspapers to portray autistic people negatively, and that the SCM would be sensitive to differences related to language and framing highlighted in earlier research. More specifically, we predicted that the majority of quotes would be assigned low warmth and low competence values, while quotes using identity-first language would be attributed higher warmth and competence values than those using person-first language or making impersonal references to autism. Furthermore, drawing on the findings of Karaminis et al.,[26] quotes from broadsheets, left-leaning papers and quotes with a later publication time would be given higher warmth and competence values than quotes from tabloids, right-leaning papers, and with an earlier publication time.

Methods

Coders

Five members of our research team (hereafter referred to as "autistic experts"), who were autistic adults (mean age = 27.8, SD = 10.7, range = 23 - 31; 2 female, 1 male, 1 non-binary, 1 prefers not to say) carried out the task of evaluating the quotes of the survey based on the SCM.

Materials

Sample of quotes

We created a sample of 1,000 quotes to be evaluated for the sentiment conveyed towards autism and autistic people. These quotes were extracted from the Autism UK Press Corpus,[46] using a bespoke programme written in Python. Each quote in the sample was selected to contain either one instance of the term "autism" or "autistic". Of the 1,000 quotes, 285 (28%) used the term "autism" to refer to the condition without using person-first language to describe an autistic individual. For example: "I reali[z]ed that rather than trying to dilute my autism, I needed to find my natural habitat – that autism can be a gift, if you're in the right environment" *[Telegraph, 2019].* An additional 356 quotes (36%) used the term "autism" with expressions utilizing person-first language to describe an autistic person. For example, "Tesco has launched a "quiet hour" scheme to make the shopping experience more comfortable for customers with autism" *[Independent, 2017].* Finally, 359 quotes (36%) used the term "autistic" with identity-first

language to describe an autistic individual. For example, “He plays a grief-stricken man who strikes up an unusual relationship with Sigourney Weaver, high-functioning autistic woman in Canada” *[Mirror, 2016].* Some other characteristics of the quotes are summarised in Supplementary Table 1.

Survey

We designed an online Qualtrics survey to present the 1,000 quotes to autistic experts. The quotes were shown one-at-a-time using the interface depicted in Supplementary Figure 1. Importantly, each quote was presented on-screen without any information about the type of newspaper or date of publication, while coders also had no information on the distribution of quotes across different newspapers. This was done to minimize the impact of potential biases towards individual newspapers and ensure that the judgments were based primarily on the language and content of the quotes.

The survey instructed autistic experts to evaluate the sentiment expressed in each quote on two dimensions: warmth and competence. It provided definitions of warmth as “the degree to which a person is portrayed as friendly, trustworthy, sincere, tolerant, and kind”, and competence as “the degree to which the person is portrayed as intelligent, efficient, ingenious, knowledgeable, and powerful”.

The autistic experts were asked to judge the warmth and competence of the individual quote, as well as their confidence in these judgments. Specifically, they responded to four questions:

1. What is the warmth value?
2. How sure are you about your judgment regarding warmth?
3. What is the competence value?
4. How sure are you about your judgment regarding competence?

For Question 1, autistic experts could choose between five options referring to warmth per se (Very cold, Somewhat cold, Neutral, Somewhat warm, Very warm) and one more option to indicate that they found a given quote uncodable ("I think this is uncodable"). Similarly, for Question 3, experts could select between five options referring to competence per se (Extremely incompetent, Somewhat incompetent, Neutral, Somewhat competent, Extremely competent)

and another option suggesting that a given quote was uncodable. For Questions 2 and 4, autistic experts could indicate their confidence on an 11-point scale using a slider (0: not sure at all... 5: neither unsure nor sure... 10: absolutely sure).

The Qualtrics survey was designed such that it was mandatory to provide responses to all four questions for a given quote to proceed to the next quote. However, our autistic experts could step back to amend their previous responses. The survey autosaved progress and enabled autistic experts to pause their annotation work at any time and continue their work from the last quote they had annotated.

General procedure

The study received ethical approval from the Science Research Ethics Committee of Edge Hill University (SREC: ETH2021-0008) and was conducted in accordance with its ethical procedures. The research and coding team gathered at the beginning of the coding process to discuss the coding requirements and establish clear research procedures for the study. The training for the coding task consisted of the following steps. First, the team discussed the study's rationale and shared experiences and perspectives on examples of negative and positive autism coverage in the press. The specific research questions of the study were not disclosed to the coders at this stage to minimize the impact of prior beliefs related to terminology or the quality of representations in different newspapers on their codings.

Next, the research and coding team familiarized themselves with the SCM and its dimensions, warmth, and competence. The team also went over the Qualtrics survey environment, reviewing the provided instructions and discussing the option "I think this is uncodable" and the questions related to their confidence in judging warmth and competence. Additionally, the team examined example quotes and discussed how different attitudes were conveyed. After the meeting, the coding team members received the Qualtrics survey link to complete the coding task at their convenience. The coders were encouraged to take a break from the coding process, given that some of the quotes could be unpleasant to read and potentially cause feelings of distress, and to contact lead researchers for support with such experiences. The team convened again at the end of the coding process. The coders did not report any significant issues with the coding task during this review meeting.

Upon activating the survey link for the first time, autistic experts received written instructions reiterating that they would be presented with 1,000 quotes that reference autism, some of which may focus directly on autism or autistic people, while others may refer to autism and autistic people indirectly or incidentally. Autistic experts were directed to assess the sentiment conveyed in every quotate along two dimensions: warmth and competence. Definitions of warmth were given, describing it as the extent to which a person is depicted as friendly, trustworthy, sincere, tolerant, and kind. Similarly, competence was defined as the degree to which the person is presented as intelligent, efficient, ingenious, knowledgeable, and powerful.

Community involvement

The study was conducted within a participatory research framework.[51-53] To ensure clarity and understanding among all members involved in the project, the research and coding team convened at the start of the coding process to discuss the coding requirements and ensure that the study's research procedures were well-defined for everyone involved in the project. All autistic experts received reimbursement, in line with NIHR (National Institute for Health and Care Research) guidelines, for their annotation work. The autistic experts were given the option to choose between different models of participation, including solely being involved in the annotation work or continuing to contribute to the data analysis and manuscript writing process. At the end of coding, all five autistic experts opted to contribute to the data analysis and write-up, and are authors on the paper.

Measurements

We computed averages for the warmth and competence values, excluding the "I think this is uncodable" option. These averages were normalized to range from 0.0 to 1.0, with higher scores indicating more warmth and competence. We also computed normalized averages for confidence ratings in warmth and competence, ranging from 0 to 1, where higher scores indicated greater confidence. The judgments of warmth and competence were further analyzed to measure the occurrence of "I think this is uncodable" responses for each quote. This measure, referred to as codability, ranged from 0 to 5 and was computed separately for warmth and competence. To

assess agreement between autistic experts' judgments of warmth and competence, we used the Krippendorff alpha measure of inter-rater reliability, which ranges from -1 (inverse agreement) to 1 (perfect agreement). We calculated Krippendorff alpha for all five autistic experts and all possible pairwise combinations of autistic experts. Based on their average warmth and competence values, individual quotes were assigned to one of the four SCM areas ("quadrants"), see Figure 1.

Data analysis

Addressing research questions

To examine the overall sentiment towards autism and autistic people (Research Question 1), we examined whether a larger number of quotes were coded as conveying a negative sentiment, represented by the low warmth and low competence area, than a positive sentiment, represented by the high warmth and high competence area. These comparisons were made using the Bayesian Information Criterion (BIC; see p. 8 in Wilson).[54] A negative BIC was taken to suggest that there is no reliable evidence for a difference; a positive BIC < 2.00 was taken to indicate "anecdotal" evidence for a reliable difference; a BIC $\geqslant$ 2.00 was taken to show "positive evidence", a BIC $\geqslant$ 6.00 suggested "strong evidence" and any BIC $\geqslant$ 10.00 implied "very strong" evidence. Furthermore, we compared the averages for warmth and competence across all quotes in the sample to the values for neutral sentiments (warmth = competence = 0.5). As our data were not normally distributed, these comparisons were made using a Wilcoxon One Sample Signed-Rank test, the non-parametric equivalent of the one sample t-test.

We addressed the role of language and terminology (Research Question 2) in two ways. First, we compared the proportion of quotes in the low warmth and low competence area and the the high warmth and high competence area of the SCM, as well as the averages for warmth and competence, in quotes that referred to autism impersonally (i.e., as a condition, without making reference to autistic people) and quotes that referred to autistic people (using either person-first or identity-first language). Second, we made similar comparisons for these measures in quotes that used identity-first and person-first language. Similarly, to address potential differences related to reporting style, political orientation, and time period (Research Questions 3-5), we compared the proportion of quotes in the low warmth and low competence area and

the high warmth and high competence area, as well as the average values for the warmth and competence judgments in appropriately selected subsets of quotes (Broadsheets vs. Tabloids, Left- vs. Right-leaning, and Early vs. Middle vs. Recent). For Research Questions 2-5, quantitative comparisons between proportions (e.g., the proportion of quotes falling in the low warmth and low competence area in quotes with identity-first and person-first language) were made using the Bayesian Information Criterion (BIC; see p. 8 in Wilson).[54] For the continuous measures (i.e. average warmth and competence values), comparisons were made using Mann-Whitney U-tests and Kruskal-Wallis ANOVA, given the lack of normality in the data.

Preliminary and complementary analyses

We conducted a preliminary data analysis, in which we examined potential associations between key measurements, and assessed between-coder variability and the agreement between individual coders in the judgments of warmth and competence. Furthermore, we carried out complementary analyses aiming to establish that the findings reported in this paper were not confounded by autistic experts' confidence in their judgments, as well as the prevalence of the "I think this is uncodable" responses. Additional information on the preliminary and complementary analyses can be found on the OSF platform (https://osf.io/25bt7/?view_only=bb813aacf28242bdb83fe24e63d93cd7, in the Supplementary Materials folder).

Results

Research Question 1: Widespread prevalence of stigmatizing attitudes

Figure 1 shows the average warmth values for individual quotes plotted against average competence values (see https://autismsentimentcoding.herokuapp.com/ for an interactive version). Example quotes from the different SCM quadrants are as follows. The quote " … an adult with severe autism, who spits, bites and eats cigarette butts and soil, and whose parents are too old to look after her, so her sister […], who herself has depression and an eating disorder, has to" *[Telegraph, 2020]* was given very low warmth and competence values by all five autistic experts (warmth = 0.05; competence = 0.05; confidence = 0.72). As a result, this quote is positioned within

the low warmth and low competence SCM area. By contrast, the quote "Much of the world's earliest great art is likely to have been created by gifted humans on the autism spectrum, new research by British scientists suggests" *[Independent, 2018],* was given high warmth and competence scores (0.75 and 0.86 correspondingly, across at least four autistic experts with confidence = 0.77). Therefore, this quote falls within the high warmth and high competence SCM area. Furthermore, the quote "Up to 400 computer-save children, many with autism, are being targeted by police under a Prevet-style programme over fears they could otherwise become dangerous hackers and cybercriminals" *[Telegraph, 2019]* was given low warmth but high competence scores (0.10 and 0.65 correspondingly, confidence = 0.67) and is positioned to the corresponding area of SCM. Finally, the quote "A deaf and autistic boy who lost touch with his friends received more than 700 birthday cards from strangers around the world" *[Mirror, 2020]* falls in the high warmth low competence area of the SCM (warmth = 0.75, competence = 0.31, confidence = 0.75, coders ≥ 3).

Overall, the great majority of the quotes (k = 632, 63.2%) fall within the low warmth and low competence SCM area, indicating a strong prevalence of stigmatizing views towards autism and autistic people. Additionally, for 51 quotes (5,1%), the average warmth and competence values fall within the low warmth and high competence area, while for 170 quotes (17%), the average warmth and competence values fell within the high warmth and low competence area. Only 147 quotes (14.7%) have average warmth and competence values within the high warmth and high competence SCM area, corresponding to more positive attitudes towards autism and autistic people.

Table 1 presents results on the quantitative comparisons between the proportion of quotes across the SCM quadrants, while Table 2 presents statistical comparisons focusing on the average warmth or average competence values. With regards to Reserach Question 1, the quantitative comparisons suggested very strong evidence that autistic experts perceived more quotes as conveying a low warmth and low competence sentiment than a high warmth and high competence sentiment (Table 1). Furthermore, the average warmth and competence values were significantly lower than the point of neutrality (Table 2).

Research Question 2: Language and terminology matters

Impersonal references vs references to individuals

Figure 2 illustrates the distribution of quotes across the four SCM areas based on the three quote types that differ in their use of language and terminology. Impersonal references to autism conveyed more negative sentiments than references to autistic people with either identity-first or person-first language. More specifically, the proportion of quotes falling in the low warmth and low competence SCM area was higher for impersonal references to autism (k = 218, 76.49%) than for references to autistic people with either identity-first or person-first language (k = 414, 58.48%). The statistical analysis (see Table 1) suggested anecdotal evidence for this difference. Moreover, quotes using impersonal references to autism had a lower proportion in the high warmth and high competence SCM area (k = 27, 9.47%) compared to quotes referring to autistic people (k = 120, 16.55%) and the statistical evidence for this effect was relatively strong (see Table 1). Consistent with these results, quotes including impersonal references to autism had lower average warmth and competence values than quotes referring to individuals (Table 2).

Identity-first vs person-first language

Quotes using identity-first language were associated with more positive sentiments than those using person-first language. The percentage of quotes falling in the low warmth and low competence SCM area was lower for identity-first (k = 175, 48.75%) than for person-first (k = 239, 67.13%) quotes. Additionally, quotes using identity-first language had a higher percentage in the high warmth and high competence SCM area (k = 85, 23.68%) than those using person-first language (k = 35, 9.83%). These differences were corroborated statistically with quantitative comparisons of proportions (see Table 1). Furthermore, quantitative comparisons suggested that quotes using identity-first language had higher average warmth values and higher competence values than quotes using person-first language (Table 2).

Research Questions 3-5: No influence of reporting style, political orientation and publication time

With regard to research questions 3-5, the analysis revealed minimal and inconsistent differences between different categories of quotes (see Tables 1 and 2). Quotes from broadsheets received similar warmth scores and slightly higher competence scores compared to tabloid quotes. However, no differences were observed between left-leaning and right-leaning papers regarding warmth and competence, while changes over time were inconsistent. Further details on these results can be found in the Supplementary Materials (Section 5).

Discussion

Summary of our findings

Here, we investigated the attitudes towards autism and autistic people in the British press between 2011 and 2020 using an annotation method and a participatory approach. Overall, we found that the sentiment towards autism and autistic people portrayed in the British press was overwhelmingly negative, as evidenced by most quotes falling under the low warmth and low competence area of the SCM model. This finding aligns with the findings of the corpus-based study of Karaminis et al.,[46] and other studies on the representation of autism in the press.[41-45, 47] A common finding in these studies is that newspapers focus on adversities associated with autism and adopt an ableist perspective, and tend to use negative and stereotypical language to refer to autism and autistic people.

In our study, the extent to which individual quotes focused on adversities or featured negative, ableist and stereotypical language cues contributed to the warmth and competence that were assigned to quotes and their membership in the four SCM areas. According to the BIAS ("Behaviors from intergroup affect and stereotypes") map within the SCM framework,[48-50] groups associated with low warmth and low competence, which, amongst others, include unhoused people and those with addiction, may be described by laypersons as "inept", "unfamiliar", "strange", and "not uniquely human or quite typically human".[55-56] These groups often experience extreme prejudice including "unabashed disliking and disrespect" from others and eliciting

negative emotions that can be observed in neural responses.[55] It remains to be demonstrated whether the low warmth and competence values attributed by our autistic experts to the quotes from British newspapers align with the sentiments of their readership or the broader British society towards autism and autistic people. Nevertheless, our results are consistent with a growing body of research that highlights the prevalence of dehumanizing and objectifying views towards autistic people in society more broadly[57] and in research.[35]

Our data indicated that the attribution of negative connotations to autistic people was stronger when newspapers made impersonal references to autism, in comparison to when they referred to autistic people through identity-first or person-first language. This finding aligns with results from a study by Botha and Cage,[35] who used content analysis of open-ended responses provided by autism researchers regarding autism. The authors of that study suggested that abstracting autism from the autistic person, as implied in vague references to autism, supported certain research-based narratives. These narratives often portrayed autism as a disease, disorder, or condition characterized by significant heterogeneity and necessitating intervention due to the suffering and disruptions it purportedly causes to the lives of autistic individuals and those around them. Additionally, these narratives occasionally alluded to the prevention and eradication of autism. It is likely that similar linguistic mechanisms operate in narratives concerning autism and the representation of autistic people in the press. This is because newspapers often cover scientific findings and discoveries and interview researchers, and anecdotal reports suggest that research may contribute to or reinforce stereotypes about autistic people in public discourse.[27] Future studies could conduct a more detailed analysis of the content of impersonal references to autism in newspaper texts.

Furthermore, our data provided compelling evidence that quotes employing identity-first language were assigned a more positive sentiment than those using person-first language. This finding may be attributed to the varying degrees of semantic separation in person-first and identity-first language. Similar to impersonal references to autism, the presence of linguistic distance between the autistic person and autism in person-first language could lend support to narratives that conceptualize autism as a disorder that is external to the individual and needs to be combatted.[16,30] Such narratives would likely be assigned lower warmth and competence values by our autistic experts. However, it is also possible that the difference in perceived sentiment

between quotes using identity-first and person-first language reflects the terminology preferences of our autistic experts. Notably, a preliminary study by Gomes[33] found that individuals from the general population exhibited comparable evaluations of inclusivity of passages, regardless of whether they were presented in identity-first or person-first language. Future research could explicitly examine whether the language preferences of autistic people influence their judgments of the sentiment conveyed in quotes.

Regarding our third aim, we found limited evidence suggesting differences in attitudes expressed in quotes from tabloids versus broadsheets, and no evidence suggesting differences between left-leaning and right-leaning newspapers. However, these differences were not statistically significant. Nonetheless, we observed some subtle variations in the distribution of quotes across different SCM areas within different sections of the press. These findings generally align with the results of Karaminis et al.'s[46] corpus-based analysis. However, our findings challenge the notion that British newspapers have been progressing towards more positive representations of autism over time.[46-47]

Implications for the improvement of attitudes toward autistic people

The finding that the overwhelmingly negative portrayals of autism have remained largely unchanged over the past decade has significant implications for public perceptions and attitudes toward autistic people. This finding is consistent with recent research indicating that while younger generations tend to possess greater knowledge and have more positive attitudes towards autistic people,[58] negative attitudes and stigma surrounding autism continue to prevail.[59-60] Importantly, increased knowledge about autism and greater engagement with autistic people are associated with more favorable attitudes towards them.[61-62] That said, short-term exposure to autism acceptance training is insufficient to shift implicit negative attitudes.[63]

One way to contribute positively to the improvement of attitudes towards autism and autistic people is for the press to disseminate information that enriches knowledge about autism and the autistic experience. This could be achieved through a broader shift in autism research and practice, away from deficit-based perspectives and towards an appreciation of the capabilities that form the foundation of fulfilling autistic lives.[64] Drawing on a neurodiversity approach,[9,15,65] the emphasis is not on attempting to change autistic individuals, but on identifying and

addressing the factors that restrict the capabilities of autistic people, while creating opportunities for their well-being and flourishing.[64] This shift has the potential to encourage more favorable portrayals of autistic people in newspapers. Given that autistic individuals should possess the capability to control their own environment,[64] the involvement of autistic self-advocates and community advocacy,[65-67] including autistic journalists and media employees,[68] will be paramount in guiding newspapers towards embracing these new perspectives and promoting more inclusive views.

With regards to terminology, recommendations for newspapers should include considering how autistic individuals might perceive language around autism and to acknowledge and be vigilant about the impact of non-acceptance on the mental well-being of autistic people.[59] To illustrate some of autistic people's perspectives, in Kenny et al.,[23] autistic people advocated that "[autism] is not a disorder, I am not a disordered version of a non-autistic person" and that one should "[n]ever forget that autistic people are PEOPLE who are complex and not fundamentally broken in some way" (p. 448). Regarding person-first language, a community member highlighted that "[s]eparating the person from their autism is damaging, as it reinforces opinions about autism being a 'thing' that can be removed, something that may be unpleasant and unwanted, and something that is not just another aspect of a whole, complete and perfect individual human being" (in Kenny et al.[23], p. 448). It is equally important to provide authors with relevant training and raise their awareness about the availability of more inclusive alternatives in mental health research. For instance, replacing terms such as "risk" and "co-morbid" with accurate equivalents like "likelihood" and "co-occurring" presents a more inclusive approach that challenges the deficit-oriented interpretations prevalent in the majority of published autism research. [17, 19, 69]

Limitations and future work

The present study is not without its shortcomings. First, two of our coders chose "uncodable" for a much larger number of quotes than the others, which meant that we needed to exclude a substantial portion of their data.

Second, that the five coders did not have high agreement on their codes might be seen as a potential limitation of our study. Critically, however, it was not the aim of this study to

achieve consensus or high agreement amongst our autistic experts, nor to reconcile conflicts through moderation. Instead, the emphasis was on the inclusivity of different perspectives. Future studies should explicitly address the source of potentially different views in autistic coders. In addition to establishing how preferences for identity-first or person-first language, which are intrinsic parts of people's identity or not, might affect coding, it would be interesting to measure internalized stigma[70-71] in coders and how this could impact their competence ratings.

Moreover, although the inclusion of autistic experts as coders was a notable strength in the study, and our research procedures were meticulously crafted to ensure that coding took place without knowledge of the specific origin of quotes, the composition of the sample and the research questions of the study raise the possibility that the encoding may have simply mirrored the pre-existing terminology preferences of our autistic experts or their understanding of the study and its research aims. Similarly, due to the nature of the coding task we developed, it is possible that the warmth and competence values assigned to the quotes, as well as the coders' confidence in these judgments, could be different if more context were provided. The potential impact of these confounds merits exploration in future studies.

Additionally, it remains unclear how non-autistic coders would rate the quotes and whether there would be any differences between these coders. It is plausible that non-autistic people might perceive the texts as less negative, given that they do not bear the brunt of the sentiments portrayed. This investigation would have implications for understanding the impact of press representations within the framework of the double-empathy problem.[72-73] Similarly, it would be interesting to examine how parents of autistic children or non-autistic individuals with autistic people, who are often the protagonists of newspaper stories about autism,[44,46] would assess the sentiments expressed in press quotes.

Finally, this study aimed to investigate the impact of impersonal references to autism and the differences between identity-first and person-first language. While these dimensions are crucial for understanding how language influences perceptions of autism, it is important to acknowledge that there are other language, terminology, and topic-related issues that require attention. For example, terms such as "neurodiversity", "difference", "condition", "disability", "impairment", or "disorder", as well as "support", "treatment", or "cure", and controversial topics

such as the MMR vaccine[74] or Applied Behavior Analysis-based intervention[75] also impact perceived judgments regarding the representation of autism.

Conclusions

Our study confirms that the portrayal of autism in British newspapers is largely negative and stereotypical. However, our results highlight that language and terminology may play a crucial role in the quality of the press representation of autism and, in turn, shaping public perceptions of autism. Associating autism with a person rather than alluding to autism amorphously, and using identity-first rather than person-first language, appear to be linked to more positive representations of autism and autistic people.

CRediT author statement

Themis Karaminis: Conceptualisation, Methodology, Formal analysis, Visualisation, Writing - Original Draft; **Monique Botha:** Conceptualisation, Methodology, Writing - Original Draft; **Sophie Longley:** Data analysis, Writing - Review & Editing; **Krysia Waldock:** Data analysis, Writing - Review & Editing; **Soph Storey:** Data analysis, Writing - Review & Editing; **Nick Ransom:** Data analysis, Writing - Review & Editing; **Khiah Strachan:** Data analysis, Writing - Review & Editing; **Elizabeth Pellicano:** Conceptualisation, Methodology, Data analysis, Writing - Review & Editing. This article has been submitted solely to Autism in Adulthood and is not published, in press, or submitted elsewhere.

Authors' disclosure statements

The authors have no competing interests of which they are aware.

Funding statement

The authors acknowledge the financial support of the British Academy/Leverhulme Small Research Grant SRG20\201250 "Implicit attitudes towards autism in the British Press", awarded to TK. EP was also supported by an Australian Research Council Future Fellowship (FT190100077). The views expressed are the views of the authors alone and do not necessarily represent the views of their organizations or funding sources.

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Figure legends

Figure 1

Two-dimensional plot of average warmth and competence values for the 1,000 quotes, with color-coded confidence levels based on the autistic experts' reported confidence judgments. The Root Mean Square of confidence judgments for warmth and competence values was used (to aid visualization). The dashed vertical and horizontal lines indicate the average warmth and competence values, respectively. The four areas depicted in different shades of gray correspond to the categories based on the Stereotype Content Model (SCM; Cuddy et al.[50]): (A) Low warmth and low competence, including quotes with average warmth < 0.5 and average competence < 0.5; (B) Low warmth and high competence, including quotes with average warmth < 0.5 and average competence $\geqslant$ 0.5; (C) High warmth and low competence, including quotes with average warmth $\geqslant$ 0.5 and average competence < 0.5; and (D) High warmth and high competence, including quotes with average warmth $\geqslant$ 0.5 and average competence $\geqslant$ 0.5. The numerical values listed for each category correspond to the count of quotes that fall into that particular area. Note that the scatterpolot does not show overlapping points (quotes with the same warmth and competence values).

Figure 2

Perceived sentiment and terminology. The pie charts on the top show the distribution of quotes across the different areas based on the SCM for quotes making impersonal references to autism (left), quotes using identity-first language (center), and quotes using person-first language (right). The violin plots at the lower part show average warmth (left) and competence (right) values based on the same categorization.

Figures

Figure 1

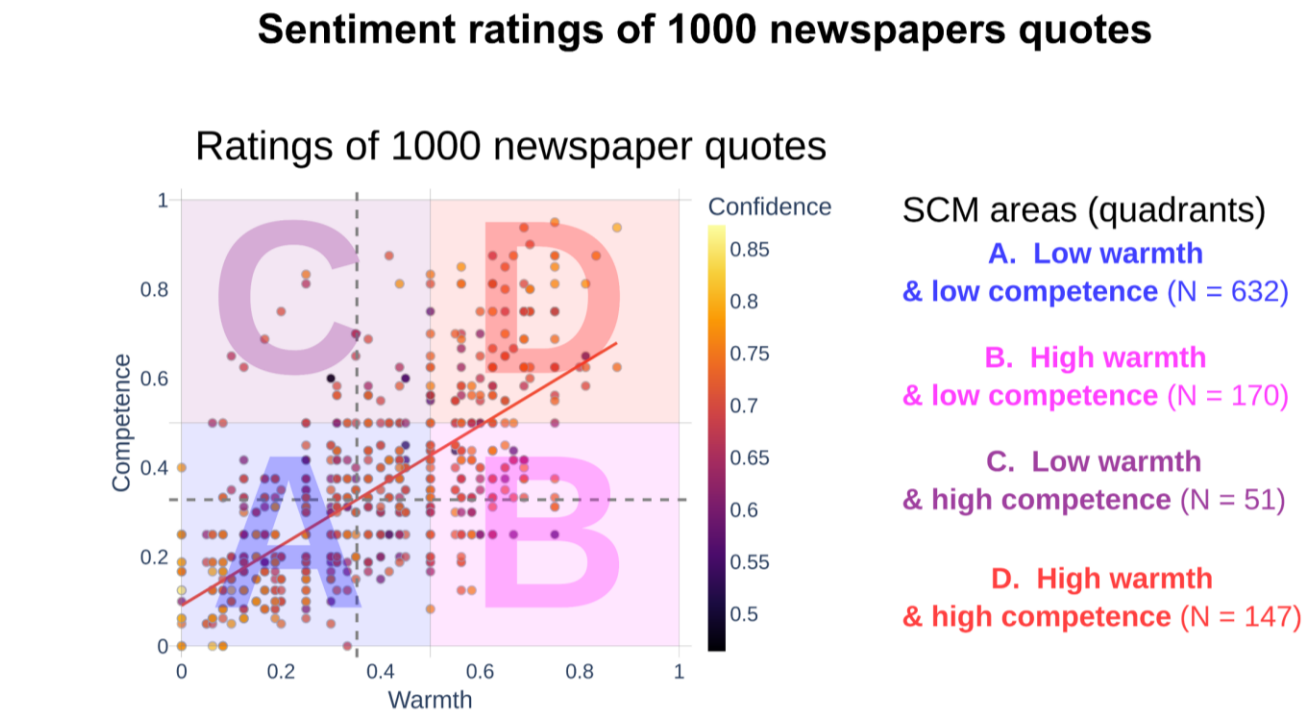
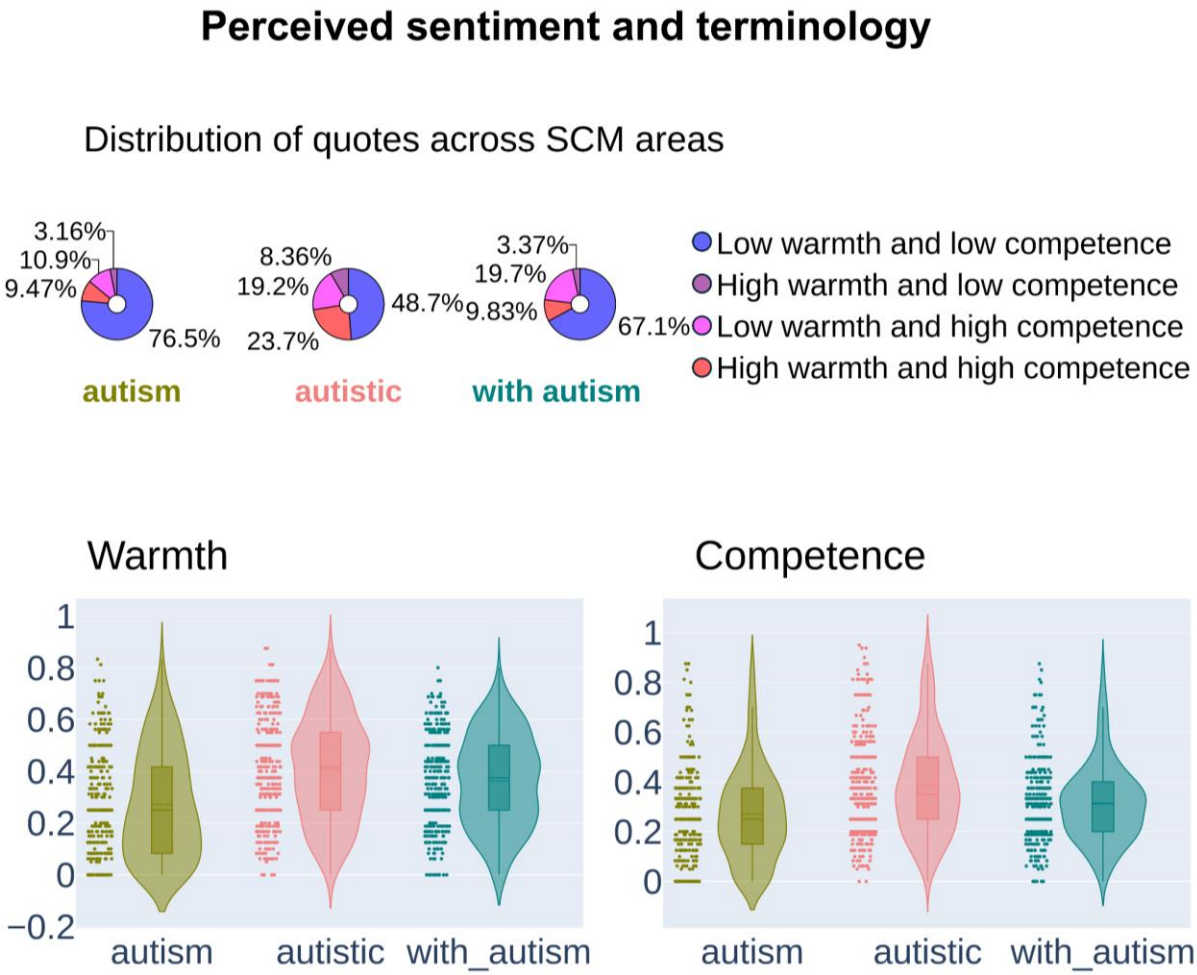


Figure 2


Perceived sentiment and terminology
Distribution of quotes across SCM areas
3.16%
10.9%
9.47%
76.5%
8.36%
19.2%
48.7%
23.7%
3.37%
19.7%
9.83%
67.1%
autism
autistic
with autism
Low warmth and low competence
High warmth and low competence
Low warmth and high competence
High warmth and high competence
Warmth
Competence
1
0.8
0.6
0.4
0.2
0
−0.2
autism
autistic
with_autism