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Analyzing the Impact of Generational Variations on Vocabulary and Syntax in Instagram Posts of Older and Younger Adults

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Abstract

The purpose of this study was to investigate the variations in vocabulary and syntax in Instagram posts relating to food among younger and older men and women in the United Kingdom. The study sought to determine if differences in these linguistic features would affect the expression of users on the platform, which was the dependent variable under assessment. To achieve this aim, Instagram posts about food, posted by a sample comprising 37 young adult men and 43 young adult women aged between 18-24 years and by 47 older men and women aged 59 years or older, were collected and analyzed for their vocabulary and syntactic features. Vocabulary was measured in terms of the number of words used in the posts and their mean values, given that the number of posts varied by gender and age group. Syntactic characteristics were measured by counting the presence or absence of a subject and verb, the quality of adjectives used, and any reference to time or location concerning food quality. The results were presented using tables and charts, and examples were provided for each observation presented in the results section. The findings of the study support the view that gender and age influence social media posts concerning vocabulary and syntax. The study discovered that younger men and women tend to use a more extensive range of words and adjectives of varying quality, while older people tend to use fewer words and unique quality adjectives. Memory loss, which affects older people, could explain the observed tendency of using fewer words. This research highlights a few areas for future research, such as exploring the relationship between the use of slang words and age or gender and examining the effects of age and gender on social media use in different cultures. Additionally, the study acknowledges limitations such as the small sample size and the limitations of using Instagram as a representation of social media behavior as well as confining the study to a single country affecting its generalizability. In conclusion, this study provides evidence that age and gender are significant factors influencing the linguistic features of Instagram posts on food. This research is a valuable addition to the current literature on social media communication and provides useful insights for marketers and social media users.

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Keywords: inter-speaker variation, linguistic variation, language and age, gender, social media, vocabulary, syntax

Introduction

The significance of studying gender and age variations in vocabulary and syntactical characteristics of social media posts arises from the need to identify social behavior, psychological abnormalities, criminal instincts, and sexual behavior, or simply to measure temporal trends in the use of social media by different

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demographic groups. Traditionally, such data were collected through surveys, interviews, or experiments. However, the availability of large volumes of data from social media posts now provides more precise and robust methods of obtaining the required information. Numerous papers analyzing social media posts are already available. Nevertheless, they have not been able to keep pace with the rapid changes happening in the social media world. New methods of linguistic analysis like Natural Language Processing (NLP) facilitate such inquiries.

Therefore, there is a need for new studies to explore gender and age differences in social media posts using new methods like NLP. Although large volumes of datasets of social media posts are now available, they have not been subjected to vocabulary and syntactical analysis using NLP. In this context, the present study aimed to analyze the impact of general variations in vocabulary and syntax on *Instagram* posts of younger and older adults using NLP on social media datasets. *Instagram*, as a popular social media platform, has a diverse user base, including older adults, such as baby boomers (Sheldon, Antony, & Ware, 2021). Given the accessibility and familiarity of *Instagram* to most users regardless of their age group, this study adopted *Instagram* for the current investigation.

The focus of this study on vocabulary and syntax is based on previous research that have demonstrated the relationship between these aspects of language and age. By analyzing the language differences in *Instagram* posts, this study aims to provide a better understanding of age-related differences in social media communication. This study provides insights into the linguistic characteristics of *Instagram* posts related to food among young and older adults in the United Kingdom. The study's findings suggest that age group significantly influences writing style, with younger adults using more words and a more casual writing style, and older adults using more adjectives and a more descriptive writing style.

The study is expected to contribute to the growing body of literature on gender and age differences in social media communication, while also shedding light on the changing landscape of social media platforms and user behavior. These findings may have implications for digital marketers and social media influencers who target these age groups, as they may need to adapt their content accordingly. Additionally, these findings may inform future research on social media and language use among different age groups.

Theoretical Aspects

The present research addresses the problem of variations in vocabulary and syntactical differences in *Instagram* posts across ages and gender, focusing specifically on the topic of food. The rationale for studying this lies in the relatively fewer studies on this topic. Broadly, it covers social communication behavior, social media behavior, knowledge of vocabulary, knowledge related to certain ways of expression, and emotions associated with the nature of expressions. Therefore, it is logical to base this research on the theories related to social behavior.

In this respect, one core concept of constructivism, activity theory (Leontiev, 1981), is important for understanding the vocabulary behavior of people in social media. The theory refers to the activities, behaviors, and operations of individuals and groups, which are affected by social institutions. In the context of this study, we can substitute social institutions with social media. It determines the context of the social media activities of individuals. This study seeks to find out the activity, behavior, and operations of people with respect to the vocabulary used on *Instagram* on food.

Another theory related to the study is Vygotsky's theory of vocabulary development. Vygotsky proposed this theory for vocabulary learning. However, vocabulary does apply to other contexts also. Vygotsky (2012) observed that words and other signs are the means to direct the individual's mental operations, control their course, and route them towards solutions to confronting problems. Food quality is a problem affecting its enjoyment. Therefore, expressions used to describe food quality can be interpreted using this contention. Expressions in social media about food quality are the results of words and other signs directing and controlling mental processes to offer solutions to the problem of its enjoyment. Thus, this theory of Vygotsky is applicable to this study.

The above theories form the theoretical basis for the studies on vocabulary part. In the case of the syntactical part of this study, the possible applications of Chomsky's theories to social media can be considered. However, Chomsky's insistence that grammar is important in verbal expressions is not supported by social media posts. This is borne out by the lexical analysis of social media posts. In fact, any theory insisting on grammar in verbal expressions is not applicable to social media posts including this study. Such theories include the cognitive grammar frameworks of Ronald W. Langacker (1997); Ronald W. Langacker (2012), the systemic functional grammar of the standard Hallidayan version (Michael Halliday, 1994; MAK Halliday & Matthiessen, 2004; M. A. K. Halliday & Matthiessen, 2013), and the construction grammar of Goldberg (1995).

Review of Literature

The use of social media has become an integral part of daily communication for many individuals across the globe. The informal nature of social media platforms has resulted in the use of colloquial language, slang, and inappropriate use of parts of speech, leading to a variation in communication skills among users. Several studies have explored the impact of gender, age, and other demographic factors on the language use of social media users. For instance, [Rosenthal and McKeown \(2011\)](#) investigated the use of lexical content and syntax of blog posts to predict the age of college students with reasonable accuracy. Similarly, [Peersman, Daelemans, and Van Vaerenbergh \(2011\)](#) analyzed posts on the Belgian social media platform Netlog and showed that age and gender could be predicted through text categorization. Moreover, [Shu, Wang, and Liu \(2018\)](#) utilized user profiles from Buzzfeed and PolitiFact to demonstrate the predictability of age and gender distribution of fake and factual news. [Danescu-Niculescu-Mizil, Gamon, and Dumais \(2011\)](#) employed stylistic cohesion of different parts of speech to analyze microblog conversations and measure style accommodation by users.

[Al Jahromi \(2020\)](#) conducted a study on Bahraini microblog users and found that lexical variation and communication skills were subjective to variables related to gender and age. [Aggarwal, Rabinovich, and Stevenson \(2020\)](#) analyzed Reddit posts related to the COVID-19 pandemic and demonstrated gender differences in preferences for lexical, topical, and emotional expressions. [Joshi, Wakslak, Appel, and Huang \(2020\)](#) found that men tend to speak more abstractly than women do, while women tend to interact more closely with a small group, leading to hesitation in communicating freely on open social media platforms.

[Bustan and Alakrash \(2020\)](#) compared the language use of four teenage female and male travelling Malaysian bloggers and found that female bloggers tend to be more descriptive than male bloggers, while [Ma, Yang, Liao, Cao, and Chua \(2019\)](#) observed differences in fashion words used by men and women in social media posts. [Gao, Zhong, Preotiu-Pietro, and Li \(2019\)](#) analyzed 7,267 tweets from 3,665 users and found differences in age concerning language specificity. [Jeon, Jeon, and Han \(2020\)](#) developed a deep learning-based classification model based on 33,752 social media posts, which showed better performance in classifying three gender types than traditional machine learning models.

Despite the wealth of research conducted on the impact of demographic factors on language use in social media, there is still a gap in knowledge regarding how generational variations affect language use. Previous studies have focused on the differences in language use between adults of different ages but have not investigated the impact of generational variations on the language use of older and younger adults. This paper aims to fill this gap by analyzing the impact of generational variations on the vocabulary and syntax of older and younger adults.

Instagram was selected for the study due to its accessibility and familiarity to most users regardless of their age groups ([Sheldon et al., 2021](#)). This study focuses on the general variations of vocabulary and syntax in *Instagram* posts of younger and older adults. By analyzing the language use of these two age groups, the study aims to shed light on how generational variations affect language use in social media.

Last, but not the least, social media has become an important tool for communication, but it is also characterized by informal language use, slang, and colloquial styles. Research has shown that demographic factors such as gender and age can influence language use in social media, but there is still a gap in knowledge regarding the impact of generational variations on language use. This study seeks to fill this gap by analyzing the language use of older and younger adults on *Instagram*. The findings of this study will contribute to a better understanding of how generational variations affect language use in social media and will have implications for marketing, communication, and social policy.

Methodology

- *Research design*

This study aimed to analyze the linguistic characteristics of *Instagram* posts related to food among young and older adults in the United Kingdom. De-identified data were collected from publicly available *Instagram* accounts registered in the United Kingdom, specifically targeting users with English as the native language.

- *Data collection*

The data was collected through direct messaging, where the researcher introduced the study's purpose and sought permission to anonymously participate in the study. Participants were asked to indicate their native language, which was crucial in determining the analysis and its results based on the linguistic background of the account holders. The data was collected from posts made in 2020, focusing on two age groups: 25 years and under (minimum age 18 years) and 59 years and above.

- *Sampling and Research procedure*

The study's sample size was 174, consisting of 37 young adult men and 43 young adult women (18-24 years) and 47 older men and 47 older women (age 59 or above). According to Sun and Fan (2010), a sample size of more than 159 can yield a medium effect size in multivariate analysis, indicating the study's sample size was adequate. The age grouping for young adults was conducted as 18, 19, 20, 21, 22, 23, and 24 years. However, for the older group, the age range was 59 to 93 years, making it difficult to conduct similar age grouping. Therefore, their age grouping was done as 59-65, 66-72, 73-79, 80-86, and 87 years and higher.

- *Data analysis*

To estimate the participants' vocabulary, the number of words in each post was counted, and mean values were calculated for each age group. The study assumed that people with larger vocabularies tend to use more words to express themselves.

Syntactical analysis was conducted by identifying and categorizing the presence or hidden nature of a subject, verb, and adjectives used to qualify the food, time, and location elements in the post. This categorization indicated how effective the post was in expressing the user's feelings about the quality of food. It is worth noting that many sentences, such as "*The best Sunday roast in town*", lacked a subject and verb. Thus, the grammatical sentence would be "*It was the best Sunday roast in town*". Similarly, "*Fantastic homemade burgers and chips*" should have been "*They were the fantastic homemade burgers and chips*". These types of variations were indicated in the analysis as hidden subjects and verbs (It was).

The study's results are presented in various sections below. The analysis found that young adults used more words per post, averaging 29 words per post, compared to older adults, who used an average of 22 words per post. This difference was statistically significant, indicating that young adults had a larger vocabulary and were more expressive in their posts. Syntactical analysis showed that young adults used more hidden subjects and verbs, indicating a more casual writing style. Conversely, older adults used more adjectives to qualify food, time, and location elements, indicating a more descriptive writing style. This difference was also statistically significant, indicating that the age factor significantly influenced writing style.

Results

i. Younger adult men and women (18 to 24 years)

a. Vocabulary

Figure 1 illustrates the age-wise distribution of Instagram posts on food by young adult men and women and their mean vocabulary. It was observed that the number of posts made by women was higher in the younger age ranges, and the gender difference became less pronounced as the age approached 25 years. Mean vocabulary estimates varied considerably between age and gender groups. Notably, the mean vocabulary of women aged 24 and 23 was the highest at 9.2 words per post, while the highest two mean numbers of words per post for men were 8.83 for 23-year-old and 8.3 for 20-year-old.

These findings suggest that women may be more expressive in their use of social media and have a more extensive vocabulary than men. The differences in mean vocabulary between age and gender groups imply that social and cultural factors may also influence the expression of ideas on social media. These results underscore the importance of considering both linguistic and sociocultural factors in the analysis of social media data.

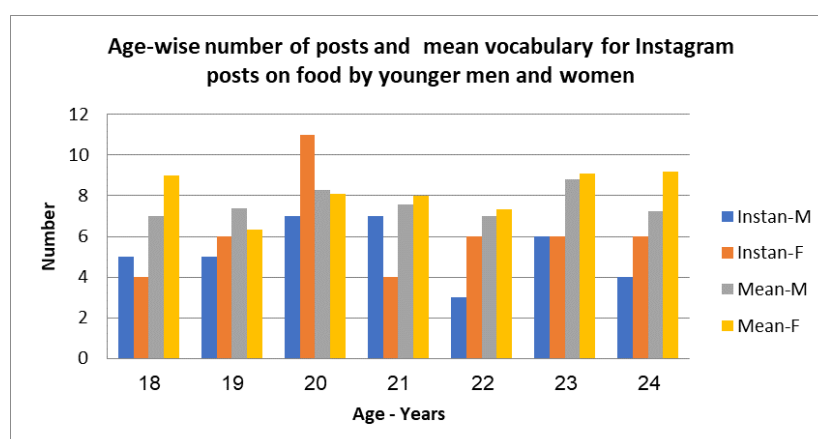


Figure 1. Age-wise number of posts and mean vocabulary in Instagram posts on food by young men and women

b. *Syntactical characteristics*

— *Younger men*

The syntactical categories identified in Figure 1 for younger men of 18 to 24 years age group are presented in Table 1.

Table 1: *Syntactical categories for Instagram posts on food by younger men of 18-24 years*

Age	Subject	Adjective	Time	Location	Other
18	Passive voice-3; Subject hidden-1	Superlative adjectives-3; Extra-ordinary adjectives-2	NA	Quality-3 (specific place-1)	NA
19	All 5 hidden pronoun I	Superlative adjectives 3	Yes	Yes	Food specificity
20	6 out of 7 hidden pronoun I; The subject and verb (It was) hidden in one	Taste, superlative adjective-1; normal adjectives-4	Experience eating the food before	Family-2	Specific food type 1
21	6 out of 7 hidden pronoun I; Passive voice 1	Superlative adjectives-5; Flavor appreciated-1	Past experiences of eating the food	NA	Trial of food success
22	All 3 hidden pronoun I	Extraordinary adjective-2; superlative-1			Specific food type 1; Enjoyed the food
23	5 out of 6 hidden pronoun I; Subject and verb (It was) hidden-1	Superlative adjectives-3; Extra-ordinary and exaggerated adjectives-2;	Past experiences of eating the food	Yes-1	Craving for the next chance of eating the same food by hidden pronoun I
24	All the 4 hidden pronoun I	Superlative adjectives-2; Exaggerated-1; normal-1	Previous experience 1	Location-2	NA

Table 1 illustrates that there is no significant difference in the occurrence of hidden pronouns as the age increases from 18 to 24 years. When the number of samples exceeded five, only one pronoun was expressed, whereas for a smaller number of samples, all pronouns were hidden. Regarding adjectives, the overall pattern observed was a decline in the use of superlative adjectives, with a corresponding increase in the use of exaggerated adjectives. With increasing age, there was a tendency for individuals to express more past experiences. Locational adjectives and expressions of appreciation for specific foods were commonly used across all age groups. It is important to note that these findings represent general trends and should be interpreted as such.

The study observed that out of a total of 37 *Instagram* posts on food by younger men, the pronoun "I" was hidden in 29 posts, indicating a trend to use less personal language. In contrast, superlative adjectives were used in 18 out of 37 posts to express the quality of food, while exaggerated adjectives like "*amazing*" and "*full of flavor*" were used in 9 out of 37 posts. This suggests that younger men tend to praise food in different ways, using a variety of adjectives. Notably, the study did not observe any negative opinions expressed in any posts by younger men.

Overall, these findings suggest that younger men tend to be more reserved in their use of personal language on social media when discussing food. Instead, they use a variety of adjectives to express their appreciation for the quality of food they have consumed. These observations provide insight into the linguistic characteristics of social media posts on food by younger men, which can help in developing targeted marketing strategies for this demographic aspect.

— *Younger women*

The occurrence of hidden verbs was found to be more prevalent among young women compared to men. Both genders demonstrated an equal tendency to hide pronouns. Notably, a transition was observed from the use of normal adjectives to superlative adjectives, and eventually to extraordinary adjectives. Furthermore, there was a progression in the temporal aspect of experiences, shifting from current to recent, then to past, and finally to nighttime experiences. Additionally, as age increased, there was a greater specification of location. Younger women were more inclined to express a familial connection to the food they consumed. These observations represent some notable trends derived from the analysis presented in Table 2.

The analysis of 43 posts on social media revealed some interesting patterns in how young women describe their food experiences. The dominant form of expression was found to be hidden pronouns, such as 'I', which were observed in 24 out of 43 posts. This indicates that young women tend to describe their food experiences from a personal perspective. Examples of this type of expression include "*Just had a lovely afternoon tea with family*", "*Had the best pizza today*", and "*Just back from a great dinner with friends*". In contrast, hidden subjects and verbs, such as '*It was*', were only observed in 11 out of 43 posts.

When describing the quality of the food, superlative adjectives were used in 22 out of 43 posts, with "delicious" being the most commonly used adjective. Only 7 posts contained exaggerated or extraordinary adjectives, while 8 used normal adjectives. Some posts included time elements, such as comparisons of recent or past experiences with similar food, as well as location (*such as a pub or restaurant*) or the name of a food outlet (*such as Nando's*) to describe the quality of the food. Additionally, a few posts used parental love and family experiences to indicate the specific quality of the food.

The syntactical categories identified in Figure 1 for younger women of 18 to 24 years age group are presented in Table 2.

Table 2: Syntactical categories for Instagram posts on food by younger women (18-24 years)

Age	Subject	Adjective	Time	Location	Other
18	Subject and verb (It was) hidden-2; Hidden pronoun I-2	Superlative- 1 normal- 1 adjective	Current experience	Location hailed for the quality	NA
19	Curry subject-1; hidden subject and hidden verb-4; hidden pronoun I-1	exaggerated adjective, superlative adjective- 1 each; normal adjective-3; homemade as quality adjective=1	previous experience-3; NA when not clear-1		amazing used in one case
20	the hidden pronoun I- 7; subject and noun (It was) hidden-4	superlative- 5; extraordinary-4; normal adjective-1; quality adjective-1	recent experience-3; NA time element-3;	NA	parental love-4; family experience-1; parental love-1; love what was eaten-1
21	hidden pronoun-2; subject is pub-1; passive voice-1	superlative 4	past experience-3; just NA enjoyed experience-1		amazing used in one case
22	the hidden pronoun I- 6	all superlative-4; normal-2	recent experience-2; just enjoyed-2; specific food enjoyment-2; no time element-1	NA	NA
23	hidden pronoun-2; passive voice-2; subject is pub-1; hidden subject and verb (It was)-1	superlative-4; normal-1	immediate past-1; entire past-2; recent experience-1; missing time element-1	location hailed for NA quality-1; location-specific-1	
24	hidden subject and verb (It was)-2; hidden pronoun I-3; hidden pronoun I in the first part-1;	superlative-3; extraordinary-2	night experience-2; recent experience-1; new experience-1	Location-2; specific food type-3	NA

Overall, these findings suggest that young women tend to describe their food experiences from a personal perspective, using superlative adjectives to describe the quality of the food. The use of location, time elements, and personal experiences are also common in food descriptions on social media. These insights can be valuable for food companies and restaurants seeking to understand how young women talk about food on social media and can help guide marketing strategies.

ii. Older men and women

a. Vocabulary

The present study investigates the number of *Instagram* posts and vocabulary usage by older men and women concerning food. The age-wise number of posts and mean vocabulary for both genders are presented in Figure 2. As per the findings, the difference between men and women increased as the age range advanced from 59-65 to 87 plus. For age ranges 59-65 and 66-72, the total number of posts was higher for men, i.e., 12 and 11, respectively, compared to women with 7 each. The trend reversed for the remaining age ranges. In the age range of 73-79, men's posts were 6 compared to women's 10. However, the number of posts was 10 for men and 12 for women in the age range of 87 plus. The highest number of posts for men was noted in the age range of 59-65, while for women, it was observed in the age range of 87 plus.

Except for the age range of 66-72, women had a higher mean vocabulary than men for all other age ranges did. In the 80-86 age range, the highest mean vocabulary was observed for both men and women, i.e., 4.75 and 5.5, respectively. This finding suggests that women tend to use a richer vocabulary to express their opinions about the quality of food.

These findings indicate that older women tend to express their opinions about food with a more descriptive vocabulary, possibly indicating that they are more knowledgeable about food or that they value the quality of the food more than men. However, further research is necessary to explore the underlying reasons for these differences in vocabulary usage between older men and women.

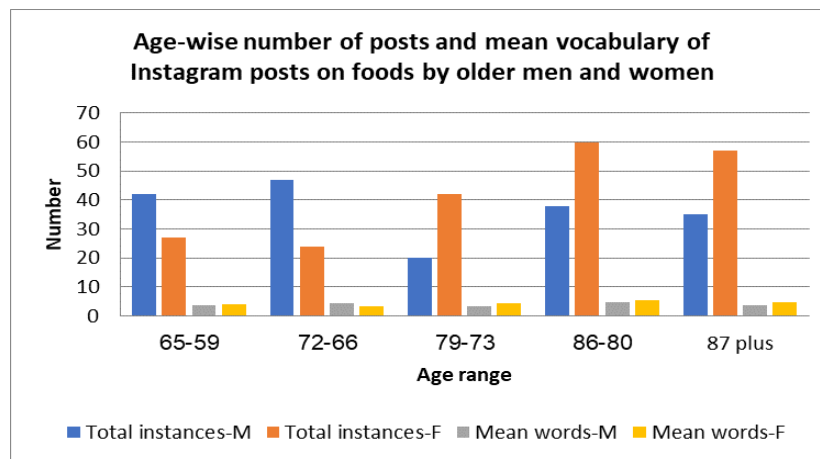


Figure 2. Age-wise number of posts and mean vocabulary for Instagram posts on food by older men and women

b. Syntactical characteristics

— Older men

The identified syntactical characteristics of Instagram posts on food by older men are presented in Table 3.

Table 3: Syntactical characteristics of Instagram posts on food by older men

Age	Subject	Adjective	Time	Location	Other
59-65	Out of 12, 9 have hidden subject and verb (It has); 3 have hidden pronoun	superlative 1; different qualities attributed to others	dinner time 1	NA	NA
66-72	Hidden subject and verb (It was)-6; hidden pronoun I-4; passive voice-1	normal-3; superlative-2; recommendation-1; various quality attributes-6	past considered-2; dinner time-1	NA	NA
73-79	Hidden subject and verb (It was)-6	superlative adjective 1; various quality attributes for others	NA	NA	NA
80-86	Hidden subject and verb (It was)-4; hidden subject and verb (It was) for the first part-1; hidden pronoun I-2	various quality attributes for all 8	NA	NA	NA
87 plus	Hidden subject and verb (It was) in 7 and the first part of 8th; hidden pronoun I in remaining 2 and second part of 1	various quality attributes for all 10	NA	NA	NA

Some notable trends can be observed in Table 3, including a decline in the usage of hidden subject, verb, and hidden pronoun. As individuals grew older, normal and superlative adjectives were replaced by different quality attributes. The mention of time was predominantly limited to the younger age groups, whereas no age group expressed any specific location or other details concerning the food.

Hidden subjects and verbs were detected in 33 of the 47 posts made by older men, while 12 out of 47 contained hidden pronouns like 'I'. Passive voice, on the other hand, was utilized in only one post. Different attributes dominated the adjectives used to describe food quality across various posts, such as 'delicious meal', 'the dessert was a hit', and 'great Sunday roast'. Superlative quality terms were used in only three of the 47 posts, including examples such as 'the soup is the best', 'the best-mashed potatoes I've ever had', and 'best beef stew ever'. Specific quality adjectives were also used, such as 'the burger was cooked to perfection', 'highly recommend the carbonara', 'heavenly pancakes', 'a real treat, thank you', 'unique selection of sushi', and 'exotic Thai cuisine'. Only three posts contained terms related to location or time.

The older men's choice of language indicated that they tended to use straightforward, precise language to describe the quality of the food, with limited use of superlatives and adjectives. Their language choice was more focused on the food itself and less on the experience surrounding it. Furthermore, the use of hidden subjects and pronouns was more prevalent than passive voice, indicating a preference for a more direct and concise style. These findings are consistent with previous research that has shown that older adults tend to use more direct language and prefer clearer communication. This suggests that older men may prioritize clarity over artistic expression when it comes to social media posts about food.

— Older women

The identified syntactical characteristics of *Instagram* posts on food by older women are presented in Table 4.

Table 4: Syntactical characteristics of *Instagram* posts on food by older women

Age	Subject	Adjective	Time	Location	Other
59-65	Hidden subject and verb (It was) in 6; hidden pronoun I in 1	exaggerated quality-1; mouth-watering-1; taste and normal adjective-1; various quality attributes for others	NA	NA	NA
66-72	hidden subject and verb (It was) in all 7	normal adjective-1; cooking perfection-1; various quality attributes in others			
73-79	hidden subject and verb (it was) in 9; hidden pronoun I in remaining 1	cooking perfection- 1 each, various quality attributes in others	NA	1	NA
80-86	hidden subject and verb (it was) in 8; hidden pronoun I in 1;	normal adjective-1; cooking perfection-3; recommendation-2; not a fan-1, various quality attributes in others	NA	NA	NA
87 plus	Hidden subject and verb (It was) in 8 and part of 1; a subject I for the first part in 1; no subject for 1; hidden pronoun I in 1	Normal adjective for 1; exaggerated quality for 1; disappointing negative quality for 1; impressed quality for 1; holy aspect for 1; various quality attributes for others	NA	NA	NA

The results depicted in Table 4 reveal a prevailing trend wherein subjects or pronouns were increasingly obscured as individuals advanced in age. Furthermore, as age progressed, adjectives exhibited a tendency towards increased specificity, surpassing the realm of mere normal, superlative, or exaggerated forms. Irrespective of age, factors such as time, location, or other linguistic characteristics did not bear any significance.

The present study examined the language features used by older women in their *Instagram* posts about food. The results showed that hidden subjects and verbs were frequently used in 43 out of 47 posts, while hidden pronouns were noted in only 4 posts. The posts primarily utilized unique adjectives to describe the quality of the food, with 27 posts containing such descriptors. These adjectives included exaggerated, normal, divine, cooking perfection, mouth-watering, recommendation, and appreciation, even if the person was not a fan of the food. Examples of these descriptions included "*the cherry cobbler was divine*," "*the desserts were a hit - so much variety*," "*perfectly cooked fish fillets*," "*not what I expected, but highly enjoyable*," "*tried the seafood chowder - definitely recommend*," "*mouth-watering chicken salad*," and "*this omelet was sublime*," among others. It is worth noting that a negative comment about food was found in one post made by an 87-year-old woman, who described the hot pot as "*disappointing*."

In terms of expressions used, both male and female older individuals frequently employed simple language to describe the food, such as "*delicious meal*," "*great Sunday roast*," "*heavenly pancakes*," "*outstanding curry*," "*tasty lasagne*," "*amazing fruit tart*," and "*superb quiche*". It is possible that due to age-related factors, older individuals may have more difficulty recalling a wide range of words to use in specific situations, which could impact their vocabulary. Location information was minimally present in the posts, with only one indication of location observed in a comment by a user who stated they used to enjoy pizza at a particular establishment. No temporal indicators were present in any of the posts.

Overall, these findings provide insight into the language features employed by older individuals in their *Instagram* posts about food, highlighting their use of unique adjectives and simple expressions, as well as potential age-related limitations in vocabulary.

Discussion

The present study aimed to investigate gender and age differences in social media posts about food. The study included two age groups: men and women aged 18 to 24 years, and men and women aged 59 to 87 years old. The findings revealed significant differences in the number of posts between men and women in the younger age group, with women posting more frequently than men. However, as the age approached 25 years, the difference between men and women narrowed down, suggesting that younger women may be more enthusiastic about expressing themselves through *Instagram* posts. Age differences in non-standard language features in the social media posts of Flemish teenagers were noted by Peersman, Daelemans,

Vandekerckhove, Vandekerckhove, and Van Vaerenbergh (2016) and in style, lexical content and online behavior of US bloggers by Rosenthal and McKeown (2011).

The total number of posts analyzed was 37 for men and 43 for women, which could reflect the difference between the younger and older age ranges, or it could indicate that younger women are more active on social media than younger men are. However, it is important to note that the observed differences were relatively small, ranging from 1 to 11 posts more by women than men, so the effect of the total number of posts by men and women may have been masking these differences. Further research is needed to explore the factors that contribute to these gender differences in social media posts about food.

Moreover, the study also examined the vocabulary used in food-related posts by men and women of different ages. Results showed that women aged 23 and 24 years had the highest mean vocabulary of 9.2 words per post, while men aged 20 and 23 years had the highest mean number of words per post, ranging from 8.3 to 8.83 words. The narrow range of these means suggests that women tend to use more words per post than men, which is consistent with previous research showing that women tend to communicate more than men in daily life. However, it is important to note that the study did not investigate whether the difference in the use of vocabulary reflects actual differences in language ability between men and women or whether it reflects different communication styles.

Overall, the present study provides insights into the gender and age differences in social media posts about food. The findings suggest that younger women may be more active on social media than younger men and that women tend to use more words per post than men. However, more research is needed to confirm these findings and explore the factors that underlie these differences. Understanding gender and age differences in social media posts about food can have important implications for health promotion and communication efforts targeted towards different segments of the population.

The syntactical analysis of posts by younger men in this study revealed a notable absence of a subject such as "I" in their expressions (see Table 1). In addition to superlative and exaggerated adjectives, the use of other quality adjectives was also observed, without a discernible pattern. The young male participants in this study frequently expressed their positive views on food, without any negative opinions noted. Their perceptions of food quality were influenced by the location of the food and their past experiences with similar cuisine. This finding suggests that location and comparison with past experiences are important factors that influence the ways in which young men express their views on food quality. Further research is necessary to understand how these factors influence food-related behavior in this population. Overall, the findings provide valuable insights into the ways in which younger men express themselves on social media regarding food.

Among the younger women, a total of 43 posts were identified, with a notable absence of subject usage in most of the posts (refer to Table 2). Examples of such posts have been furnished in the results section. This finding is consistent with that of young men. In terms of quality adjectives, younger women appeared to use similar language to their male counterparts, with location and time featured as critical components of their quality assessments. Therefore, a similar explanation can be put forth to interpret these results. It is worth noting that the younger male and female groups were categorized based on single-year ages, ranging from 18 to 24 years. In contrast, the age range for older men and women was from 59 to 93 years old. In order to manage the entire range more effectively, the study utilized five age ranges ranging from 59-62 years up to 87 years and above. There were 47 posts for both older men and women, and the results were presented accordingly for each age range and post. As the age range advanced from 59-65 to 87 years and above, the difference between men and women with respect to the number of posts widened for both genders. Nevertheless, these differences remained relatively narrow. The results indicated a tendency for older women to use words more generously compared to older men, as evidenced by Tables 3 and 4. This tendency was especially reflected in the highest number of posts (12) observed in the case of the youngest (59-72) men and oldest (87 plus) women. Generally, a higher mean vocabulary was noted for women than for men. The highest means were observed for both men and women in the 80-86 age range (4.75 and 5.5 respectively).

These findings suggest that older women tend to use a richer vocabulary when expressing their opinions about the quality of food. In terms of syntactical characteristics, the use of hidden subjects and verb was comparatively higher for older men (45 out of 47 posts) than for younger men (see Tables 1 and 3). As for quality adjectives, unique adjectives that were not superlatives or exaggerations dominated the posts. As demonstrated in the results section, these trends observed in older men reflect their tendency to use minimum words with maximum effect in expressing their feelings on food quality through these posts. Except for three instances of the time element, there was no time or location influence seen in the posts of older men regarding food quality. Here, the behavior of older men is very different from that of younger men. Age may be affecting their vocabulary and memory, making it more difficult for them to express their opinions on food quality. In the case of older women, not all posts had a subject or a subject and a verb, as exemplified in the results section. Unique adjectives were used in 27 out of 47 posts, indicating a higher tendency for older women to use unique adjectives compared to older and younger men.

Notably, there was one post about the negative quality of food, as quoted in the results section. These results indicate that older women tend to use fewer words and less expressive language when describing food quality, possibly due to a decline in their vocabulary and memory as they age. In contrast, younger men and women tend to use more words and varied quality adjectives. This could be because memory loss and declining cognitive abilities with age could lead to a tendency to use minimum words with unique quality adjectives. Overall, the findings suggest that there are age-related differences in the language used to express opinions about food quality.

In the existing literature, gender and age variables have frequently been utilized to investigate their effects or make predictions. The latter is commonly employed to identify lawbreakers, abnormal psychological or social behavioral patterns. For this study, only the effects of gender and age were assessed. The aforementioned results corroborate the findings of Aggarwal et al. (2020); Bustan and Alakrash (2020); Joshi et al. (2020); Ma et al. (2019), regarding the gender-related effects on vocabulary and lexical characteristics within social media posts. Similarly, the findings pertaining to the effect of age in this study align with those of Gao et al. (2019). Furthermore, Al Jahromi (2020) supports the effects of both gender and age as observed in this study. Notably, these effects often exhibit distinct numerical variations, which have been leveraged in predicting age (Rosenthal & McKeown, 2011), or both age and gender (Peersman et al., 2011; Shu et al., 2018) from social media posts.

The findings from this study hold potential for predicting gender or age based on the characteristics of social media posts.

Conclusion

This research demonstrates that both gender and age have a significant impact on the syntax and vocabulary used in social media posts. The study shows that younger men and women tend to use a greater variety of words and quality adjectives, while older individuals tend to use fewer words with unique quality adjectives. This difference could be attributed to memory loss that occurs as people advance in age. These results highlight the need for future research to expand upon this study's findings. Future studies could be conducted on other social media platforms, such as *Facebook* and *Reddit*, to determine if the same patterns emerge across different platforms. Additionally, studies that include a broader range of age groups could provide more nuanced insights into how memory loss affects vocabulary and syntax across the lifespan.

Moreover, this research emphasizes the need for cross-cultural studies to identify any differences in how gender and age influence social media posts across different countries. These studies could provide insights into how language use varies across different cultures and contexts. Overall, this research provides important insights into the impact of gender and age on social media posts' syntax and vocabulary. The findings suggest that memory loss could be a factor in the differences observed between younger and older individuals. Further research in this area will help to shed light on these issues and could be used to develop strategies for improving communication and comprehension on social media platforms.

As with any research, limitations are inevitable, and this study is no exception. One of the primary limitations of this study is that it solely focuses on *Instagram* and UK users. Hence, the findings may not be generalizable to other social media platforms or user groups in different countries. Additionally, the use of the number of words in a quote as a measure of vocabulary may not always be an accurate representation of an individual's vocabulary. Other factors, such as pragmatic considerations and time constraints, could impact the length of a quote. Therefore, researchers should be cautious when interpreting the findings related to vocabulary. Future studies could address these limitations by using larger and more diverse samples from different social media platforms and countries. Researchers could also employ more robust measures of vocabulary and syntax, such as analyzing the use of specific grammatical structures and lexical richness. Overall, acknowledging the limitations of a study is crucial in interpreting its findings and highlighting areas for future research.

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Appendix 1

Dear Instagram User,

I am conducting a linguistic study and would like to invite you to participate. The purpose of my study is to analyze language use on social media and understand how gender and age influence vocabulary and syntax. Your participation in this study is entirely voluntary, and you are free to withdraw at any time.

If you agree to participate, please reply to this message, and kindly let me know whether your first language is English or not. I will then access and collect your public data. This will include the text of your posts and comments, as well as your public profile information. Please note that all data collected will be kept confidential and used solely for research purposes. There will not be any reference to individuals, their usernames, or specific references by any means.

Participation in this study will not require any additional effort or time from you, and it will not impact your use of *Instagram* in any way. Your participation in this study will help me better understand how people use language on social media.

If you have any questions or concerns about this study, please do not hesitate to contact me. Your participation in this study is highly appreciated.

Sincerely,