

## Analyzing Sociolinguistic Aspects of Code-Switching Among Indians on Social Media Platforms

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### Abstract

*The term code-switching is quite close to the concept of multilingualism, as it can be defined as the act of having a conversation in some language other than that of the individual's mother tongue. The primary objective is to intertwine two elements: the widespread use of social media for communication and the practice of code-switching between English and Hindi languages, specifically within the context of WhatsApp. Employing a quantitative approach, data was systematically collected across India through a structured questionnaire employing a 5-Point Likert Type scale.*

*The study reveals a prevalent occurrence of code-switching between English and Hindi on WhatsApp, emphasizing its connection to language comfort and fluency. The regression model, constructed from the data, underscores the influential role of comfortability and emotive expression in shaping the intention to continue code-switching. Users in India demonstrate a pronounced inclination toward code-switching, driven by the perception that employing a combination of both languages enhances emotive expression and facilitates better understanding among communication participants. This study contributes valuable insights into the dynamics of code-switching within the realm of social media communication, particularly on the widely used platform of WhatsApp.*

**Keywords:** Code; Switching; English; Hindi; Social; Media, Whatsapp.

### Introduction

Multilingualism is one of the most prominent aspects of an individual in the present times because of their exposure to a number of different learning mediums. The concept of multilingualism refers to the ability of an individual to be able to convey themselves in more than one language. The term code-switching is quite close to that of the concept of multilingualism as it can be defined as the act of having a conversation in some language other than that of the individual's mother tongue (Eldin, 2014). The literature associated with code-switching has received much attention from researchers in the field as they have put forward a number of interesting insights in this regard (Johns & Steuck, 2021). One of the crucial factors increasing the necessity to understand the code-switching pattern of individuals is their involvement in the use of various social media platforms for networking (Hofweber et al., 2020; Rudra et al., 2019). In the present times, the various social media platforms not only serve the recreational purpose of the masses but also caters to setting up several professional means of communication as well. With the social

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media platforms getting a high number of users the pattern for understanding code switching behaviour have given further way.

According to Noor Al-Qaysi and Mostafa Al-Emran's study in 2017, students exhibit strongly positive attitudes toward code-switching in social media. Among the users, those with Bachelor's degrees constitute the majority engaging in code-switching during social network conversations, while 81% of educators also employ code-switching on social networks. The amount of online conversation in the present times has seen a drastic rise, according to the report (Ceci, 2022). Therefore, the study indulged in understanding the code-switching behaviour among Indians, specifically in the case of English and Hindi languages, on one of the most repeatedly used social media platforms (WhatsApp) for personal and professional aspects is of need. The prime intention behind this study is to integrate the two aspects, i.e., the repeated use of social media in the present times concerning communication and the use of code-switching among the languages of English and Hindi, in establishing communication through WhatsApp. At present, there are 2.6 billion unique users of WhatsApp in 2022 as compared to 465 million in 2014. This shows the popularity of the social media platform for communication, and it would be quite interesting to understand the code-switching behaviour among Indian users in this regard.

The study aims to address the following research questions:-

1. How often is code-switching observed among Indian WhatsApp users between the English and Hindi language?
2. What are the factors that cause an impact on the code-switching behaviour on WhatsApp users in India?

The studies focusing on the Indian aspect of code-switching on social media platforms are quite limited. The integration of online conversations and the pattern exhibited in the code-switching behaviour would help in understanding the situation in India from a new perspective altogether.

## **Review of Literature**

Studies on code-switching have focused on bilingual societies, with parents as the primary study subjects while they are speaking to their young children (Kremin, Alves, Orena, Polka, & Byers-Heinlein, 2022). There are a total of 21 recordings in Canada of parents explaining the code-switching conduct to their young children in both French and English. It had a rather modest amount of new-born switching codes. It stood at a total of 6 times of switching per 1000 words. The 18 months infant conversation however saw a switching of 18 times per 1000 words. The rationale for such change is described as wanting to improve their knowledge and vocabulary. Code-switching in the context of trilingual people was conducted in Hong Kong using qualitative and quantitative research methodologies (Ka Long Roy Chan, 2019). English, Cantonese, and Putonghua are among the languages being taken into consideration. The study included students for their analysis from around sixty universities and involved in both qualitative and quantitative methods of study. Students from over sixty universities participated in the study. The study, an extension of a similar study by (Ka Long Roy Chan, 2018) on bilingual code-switching, revealed that while trilingual switching, including Putonghua, is less acceptable, bilingual switching is still a significant component of Hong Kong culture. Likewise, (Adler, Valdés Kroff, & Novick, 2020) based their study on understanding bilingual code switches among individuals during a real-time conversation. The languages being considered here include Spanish and English. The main attempt has been to determine if this code-switching has any impact on the cognitive processing of an individual. With a total of 48 responses being examined, it showed that code-switching was recorded with incremental comprehension, and it was found to reduce conflicts in the

process. There is a regulation of cognitive control hereby observed in the process of code-switching. While (Goodman & Tastanbek, 2021) tried to provide the concept of code-switching through the lens of trans-language in their study. The main aim was to focus on teacher education concerning the English language. The study understanding a teacher's views in an English medium university located in Kazakhstan showed that the inclination towards forming a holistic point in terms of language is highly desired. (Rudra et al., 2019) conducted their study in India to identify the code-switching occurring among English and Hindi, specifically regarding Twitter. The study involved analysing the similarities as well as the differences that exist with respect to the use of Twitter. The study has found that the extent to which code-switching between the two languages occurs highly depends on the topic of discussion. According to (Khan) code-switching, along with code-mixing, takes place among children. The phenomenon of code-switching among children is often not considered to be as prominent as among adults, but the study here shows that there is a difference between the code-switching governing rules among children and adults. It is observed that code-switching in children is a part of their bilingual competence, and there is literature that does support the same.

From the discussion above, it is observed that there are a number of studies that are successful in providing the highlights of code-switching behaviour. However, the focus on social media platform usage and its impact on code-switching seems to require more literature for its betterment. The study here would address that gap and try to understand the code-switching behaviour in regard to one very specific social media platform, WhatsApp. Moreover, the studies involving the English language are quite high, but those with respect to Hindi are somewhat lesser in number. The study would help in understanding the same by fulfilling the following objectives –

1. To explore the present situation of code-switching between English and Hindi in WhatsApp.
2. To determine the factors that cause an impact on the code-switching behavior.

## **Research Methodology**

The importance of specifying the research methods in any study is quite essential as it provides the framework followed in conducting the research. The study here, although based on sociolinguistic aspects, takes the quantitative route to arrive at the results of the study as per the requirement of the research questions. The study uses the non-probabilistic method of sampling in which convenience sampling is used to collect the responses. The respondents are selected from all across the country who use WhatsApp and speak Hindi.

### **Research Instrument**

The research instrument is a structured questionnaire in a 5 Point Likert Type Scale. A total of 240 responses are collected for the purpose of the study and are analysed using a number of statistical methods including multiple linear regression. The in detailed data analysis is provided in the next chapter.

### **Data Analysis and Interpretation**

The data were collected from the respondents through the survey method and the 240 collected data sets are being analysed using the software SPSS for conducting the statistical analyses. However, it is important to mention here that the total number of respondents approached has been 400. Based on the preliminary question which is to determine if the respondents are engaged in switching languages on WhatsApp especially among Hindi and English, it is seen that only 240 of them answered in favor of it. Hence, a total of 240 respondents are considered for analysing the data to interpret the code-switching behaviour.

## Results

There are a number of analyses that have been conducted in the process, however, before moving on to them, Table 1 below shows the demographic representation of the samples.

Table 1: Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Female	120	50.0 %	50.0 %
Male	120	50.0 %	100.0 %

In order to understand the code switching behaviour without any biases, the samples collected include a 50% representation of males as well as females as shown in Table 2.

Table 2: Frequencies of Age (in years)

Age (in years)	Counts	% of Total	Cumulative %
18-24	72	30.0 %	30.0 %
25-34	96	40.0 %	70.0 %
35-44	72	30.0 %	100.0 %

The age of a respondent can be a good identifier of certain code-switching habits of the consumers and must be made a part of the statistical analysis process. From the samples collected, it is seen that the majority are in the age group of 25-34 years with 40% and the remaining respondents are equally from 18-24 years and 35-44 years of age group.

Table 3: Frequencies of Education Level

Education Level	Counts	% of Total	Cumulative %
Doctorate	24	10.0 %	10.0 %
Graduate	96	40.0 %	50.0 %
Post-Graduate	96	40.0 %	90.0 %
Undergraduate	24	10.0 %	100.0 %

The education level is again a determinant of behaviour and provides interesting insights into such analyses. The education levels included are also inclusive of almost all sections of the Indian residency. It is seen that there are 40% of graduates and postgraduates followed by a 10% representation of undergraduates and doctorate-level among respondents as shown in Table 3.

Table 4: Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	72	30.0 %	30.0 %
Unmarried	168	70.0 %	100.0 %

Marital status is the next demographic factor being considered here. It is seen in Table 4 that 70% of the respondents are unmarried and 30% of them are married.

These four demographic variables were further investigated in the course of the study with the help of statistical tools such as t-tests and One Way ANOVA.

The first objective is to understand the situation among Indian WhatsApp users on code-switching. The first set of questions included asking the respondents if they go for code-switching during their conversations in WhatsApp. It is interesting to find that all the respondents admitted to going through code-switching when conversing on WhatsApp. The next question enquires about how often they use other languages during their conversation. The responses are as follows in Table 5:

Table 5: Frequencies of How often do you have to switch to another language from English during conversation in WhatsApp?

How often do you have to switch to another language from English during conversation on WhatsApp?	Counts	% of Total	Cumulative %
1-10 times	56	23.3 %	23.3 %
10-20 times	24	10.0 %	33.3 %
20-30 times	64	26.7 %	60.0 %
More than 30 times	96	40.0 %	100.0 %

The results show that an approximate number provides that around 40% agree to do it more than 30 times. Some individuals, including 26.7%, have agreed to use code-switching involving English and Hindi 20-30 times. There are 23.3% who are quite low on the mark and have been involved in code-switching 1-10 times only. The relationship of these frequencies with other aspects of the individuals is given in Table 6.

Table 6: Frequencies of Which is the language used during your school?

Which is the language used during your school?	Counts	% of Total	Cumulative %
English	96	40.0 %	40.0 %
Hindi	48	20.0 %	60.0 %
Mixed	24	10.0 %	70.0 %
Others	72	30.0 %	100.0 %

As a part of the code-switching enquiry process, the study here also enquires about the medium of language being pursued by the respondents during their school curriculum. As the medium of study in the initial years can cause an influence on the code-switching behaviour. It was found that most respondents have English as their medium, with 40% and 20% having Hindi as their medium during school education. 30% of respondents have pursued their schooling in other vernacular mediums. Lastly, the respondents were asked about their comfort with Hindi and English. It is seen that only 40% have comfort using both languages, and the remaining 60% are not comfortable with both as shown in Table 7.

Table 7: Frequencies of Are you comfortable in both Hindi and English?

Are you comfortable in both Hindi and English?	Counts	% of Total	Cumulative %
No	144	60.0 %	60.0 %
Yes	96	40.0 %	100.0 %

To understand the situation among Indian WhatsApp users on code-switching better, a chi-square test was conducted which involved these three questions to understand an association among them.

Table 8 a: Contingency Tables

How often do you have to switch to another language from English during conversation on WhatsApp?		Which is the language used during your school?				
		English	Hindi	Mixed	Others	Total
1-10 times	Observed	56	0	0	0	56
	% within row	100.0 %	0.0 %	0.0 %	0.0 %	100.0 %
	% within column	58.3 %	0.0 %	0.0 %	0.0 %	23.3 %
10-20 times	Observed	0	0	0	24	24
	% within row	0.0 %	0.0 %	0.0 %	100.0 %	100.0 %
	% within column	0.0 %	0.0 %	0.0 %	33.3 %	10.0 %
20-30 times	Observed	40	0	24	0	64
	% within row	62.5 %	0.0 %	37.5 %	0.0 %	100.0 %
	% within column	41.7 %	0.0 %	100.0 %	0.0 %	26.7 %
Over 30 times	Observed	0	48	0	48	96
	% within row	0.0 %	50.0 %	0.0 %	50.0 %	100.0 %
	% within column	0.0 %	100.0 %	0.0 %	66.7 %	40.0 %

Table 8 a: Contingency Tables

		Which is the language used during your school?				
		English	Hindi	Mixed	Others	Total
Total	Observed	96	48	24	72	240
	% within row	40.0 %	20.0 %	10.0 %	30.0 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

Table 8b:  $\chi^2$  Tests

	Value	df	p
$\chi^2$	333	9	<.001
N	240		

The first chi-square test is conducted between the language used by the respondents in their school along with the frequency of switching languages between Hindi and English. It is interesting to note that the respondents switching the least, i.e., 1-10 times, had English as their language in school. The respondents who showed the highest switching which is more than 30 times .had Hindi as their language in school. The association being identified here upon being tested for association showed a p-value of less than 0.05, thus confirming a significant association between the two. ( Table 8a & Table 8b).

Table 9a: Contingency Tables

		Are you comfortable in each of the languages you speak?		
		No	Yes	Total
1-10 times	Observed	43	13	56
	% within row	76.8 %	23.2 %	100.0 %
	% within column	29.9 %	13.5 %	23.3 %
10-20 times	Observed	0	24	24

Table 9a: Contingency Tables

How often do you have to switch from another language to English during your period of work?		Are you comfortable in each of the languages you speak?		
		No	Yes	Total
20-30 times	% within row	0.0 %	100.0 %	100.0 %
	% within column	0.0 %	25.0 %	10.0 %
	Observed	29	35	64
More than 30 times	% within row	45.3 %	54.7 %	100.0 %
	% within column	20.1 %	36.5 %	26.7 %
	Observed	72	24	96
Total	% within row	75.0 %	25.0 %	100.0 %
	% within column	50.0 %	25.0 %	40.0 %
	Observed	144	96	240
	% within row	60.0 %	40.0 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %

Table 9b:  $\chi^2$  Tests

	Value	df	p
$\chi^2$	57.3	3	< .001
N	240		

The next chi-square test having the two factors of comfortability in both the language and the code -switching frequency shows that those who are not comfortable with both the languages are seen to code-switch more than 30 times. The comfortable ones on the other hand however, are found to code-switch 20-30 times majorly. The association between the two here is also seen to be statistically significant. This shows that both the comfortability and the language being used during their school have a significant association with the frequency of code switching among the respondents as shown in tables 9a & 9b.

It is concluded that the code-switching frequency although can be associated with a few personal aspects of the respondent, it is overall quite high in WhatsApp. The factors enabling these high levels of code-switching were investigated as a part of the second objective.

The second objective involved analysing the 5 Point scales used in the questionnaire by method factor reduction using the principal component analysis (PCA). The method allows the items to be statistically divided into a number of factors having eigen value of more than 1. The varimax rotation to be used would ensure maximisation of the factor loadings and a value of 0.4 or more would be considered acceptable (Hair et al., 2006). The table 10 showing the PCA deduction are as follows-

Table 10: Component Loadings

	Component				Uniqueness
	1	2	3	4	
I often use words from Hindi language when conversing in English on WhatsApp	0.836				0.1107
I am comfortable switching to Hindi language when conversing in English on WhatsApp	0.888				0.1220
I am comfortable switching to Hindi language when writing English on WhatsApp	0.819				0.1218
I wish to not undergo frequent switching to my language when conversing in English	0.821				0.0250
I adopt the switching process to fill up the gap in my mind before conversing in English on WhatsApp		0.753			0.1867
I adopt the switching process before conversing in English on WhatsApp because it is easier to understand in Hindi language		0.759			0.4153
I adopt the switching process before conversing in English on WhatsApp to add emphasis		0.828			0.3134
I adopt the switching process before conversing in English on WhatsApp to avoid misunderstanding		0.440			0.6624
I adopt the switching process before conversing in English on WhatsApp to convey intimacy		0.842			0.2882

Table 10: Component Loadings

	Component				Uniqueness
	1	2	3	4	
I adopt the switching process before conversing in English on WhatsApp to have privacy		0.919			0.1431
I adopt the switching process before conversing in English on WhatsApp when I cannot find similar words in English			0.876		0.1619
I adopt the switching process before conversing in English on WhatsApp when I do not know the English word for the same			0.933		0.1287
I would like to stop switching words Hindi language when conversing in English on WhatsApp in the Future				0.837	0.2941
I will continue to use switching of words in between using English language on WhatsApp in the future				0.901	0.1612

Note. 'varimax' rotation was used

The above PCA table shows that there are a total of four factors that have been extracted from it. Based on the understanding of the characteristics of the four factors, the terminology for them have been provided as follows-

1. Perceived Comfort – The first factor with a total of four factors represents the level of comfort the respondents have towards code-switching in the process of conversing in WhatsApp.
2. Emoting and Understanding – The next factor consists of six factors and considers the use of code-switching in WhatsApp as a process of emoting their minds and making the other party understand their thought.
3. Vocabulary – The third factor, including two items, represent the lack of a proper vocabulary that makes them go for the code-switching practice in WhatsApp.
4. Intention – The last factor with two items includes intention with the process of code-switching in the future while being indulged in WhatsApp communication.

The above four factors represent the main factors that include the code-switching behaviour of the respondents in WhatsApp.

In order to identify the impact of the three factors on the intention to go for code-switching further in the future, a multiple linear regression was conducted. The regression model constructed is found to be statistically significant with a p-value of less than 0.05. The adjusted R<sup>2</sup> for the model is also found to be quite high at 0.504. This represents that one unit change in the independent factors can cause an impact of 50.4% on the intention of code-switching.(Table 11)

Table 11: Model Fit Measures

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Overall Model Test			
				F	df1	df2	p
1	0.714	0.510	0.504	81.8	3	236	< .001

Table 12: Model Coefficients - Intention

Predictor	Estimate	SE	t	p
Intercept	1.0523	0.4157	2.531	0.012
Perceived Comfort	0.1327	0.0342	3.876	< .001
Emoting and Understanding	0.5844	0.1004	5.819	< .001
Vocabulary	0.0634	0.0910	0.697	0.487

The factors being investigated show that out of the three factors, only two have significant impact on intention. These two factors include Perceived Comfort and Emoting and Understanding. Interestingly vocabulary is not found to be a significant determinant. Out of the two factors it is Emoting and Understanding that causes the highest impact on the intention (Table 12).

Overall, the statistical analysis conducted is able to provide a clear idea on the code switching pattern of the individuals in a country like India where Hindi and English are quite widely spoken.

## Discussion

This study was conducted to understand the code-switching behaviour associated with conversing on a social media platform. Understanding this behaviour is of utmost necessity from the sociolinguistic point of view as it can help in making major contributions towards capturing the changing landscape of digital communication. The main motive of the study has been to apply statistical methods to determine and highlight the factors that affect the code-switching behaviour in the respondents. The study uses the two prime languages spoken in India, i.e., Hindi and English, for determining the code-switching pattern. The overall perception of the Indians using WhatsApp about the switching between the two languages is a part of the first objective. The results showed that the frequency of code-switching is quite high, with the majority agreeing to be indulged in it more than 30 times while texting on WhatsApp. The investigation used other factors: comfort with both languages and the medium used during school education. It is found that both aspects can have a significant association with the two. The language in an individual's primary levels, i.e., the one used in their school curriculum, can cause a significant association. This can be a significant point to associate as it indicates the relationship between the language initially used in education and the patterns of code-switching in the digital era.. This aligns with the study by Kremin et al. (2022) on parental code-switching in bilingual societies, specifically with young children. Their research contributes to our comprehension of early language exposure and its potential impact on subsequent code-switching behavior. The thematic resonance extends to the current investigation on code-switching on WhatsApp, where the aim is to unravel how

individuals, potentially influenced by early language interactions, participate in code-switching.

The next objective includes a statistically rigorous method of analysing the factors impacting the behaviour. The scale used in the questionnaire gathered 240 responses which is abundant for the statistical analyses. The PCA being generated showed that a total of four factors, out of which one is used to represent the intention to use code-switching in the future, is indicated. The other three factors represent the perceived comfort with the habit of code-switching, the emoting and understanding process initiated using the same and the lack of vocabulary in one language leading to code-switching. However, the model generated showed a 50% variance, and the significant factors include perceived comfort and emoting and understanding aspect. The present research builds on Adler, Valdés Kroff, and Novick's (2020) study on bilingual code-switching during real-time conversations by incorporating a statistical approach to unravel the intricacies of code-switching behaviors in WhatsApp. The results indicate a significant association with comfort, emotion, and comprehension, aligning with the broader literature's acknowledgment of the cognitive and emotional dimensions of code-switching.

It is quite safe to say that the process of code-switching in WhatsApp is characterised by the comfortability and ease of communication associated with it. Although vocabulary is a factor in the process, the main one is that code-switching enables WhatsApp users to express themselves better when trying to explain something to another person. The outcome is consistent with the research conducted by Noor Al-Qaysi and Mostafa Al-Emran (2017) which emphasizes code-switching allows students to express the ideas that they can't express in Arabic and helps them feel more comfortable and confident

Rudra et al.'s (2019) exploration of code-switching on Twitter in India underscores the relevance of social media platforms in shaping language choices. This study seamlessly extends this perspective, emphasizing the need to understand code-switching behavior in the specific context of WhatsApp, a widely used social media platform. The study acknowledges a literature gap related to the impact of code-switching on social media, thereby justifying the research focus.

To sum up, the present research skillfully aligns with the literature review, weaving together diverse insights, addressing identified gaps in previous research, and applying a statistical lens to comprehend code-switching behavior on WhatsApp among Hindi-English bilingual users in India, with explicit reference to the works of Kremin et al., Ka Long Roy Chan, Adler et al., and Rudra et al.

## **Conclusion and Future Outlook**

The use of social media for communication in the present times cannot be ignored. The need to conduct studies that help understand the different ways of communicating can help to move ahead in the sociolinguistic domain. The phenomenon of code-switching is highly observed among social media platform users, and many past studies have investigated its different aspects. The study here investigated the users of WhatsApp in India and their code-switching behaviour in English and Hindi. The present situation highlights how code-switching among these two languages frequently occurs in the medium and relates to the language's comfortability and fluency.

The regression model generated showed how it is the comfortability and the emoting part that has an impact on the intention to use it further in the process. Notably, comfortability and the emotional aspect emerge as significant contributors, indicating that users in India are driven by a perceived ability to better emote and facilitate understanding through a blend of both languages. This behavior reflects a strategic linguistic choice, wherein individuals opt for another language to enhance expressive capabilities within the considered respondent group.

The study underscores the importance of language comfort and the code-switching process itself. Unsurprisingly, individuals uncomfortable with both languages exhibit a higher propensity for code-switching. Conversely, being at ease with the code-switching process during conversations also proves to be a significant determinant, contributing to a notable variance in behavioral patterns. Overall, both linguistic preferences and individual expression methods play pivotal roles in shaping code-switching dynamics.

Statistically, the study has effectively established the factors influencing the future intention to engage in code-switching. The generated model exhibits a high level of variance, indicating reduced biases and errors. This model serves as a robust foundation for further investigations into code-switching dynamics by incorporating additional relevant factors. While the quantitative approach employed in this study provides a concrete framework within sociolinguistics, a complementary qualitative exploration within a similar context could yield deeper insights. Combining both methodologies could offer a comprehensive understanding of code-switching behaviors on social media platforms, contributing to the scholarly discourse in this domain.

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