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Exploring Viewership Patterns and Engagement Levels of Malayalam Political Satire Shows' Audience: A Survey

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ABSTRACT: The researchers used SPSS analysis to examine the relationships between various variables, including audience demographics, frequency of watching political satire shows, and engagement with the content. The researchers have adopted purposive sampling technique and collected samples from the premises of Calicut University, Kerala, India. A total of 120 respondents participated in the study. The structured questionnaires were distributed to the targeted population for data collection. The data so collected was analysed using SPSS, which allowed for the identification of significant relationships between the variables.

The study employed the uses and gratification theory, agenda setting theory, and third-person effect theory to provide a comprehensive understanding of audience engagement with political satire shows. The findings revealed that the audience's frequency of watching political satire shows was positively correlated with their engagement with the content, particularly in terms of their attention to the political issues highlighted in the shows. The results also indicated that the audience's demographic characteristics, including age, gender, and political affiliation, played a significant role in their engagement with political satire shows. Moreover, the study found that the audience's media consumption patterns, such as their use of social media platforms, significantly influenced their engagement with political satire shows. Overall, the study provides valuable insights into the audience's engagement with political satire shows and the factors that contribute to this engagement. The findings have implications for media professionals, political satirists, and policymakers, highlighting the potential of political satire shows in shaping public opinion and fostering civic engagement.

Introduction:

Political satire shows have become increasingly popular in the contemporary media landscape, providing a space for political commentary and social critique (Sebastian, 2021). The proliferation of such shows in India has been particularly noteworthy, with several regional languages adopting the format to critique the political class and engage with the audience. Malayalam television political satire shows have gained significant attention in recent years, garnering a substantial following among the public. This study aims toexplore audience engagement with Malayalam television political satire shows, focusing on the factors thatcontribute to their popularity and effectiveness (Sebastian, 2021). Political satire shows have the potential to influence public opinion, shape discourse, and foster civic engagement. However, the extent to which these shows achieve these goals, and the factors that facilitate or hinder this engagement, is an understudiedarea of research (Karthika & Vijayalakshmi, 2020).

Satire:

According to Worcester (2013) satire is a literary genre that employs humor, irony, and sarcasm to expose and criticise human follies, vices, and social or political injustices. Satire has a long history, dating back to ancient Greece and Rome, and has been a popular form of social commentary and criticism in various cultures and time periods. One of the earliest examples of satire is Aristophanes' play, "The Clouds," which used humor and wit to criticise the philosopher Socrates and the intellectual and cultural trends of Athens in the fifth century BCE. In the medieval period, satire was often used by poets and playwrights to criticise the clergy, nobility, and other powerful figures (Highet, 2015). During the Enlightenment, satire became an important tool for writers and thinkers to critique social and political institutions and ideas. Jonathan Swift's "A Modest Proposal" is a classic example of this type of satire, in which he suggests that the poor Irish could alleviate their poverty by selling their children as food to the wealthy (Condren, 2012).

In the nineteenth and twentieth century's, satire continued to be an important form of social commentary and political criticism. Mark Twain's "The Adventures of Huckleberry Finn" is a prime example of satire in American literature, in which he used humour and irony to expose the racial prejudices and injustices of society (Menaka & Sankar, 2018). In recent years, satire has gained new prominence and popularity through the rise of television shows like "The Daily Show," "Saturday Night Live," and "Last Week Tonight," which use humour and satire to comment on current events and political issues. The role and function of satire in society has been the subject of much debate and discussion among scholars and writers. Some argue that satire is an essential tool for exposing and challenging power structures and social injustices (Hill, 2013).

Satire allows writers and artists to engage with difficult or controversial issues in a way that is both entertaining and thought-provoking. Others, however, have raised concerns about the effectiveness of satire in effecting social change, arguing that satire can often be misunderstood or misinterpreted, or that it can contribute to the trivialisation of serious issues (Foxwell-Norton & Konkes, 2022). Despite these debates, satire remains a vital and vibrant form of social commentary and artistic expression. By using humour and irony to expose and criticise human follies and social injustices, satire continues to challenge and provoke audiences and play an important role in shaping public discourse and opinion.

Political Satire:

According to Boukes et al. (2015), political satire has been a popular form of entertainment and social commentary since ancient times. It is a type of humour that uses irony, sarcasm, and ridicule to expose and criticise political issues and figures. Political satire is often used to challenge established power structures and bring attention to social injustices. The purpose of this literature review is to provide an overview of political satire and its role in contemporary politics.

Historically, Becker (2020) stated that political satire was used as a means of political dissent and commentary. In ancient Greece, satirical plays were used to criticise the political establishment and bring attention to societal issues. In the 18th and 19th centuries, political satire became a popular form of journalism, with satirical newspapers and cartoons being used to mock politicians and social issues.

Political satire has continued to be an important part of contemporary politics, with shows like Saturday Night Live and The Daily Show using satire to comment on current events and political figures. In recent years, political satire has been used to address issues like race, gender, and sexuality, with shows like Blackish and Brooklyn Nine-Nine using humour to explore these topics (Baym, 2005).

Political satire can also serve a more substantive role in contemporary politics. The Agenda-Setting theory suggests that the media has the power to influence what issues the public pays attention to. Political satire can be used to bring attention to underrepresented or ignored issues, highlighting them to the public and potentially influencing policy (Penney, 2020).

Brief History of Television Political Satire Shows in Kerala:

According to Kennedy (2010), political satire shows have been an integral part of the television landscape in Kerala for several decades. These shows use humour, parody, and satire to provide critical commentary on political issues and public figures, making them a powerful tool for civic engagement and social change. The history of political satire shows in Kerala can be traced back to the 1980s, when programs like

"Crosstalk" and "Parliamentukku Oru Seat" began to air. These shows were known for their scathing criticism of political leaders, as well as their insightful commentary on social and political issues. The shows quickly gained popularity among viewers, who appreciated their irreverent and entertaining take on politics.

Over the years, political satire shows in Kerala have evolved and expanded, with new programs like "Marimayam," "Comedy Utsavam," and "Badai Bungalow" joining the ranks. These shows have garnered huge followings and have become a fixture of the television landscape in the state. One of the key reasons for the popularity of political satire shows in Kerala is the state's rich tradition of political activism and social reform. Kerala has a long history of left-wing politics, with a strong communist movement that has often been at the forefront of social change. Political satire shows have become an important part of this tradition, providing a platform for critical commentary on the issues that matter most to the people of Kerala. Another factor that has contributed to the popularity of political satire shows in Kerala is the state's vibrant and diverse media landscape. Kerala has a thriving film industry, as well as a robust print and online media sector. This has created a culture of media consumption that values critical commentary and incisive analysis, making political satire shows a natural fit for Kerala audiences (Chandrasekhar, 2021).

Moreover, Parthan (2022) opined that political satire shows in Kerala have become a forum for social commentary on issues that often go unaddressed in mainstream media. These shows have tackled a wide range of topics, from corruption and political violence to gender and sexuality, often with a degree of candour and frankness that is rare in other media formats. This has made political satire shows a powerful force for social change, challenging entrenched norms and promoting a more open and inclusive society. However, Mini (2015) stated that political satire shows in Kerala have not been without their share of controversies. There have been instances where these shows have faced legal action or government censorship for their critical commentary on sensitive issues. Some have also criticised these shows for their occasional use of offensive language or insensitive humour. Despite these challenges, political satire shows in Kerala have continued to thrive, evolving and adapting to changing social and political contexts. They have become an important forum for social commentary, a source of entertainment, and a means of fostering civic engagement and political awareness among viewers (Usha Rani, 2016).

Theoretical Framework of the Study:

The study of audience engagement with the Malayalam political satire shows can benefit from the application of several theoretical frameworks, including the Uses and Gratification Theory, the Third-PersonEffect, and the Agenda-Setting Theory. These frameworks provide a comprehensive understanding of the factors that influence the viewers' engagement with the show, including their motivations for watching, perception of media effects, and the role of media in shaping public opinion.

The Uses and Gratification Theory (UGT) is a well-known communication theory that focuses on the motivations of media consumption. This theory asserts that audiences are active agents who choose media content based on their specific needs and desires (Camilleri & Falzon, 2021). In the context of the Malayalam political satire show, viewers might tune into the program for several reasons. For instance, they might watch the show to gain a better understanding of current political events, to be entertained, or to satisfy their curiosity. Understanding the specific gratifications that derive viewers from the show can help researchers identify the factors that contribute to audience engagement, such as the relevance of the content and the comedic elements.

The Third-Person Effect (TPE) is another relevant communication theory that highlights the difference between individuals' perceptions of media effects on themselves and on others. This theory asserts that individuals tend to overestimate the influence of media on others while underestimating the effect of media on themselves. In the context of the Malayalam political satire show, this theory can help researchers examine the impact of the program on the public's political attitudes and behavior. Specifically, the study can investigate whether viewers perceive the show to be more influential on others than themselves and whether this perception affects their engagement with the program (Perloff, 1999).

The Agenda-Setting Theory (AST) is a communication theory that posits that media has the power to influence what the public thinks about by emphasising certain issues over others. In the context of the Malayalam political satire show, the AST can help researchers examine the show's role in shaping viewers' perceptions of political issues. For example, the study can investigate whether the program's focus on specific political figures or events influences the public's agenda in terms of their attention and opinions onthe same issues (Kim et al., 2017)

In conclusion, the application of the Uses and Gratification Theory, Third-Person Effect, and Agenda-Setting Theory can provide a comprehensive understanding of the factors that contribute to the audience's engagement with the Malayalam political satire show. By examining the motivations for media consumption, the perception of media effects, and the role of media in shaping public opinion, the study can identify the factors that drive viewership and the impact of the show on the public's political attitudes and behaviour. Ultimately, this research can provide insights into the effectiveness of political satire in educating and entertaining the public, shaping political discourse, and fostering civic engagement (Oliver et al., 2004).

Review Of Literature:

Dannagal Goldthwaite Young's paper "The Privileged Role of the Late-Night Joke: Exploring Humour's Role in Disrupting Argument Scrutiny" explores the potential of humour to disrupt argument scrutiny and

influence audience opinions. The paper discusses the ways in which late-night comedy shows, particularly The Daily Show and The Colbert Report, have emerged as important sources of political news and commentary for younger audiences. The paper argues that these shows use humour to engage viewers emotionally and disrupt their critical thinking, making it more difficult for them to engage in rigorous argument scrutiny. Young draws on several studies to support her arguments, including a study conducted by Jeffrey Jones in which participants were shown clips from The Daily Show and The O'Reilly Factor. The study found that participants who watched The Daily Show were less likely to have a clear understanding of the issues presented in the clip, but they were more likely to remember details from the segment that were not directly related to the issues at hand. This finding suggests that humour can distract viewers from the substance of an argument and make it more difficult for them to engage in critical analysis. The paper also discusses the potential benefits of humour in promoting political engagement and encouraging critical thinking. Young argues that humour can be an effective way of engaging audiences who might otherwise be disinterested in politics, and that it can serve as a gateway to more substantive discussions. However, she cautions that humour can also be used to promote false or misleading information, and that it is important to be vigilant about the potential consequences of using humour to influence political discourse (Young, 2008).

Overall, Young's paper offers a nuanced and thought-provoking analysis of the role of humour in political discourse. The paper highlights the potential of humour to engage and influence audiences, while also raising important questions about the ways in which humour can be used to distract viewers from the substance of political arguments. The paper's focus on late-night comedy shows is particularly interesting, as these shows have become increasingly influential in shaping political discourse in recent years. Overall, the paper offers a valuable contribution to the literature on political communication and the role of humour in shaping public opinion (Young, 2008).

Amanda Kay Martin's (2017) thesis "On with the Motley: Post-Stewart/Colbert Television Satire and Discursive Integration" examines the role of post-Stewart/Colbert television satire in shaping public discourse and political culture. Martin argues that the legacy of The Daily Show and The Colbert Report has had a lasting impact on political satire and the media landscape, leading to the emergence of a new era of post-Stewart/Colbert television satire.

The literature review section of the thesis provides a comprehensive overview of previous research on political satire and its impact on public discourse. Martin reviews the theories and concepts related to political satire, including its role in promoting critical thinking, engaging citizens, and shaping public opinion. She also discusses the limitations of traditional news media in covering political issues and the potential for satire to fill this gap by providing an alternative source of information and commentary. In the literature review, Martin cites previous studies that have explored the impact of political satire on political

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knowledge, political efficacy, and political participation. She highlights the findings that suggest that political satire has a positive effect on political knowledge and may increase political participation, particularly among young adults. However, she also acknowledges the limitations of political satire in addressing complex political issues and the potential for satire to reinforce existing biases and beliefs. Overall, the literature review in Martin's thesis provides a valuable summary of the existing research on political satire and its impact on public discourse. It highlights the potential of post-Stewart/Colbert television satire to shape political culture and promote civic engagement while acknowledging the challenges and limitations of this form of media (Kay Martin, 2017).

Hmielowski, Holbert, and Lee's (2011) study examines the predictors of political satire consumption, specifically with regard to the affinity for political humour, and the impact of viewing "The Daily Show" and "The Colbert Report." The authors conducted a survey of undergraduate students, measuring their level of affinity for political humour, exposure to the two shows, and political engagement. The findings suggest that the affinity for political humour significantly predicts the consumption of political satire, but the impact of the shows on political engagement was less clear. While exposure to "The Daily Show" was positively associated with political engagement, exposure to "The Colbert Report" did not have a significant effect. The study also found that exposure to political satire had a stronger effect on those with a higher level of political knowledge. Overall, the study highlights the importance of understanding individual characteristics, such as affinity for political humour, in predicting political satire consumption and the potential impact of political satire on political engagement (Hmielowski et al., 2011).

In "Using mass communication frameworks to investigate the influence of humour: furthering the study of political satire," Amy B. Becker provides a literature review that explores the ways in which humour and political satire can influence attitudes and behaviour. The author synthesizes research from a variety of disciplines, including communication, political science, and psychology, and applies several mass communication frameworks to better understand the impact of political satire. Specifically, Becker applies the Uses and Gratifications Theory, the Elaboration Likelihood Model, and the Social Identity Theory to understand the motivations behind humour consumption, the cognitive processing of humour, and the social identities that influence humour appreciation. The literature review also highlights the role of political satire in shaping public opinion, increasing political knowledge, and fostering civic engagement. Overall, Becker's literature review highlights the importance of understanding the theoretical underpinnings of political satire and the various mechanisms through which it can influence the audience (Becker, 2020).

Objectives:

General objective:

The general objective of the study is to find out "Audience engagement with the Malayalam television political satire shows". To materialize this general objective the following objectives are formulated:

- To study the influence of demographic variables of age and gender on the viewing pattern of political satire shows
- To analyse the credibility of political satire shows
- To explore the impact of political satire shows on the thought-process of the viewers
- To evaluate the audience's opinion about the content of the political satire shows

Research Questions:

1. Do television news satire programmes take over the role of traditional news channels in providing information?
2. Does the analysis involve examining how the demographic variables of age and gender impact the viewing pattern of political satire shows?

Methodology:

In this study, a survey approach is employed to collect data so as to researchers could establish the validity of the investigation. Moreover, the researchers employed the survey method as a tool to facilitate information exchange between research participants and the researchers.

To determine the level of interest in Malayalam news television satire programmes, the study employed a questionnaire survey as its approach. The study has been conducted on the premises of Calicut University, Kerala. The purposive sampling method is adopted to get the sample. The questionnaires were distributed to the participants in offline mode for the collection of data. The researchers did not force any participants to participate in the study; they participated in the survey of their own will.

Sampling:

This study has employed a quantitative approach to examine the relationships between various variables that affect audience engagement with Malayalam political satire shows. The study has utilised the Uses and Gratification theory, Agenda Setting theory, and Third-Person Effect theory to provide a comprehensive understanding of audience engagement with political satire shows. To understand the audience engagement with the satire shows the researchers took 120 samples from the population by employing the purposive sampling method. A self-administered questionnaire was used for collecting data from samples through the offline survey. The researchers collected data from a purposive sample of 120 respondents, 59 female and 61 male, drawn from the premises of Calicut University, Kerala. The participants were asked to complete a

structured questionnaire that explores their frequency of watching political satire shows, their engagement with the content, and their media consumption patterns. The data so collected was analysed using SPSS, which allowed for the identification of significant relationships between the variables.

Statement of the Problem:

The research topic **"Exploring Viewership Patterns and Engagement Levels of Malayalam Political Satire Shows' Audience: A Quantitative Survey & SPSS Analysis"** aims to investigate the level of engagement of viewers with the political satire shows in Malayalam television. The study aims to examine the influence of demographic variables such as age and gender on the engagement level of the viewers. Moreover, the study aims to explore the extent of credibility of political satire shows, their influence on the political views of the people, and the popularity and satisfaction of political satire shows. The audience's opinion about the content of the political satire shows is also a crucial aspect of this research. Understanding the audience's engagement level with political satire shows can help political satire producers to enhance the quality of their shows and make them more relevant to the audience. The findings of this research can provide insights for policymakers and stakeholders on the effectiveness of political satire shows in shaping public opinion.

Significance of the Study:

The present study holds significant value as it sheds light on the influence of political satire shows on public opinion. By examining the demographic variables and opinions of the viewers, the research can provide insights on the effectiveness of political satire shows in shaping political views. Understanding the audience's satisfaction level and opinions on the content of political satire shows can help producers and policymakers to tailor their content to meet the needs and interests of the audience (Niven et al., 2003).

The study seems to have contributed to the existing literature on political satire shows, particularly in the context of Malayalam television. The findings have shed light on the factors that contribute to audience engagement with political satire shows, including the role of demographic factors and media consumption patterns. Moreover, the study has also provided insights into the potential of political satire shows in shaping public opinion and fostering civic engagement. The results of the study encompasses certain implications for media professionals, political satirists, and policymakers. The findings will inform the development of strategies to increase audience engagement with political satire shows and to ensure that they are effective in fostering civic engagement and promoting democratic values. The study will also provide a foundation for future research on political satire shows, including qualitative studies that explore the subjective experiences and perspectives of the audience. The research can also contribute to the field of media studies

by providing a better understanding of the role of political satire shows in shaping public opinion and democracy.

Study Limitations:

One potential limitation of the research on could be the sample size and representation. It is possible that the study may not be able to generalize the findings to the entire population, as the sample size may be limited to a specific geographical area or a particular age group. To tackle this limitation, the researcher can used purposive sampling technique to ensure a diverse sample that represents different age groups, gender, and geographic areas (Klar & Leeper, 2019). Additionally, quantitative research can help in gathering a more comprehensive understanding of the audience's engagement with political satire shows. Another potential limitation is the lack of control over the variables, such as individual preferences, political beliefs, and prior knowledge of the political situation in the area. To overcome this limitation, the researcher can include questions in the survey that assess the audience's knowledge and political affiliations (Lavis et al., 2003). Moreover, the researchers performed statistical analysis to understand the relationships between these variables and the audience's engagement with political satire shows.

Results: Quantitative Survey and SPSS Analysis:

1. **Do television news satire programmes take over the role of traditional news channels in providing information?**

The study present study makes an effort to analyse the extent of political satire shows' legitimacy, influence, popularity, and satisfaction. A total of 120 samples were collected for thorough examination during the study, which was performed in Calicut University. This portion contains a thorough example profile as well as the study's summary and results.

Sample profile:

The sample profile of the study is on the basis of the demographic variable are gender and age. The number of respondents as well as the total percentage is given below:

Table 1.1 Sample Profile

Characteristics	Parameter	Frequency

		(%)
Gender	Male	61(50.8%)
	Female	59(49.1%)
Age	18-33	48(40%)
	34-49	48(40%)
	50-65	24(20%)

Figures in parenthesis denote percentage

The details of the demographic profile of the respondents of this study is given in table 1.1, Out of the total 120 samples, males contribute to a sample majority 61% and 59% is female. Inthe age group 18-33 and 34-49, get 40% each and 24% in the age group between50-65.

Purpose of Watching:

Here the researchers found the purpose of watching political satire shows. The below tablerepresents the results:

Table 1.2 Purpose of Watching

Purpose	Frequency (%)
For socio-political affairs	8 (6.7 %)
For entertainment	22 (18.3 %)
For infotainment	81 (67.5 %)
No particular reason	9 (7.5 %)
Total	120

According to the findings, 67.5 % of those surveyed watched the political satire programme for informational purposes. 18.3 % of all respondents admitted to viewing the political satire programme for fun. The findings show that 6.7 % of respondents' goals were to obtain socio-political affairs.

2. Which medium used to watch political satire shows?

In this question, the researchers made a request from the respondents regarding the platform on which they view political comedy. Internet and television are the two available mediums. This is

limited because the majority of respondents utilize the suggested media to view parody programmes.

Table 1.3 Medium used to watch political satire shows

Medium	Frequency (%)
On TV	85(70.8%)
Through internet	35(29.2%)
Total	120

Figures in parenthesis denote percentage

The vast majority of respondents used television to view the political satire. The remaining 29.2% of survey participants are being monitored on line.

3. How long have you been viewing these political satire programmes?

In order to determine how long respondents have been watching these political satire programmes, the researchers have given them three options: less than six months, between six months and two years, and more than two years.

Table 1.4 how long do you watch political satire shows

How long do you watch	Frequency (%)
Less than 6months	17(14.2%)
6 months 2 years	70(58.3%)
More than 2 years	33(27.5)
Total	120

Figures in parenthesis denote percentage

Influence of demographic variables of age and gender on the viewing pattern of political satire shows Gender and mostly watched satire shows:

Table 1.5 Gender and mostly watched satire shows

		Mostly watched satire show				
		Gum-Asianet news	Thiruva Ethirva Manorama news	Vakradrishti-Mathrubhumi	Polimix-Mediaone	Total
Gender	**Male**	28	17	10	6	61
		45.90 %	27.90 %	16.40 %	9.80 %	100.00 %
		23.30 %	14.20 %	8.30 %	5.00 %	50.80 %
	Female	23	15	14	7	59
		39.00 %	25.40 %	23.70 %	11.90 %	100.00 %
		19.20 %	12.50 %	11.70 %	5.80 %	49.20 %
Total		51	32	24	13	120
		42.50 %	26.70 %	20.00 %	10.80 %	100.00 %
		42.50 %	26.70%	20.00 %	10.80 %	100.00 %
Pearson Chi-square Value= 1.326^a, df=3, P Value= .723						

The relationship between respondents' most-watched political satire shows and gender is seen in the table. In light of the gender, out of 23 male responders, 54.90 % watch Gum. 51 respondents watched Gum, and 45.10 % of them were female. Out of 15 responses, 53.10 % of them were men who responded to Thiruva Ethirva. There are 7 male respondents in Polimix, representing 46.20%; the p-value (.723) suggests that there is no statistically significant relationship between gender and the most-watched political satire programme.

Purposes of watching and gender

The reason and gender of the respondents' viewing of political satire shows are shown in the table below. In total, 59 (49.20 %) female respondents 5 (62.50%) and 61 (50.80 %) male respondents 3 (37.50 %) watched political satire programmes for socio-political concerns, respectively.

Table 1.6 Purposes of watching and gender

		For what purpose do you watch political satires how				
		For socio-political Affairs	For entertainment	For infotainment	No particular reason	Total
Gender	Male	3	12	41	5	61
		(37.50 %)	(54.50 %)	(50.60 %)	(55.60 %)	(50.80 %)
	Female	5	10	40	4	59
		(62.50 %)	(45.50 %)	(49.40 %)	(44.40 %)	(49.20 %)
Total		8	22	81	9	120
		100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Pearson Chi-square value= .772^a, df=3, P-value=.006						

The table shows the purpose of the respondents watching political satire show with gender. In total 61(50.80 %) male respondents 3 (37.50 %) were watching political satire shows for socio-political affairs, while a total of 59 (49.20 %) female respondents 5 (62.50 %) were watching for socio-political affairs. For entertainment purpose, 2 (54.50 %) male and female 10 (45.50 %) respondents watched satire shows. The majority of the male 41 (50.60%) respondents used satire shows for infotainment and the majority of female respondents 40 (49.40 %) watched satire shows for infotainment purpose, and 5 (55.60 %) male participants watched for no particular reason as well as 4 (44.40 %) were watched political satire shows for no particular reason. There is no significant difference between the purpose of watching the satire shows and gender because the p-value is 0.856.

Age and mostly watched satire shows:

Table 1.7 Age and mostly watched satire show

Mostly watched satire show		Gum-Asianet news	Thiruva Ethirva Manorama news	Vakradrishti - Mathrubhumi	Polimix - Mediaone	Total
	18-33	23	13	10	2	48
		(47.90 %)	(27.10 %)	(20.80 %)	(4.20 %)	(100.00 %)

Age	33-49	21	12	6	10	49
		(42.90 %)	(24.50 %)	(12.20 %)	(20.40 %)	(100.00 %)
	50-65	7	7	8	1	23
		(30.40 %)	(30.40 %)	(34.80 %)	(4.30 %)	(100.00 %)
Total		51	32	24	13	120
		(42.50 %)	(26.70 %)	(20.00 %)	(10.80 %)	(100.00 %)
Pearson chi square value =12.345[a],df=6, p value=0.005						

In the 18- to 33-year-old age range, the majority (47.90 %) of viewers watched Gum, while the minority (4.20 %) watched Polimix, according to Table 1.7. The majority of people in the 33-49 age brackets watched Gum (42.90 %), whereas Polimix was seen by the minority (20.40 %). The majority of people in the 50–65 age brackets (34.80 %) watched Vakradrishti, while just 4.30 percent watched Polimix. The p-value is 0.055, indicating that there is no difference between age and the most popular satirical shows.

The age and medium through which people watching political satire show

The majority of respondents (56.30 %) who are viewing political satire shows between the ages of 18 and 33 see them on television, according to the study in Table 1.8 below:

Table 1.8 Age and medium of watching

Age and medium		Television	Social media/internet	Total
	18-33	27	21	48
		(56.30 %)	(43.80 %)	(100.00 %)
		39	10	49

Age	33-49	(79.60 %)	(20.40 %)	(100.00 %)	
	50-65	23	0	23	
		(100.00 %)	(0.00 %)	(100.00 %)	
Total		89	31	120	
		74.20 %	25.80 %	100.00 %	
Pearson chi square value =16.806[a],df=2,p value=0.000					

And the minority (43.8 %) is using the internet to view. The majority of those aged 33 to 49 (79.60 %) watch television, whereas 20.40 % use social media or the internet to do so. The majority of people in the 50–65 age bracket watch television, and none use social media or the internet. There is a substantial difference between age and the medium via which respondents watch political satire shows, as indicated by the p-value of 0.000.

The above below indicated the association with the age and the reason for watching the political satire shows. Within the age 18-33 the majority (64.60 %) watching for infotainment, (18.80 %) watches for entertainment, (8.30%) for socio-political affairs and (18.80 %) for no particular reason. Within the age group 33-49 the majority (71.40 %) watch for infotainment, minority (6.10 %) for getting socio-political affairs, (22.40 %) for entertainment purposes. Within the age 50-65 the majority (65.20 %) watches for infotainment, minority (4.30%) for getting socio-political affairs and (21.70 %) for no particular reason, (8.70%) watching political satire show for the entertainment function. There is no significant difference between the age and the purpose of watching the political satire shows because the p-value = 0.59.

Age and reason for watching political satire shows:

Table 1.9 age and reason

Age and reason for watching political satire shows		For socio-political Affairs	For entertainment	For infotainment	No particular reason	Total
	18-33	4	9	31	4	48
		8.30 %	18.80 %	64.60 %	8.30 %	100.00 %

Age						
	33-49	3	11	35	0	49
		6.10 %	22.40 %	71.40 %	0.00 %	100.00 %
	50-65	1	2	15	5	23
		4.30 %	8.70 %	65.20 %	21.70 %	100.00 %
Total		8	22	81	9	120
		6.70 %	18.30 %	67.50 %	7.50 %	100.00 %
Pearson chi-square value=12.157^a,df=6, p value=0.59						

Findings and Discussion:

The research question 'television news satire programs can replace traditional news channels in providing information' is an intriguing one. The table presents some key characteristics of the sample population, including gender and age distribution. Interestingly, the gender distribution is almost equal, with males comprising 50.8 % and females comprising 49.1 % of the sample. In terms of age, the sample is evenly distributed, with 40 % of respondents falling into each of the age groups of 18-33 and 34-49, while 20 % of respondents were between the ages of 50 and 65. The findings of the study suggest that a significant proportion of respondents, 67.5 %, watched political satire programs for informational purposes. This indicates that viewers do consider these programs as a source of news and information, which could suggest that television news satire programs could potentially take over the role of traditional news channels in providing information. However, it is important to note that 18.3 % of respondents admitted to viewing the program for fun, suggesting that entertainment value is also a factor in viewership.

Furthermore, the study found that a small percentage of respondents, 6.7 %, watched political satire programs to obtain information about socio-political affairs. This suggests that these programs could play an important role in educating viewers on important issues, potentially filling gaps left by traditional news channels. It is worth noting that the vast majority of respondents, around 70 %, used television to view political satire, while the remaining 30 % watched it online. This suggests that television news satire programs still have a significant reach and impact on viewers, and it would be interesting to investigate further how this may change in the future with the rise of digital media. Age group 18-33, the majority of viewers (56.3 %) prefer to watch political satire shows on television, while 43.8 % prefer social media/internet. For the age group 33-49, a significant majority of viewers (79.6 %) prefer to watch politicalsatire shows on television, while only 20.4 % prefer social media/internet. For the age group 50-65, all viewers (100 %) prefer to watch political satire shows on television and no viewers prefer social media/internet.

Overall, the data suggests that television is the preferred medium for watching political satire shows across all age groups. The Pearson chi-square test with a p-value of 0.000 indicates that there is a significant association between age and medium for watching political satire shows. Therefore, we can reject the null hypothesis that age and medium are independent variables for watching political satire shows. The data suggests that age plays an important role in influencing the choice of medium for watching political satire shows.

The majority of both male and female respondents indicated that they watch political satire shows for entertainment (54.5 % and 45.5 %, respectively), followed by socio-political affairs (37.5 % and 62.5 %, respectively) and infotainment (50.6 % and 49.4 %, respectively). Only a small percentage of respondents (5.6 % male and 4.4 % female) indicated that they watched political satire shows for no particular reason. The Pearson Chi-square test revealed a statistically significant association between gender and purpose for watching political satire shows (p=0.006). This indicates that gender plays a role in determining why people watch political satire shows. It is interesting to note that there were some differences in the reasons cited by male and female respondents for watching political satire shows. For instance, a higher percentage of female respondents indicated that they watch these shows for socio-political affairs, while a higher percentage of male respondents indicated that they watch them for infotainment. This suggests that there may bedifferences in the way that men and women consume and perceive political satire.

Overall, these findings suggest that political satire shows serve multiple purposes for viewers, with entertainment being the most common reason cited. The differences observed in the reasons cited by male and female viewers also highlight the need for more research into the ways in which gender influences the consumption of political satires.

Conclusion:

The analysis of SPSS data suggests that age played an important role in influencing the choice of medium for watching political satire shows, with television being the preferred medium for watching political satire shows across all age groups. The majority of both male and female respondents indicated that they watch political satire shows for entertainment, followed by socio-political affairs and infotainment. The differences observed in the reasons cited by male and female viewers highlight the need for more research into the ways in which gender influences the consumption of political satires. Overall, these findings suggest that political satire shows serve multiple purposes for viewers, with entertainment being the most common reason cited. However, the fact that a significant proportion of respondents watched these programs for informational purposes suggests that they could potentially take over the role of traditional news channels in providing information. This highlights the need for more research into the impact of political satire on viewers, as well

as the potential role that these programs could play in educating the public on important socio-political issues.

It is also worth noting that while television remains the preferred medium for watching political satire shows, the rise of digital media could have an impact on viewership in the future. Therefore, it would be interesting to investigate further how this may change in the future, particularly with the increasing use of social media and other online platforms. Overall, this study provides valuable insights into the consumption of political satire shows, highlighting the multiple purposes that they serve for viewers and the potential role that they could play in educating the public on important issues. However, further research is needed to better understand the impact of political satire on viewers and the ways in which gender and other factors influence the consumption of these programs.

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CLIMATE ACTION FOR CLIMATE JUSTICE IN INDIA AND CENTRAL ASIA

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Abstract As India holds the G20 presidency, its leadership role in combating climate change has increased manifolds. Its pledge at the COP26 to reach a net-zero emission by 2070 comes with many challenges. These include strengthening its energy networks; enhancing energy access and diversifying its energy resources. It will also have to pave its way through the international climate negotiations which require strong regional support from countries with similar developmental stages. India's relationship with its extended neighbourhood including the five Central Asian Republics plays a very important role in this regard. The region is rich in energy resources that India requires to minimize its own dependence on coal. While India has a growing thrust toward the transition to renewable and clean energy resources, the model that it develops can be helpful for replication in Central Asia Countries. The paper suggests greater environmental cooperation between the CARs. The Connect Central Asia Policy requires an impetus along with specifications on how the government of India shall ensure climate action with each of the five countries. The broad-based approach should be now progressed with a particular concentration on bilateral cooperation for overcoming environmental problems. The resolve of the current leaders and representatives of all the countries would play a significant role in ensuring this. This paper analyses how India can play a proactive role in supporting climate-resilient development in the countries of Central Asia. Water management remains a significant challenge and the Aral Sea remains the point of contestation. The focus of this research also includes the ways in which India can contribute to resolving such issues. One solution that this paper focuses on is enabling the civil society of all countries to come together on an official forum to proactively propagate a community-centric approach to solving climate issues that are turning into severe threats to human security. The 13th SDG calls for climate action and reducing the impact of climate change. Working together shall help all the actors engaging in climate action to achieve sustainable development and prosper.

Introduction:

Climate change has been stated as "the biggest threat to security that modern humans have ever faced." It is a crisis multiplier because it has short-term and long-term effects (United Nations, 2021). The 21st century is witnessing India taking a leading position in effective climate action. Its various initiatives including the establishment of the International Solar Alliance are aimed at increasing renewable sources of energy and reducing the release of Green House Gas emissions. India has joined hands with countries near and far to cooperate in combating climate change. India's extended neighbourhood which includes the five Central Asian countries, is also very crucial for this. Therefore, the Connect Central Asia policy will gain more impetus as the countries strive to come together to fulfill their converging goals.

A total of 17 Sustainable Development Goals aim at bringing peace and prosperity. The 13th Sustainable Development Goal is to limit and adapt to climate change. And the implementation of the Paris Agreement which aims to hold the temperature well below two degrees Celsius becomes crucial for the fulfilment of sustainable development goals. India has committed to reducing the emission intensity of its gross domestic product (GDP) to 45% below 2005 levels by 2030 (Sharma, 2023). The Central Asian Republics too have pledged to fulfill the aim. Kazakhstan has pledged to achieve carbon neutrality by 2060 (Bjerde, 2021). Uzbekistan has announced intentions to reduce specific greenhouse gas emissions per unit of GDP by 35 percent by 2030 from the 2010 level (United Nations Development Program, 2022). With international support, Kyrgyzstan aims to reduce its greenhouse gas emissions by 44% by 2030 (Sabyrbekov et al., April 2023, 40). Turkmenistan has country pledges to reduce its greenhouse gas (GHG) emissions by 20% by 2030, compared to 2010. Tajikistan commits to a 40-50% reduction in emissions by 2030 compared to 1990 levels (`United Nations Development Programme, 2023). However, these changes will be conditional on two major developments. The first one is the need for international support. And the second one would be how efficiently the countries can negotiate at the international level while discussing the issue of climate change. For both conditions to be fulfilled, there is a need for a strong regional grouping of countries that are steadily growing and battling climate change. The effects of climate change have multiplied in Central Asian countries due to poor planning and rapid population growth in urban centres. Water shortage in Central Asian Countries forms one of the core issues that have hampered sustainable development. Uzbekistan and Turkmenistan belong to the "severe water stress" category, and the WSIs are increasing in both countries. Tajikistan is classified as having "high water stress." Kyrgyzstan and Kazakhstan both exhibit "moderate water stress." (Wang et al., 2022). The stress on resources has led to various conflicts arising in the region. India strives for peace and stability; it can be helpful for the countries of its ability to negotiate and resolve disputes. The recent reports throw ample light on the shrinking water resources of the region but there is little consolidated work on how India can become a partner to the Central Asian Countries in their quest to mitigate and

adapt to climate change. It is worth noting that India too will have a lot to gain in terms of achieving its goals to reduce its energy dependency on coal and reduce its emissions of greenhouse gases. With the abundance of energy resources in Central Asian countries, energy has become the most important area of cooperation. The completion of the TAPI (Turkmenistan-Afghanistan-Pakistan India) pipeline would also have a considerable effect. India is a formidable beneficiary of the TAPI pipeline, with 14 bcm of natural gas arriving in the country every year, in addition to its other sources of gas import and production (Abbi, 2016)

India's Prime Minister Narendra Modi visited all five Central Asian countries in 2015. In 2021, New Delhi hosted the third India-Central Asian dialogue. In 2022, the countries came together to celebrate their 30th anniversary of diplomatic relations. This meeting explored new vistas of cooperation based on mutual interests and the need to deepen strategic engagement in the "4cs"—commerce, capacitybuilding, connectivity, and contact. (Bhattacharya, 2022) It is about time the countries add another 'C' to this that would stand for Climate Action (Bhattacharya, 2022).

Objectives:

This research aims to focus on the importance of enhanced cooperation on climate action, climate mitigation, and climate resilience between the Central Asian countries and India while underlining the role of regional organizations, civil society, and multilateral engagements.

It focuses on water management issues of Central Asian countries and India's dependence on non-renewable sources of energy while suggesting ways in which the countries can come together to solve the problems. Connectivity, trade, and people-to-people connections will all play a significant role in multilateral engagement.

Research Methodology:

The research paper uses qualitative content analysis. The case study approach has been used to obtain in-depth information on the phenomenon of the shrinking of the Aral Sea. The paper also considers the press releases by the governments in order to utilize information on the efforts to combat climate change and on the cooperation with other countries.

Discussion and analysis:

According to the United Nations Development Project report, Central Asia is warming faster than the global average. Increased incidence and velocity of extreme weather events and disasters threaten physical security, critical infrastructure, and access to healthcare and education (United Nations Development Programe, 2022). All the Central Asian countries are landlocked. At the UN Climate Change Conference COP27, it was discussed that landlocked developing countries have an increased vulnerability to droughts, floods, glacial lake outflow flooding, landslides, and erratic weather. This is

because of their isolation from global markets, level of development, and great reliance on climate-sensitive sectors (United Nations, 2022).

Figure 1: Geographical Features of Central Asian Countries (*Central Asia Physical Map*, n.d.)

The region of Central Asia has a very diverse geography, ranging from vast deserts to mountain ranges; from inland waterways to steppes. More than 40% of Central Asia is desert, which includes the two major deserts – the Northern and the Southern deserts. The desert area has extreme temperatures, with the regular occurrence of dust storms. As the map attached below (Figure 2) shows the maximum area is arid and semi-arid so the concern remains that the desert climate with infrequent rainfall will spread, heightening the chances of droughts. Since the 1980's the desert climate has expanded northwards in the region by over a hundred kilometres (Hu & Han, 2022)

The ecosystem of a different climate type directly gets affected, which results in the flora and fauna becoming extinct or endangered. Agriculture is getting severely affected and it requires urgent climate adaptation. According to Ms. Sunita Narain, a leading environmentalist, there is more than one way in which climate-resilient societies can be built. While financial support is important, other ways include early warning systems for climate disasters, peoples' participation, and switching to localized rain collection and waste systems.
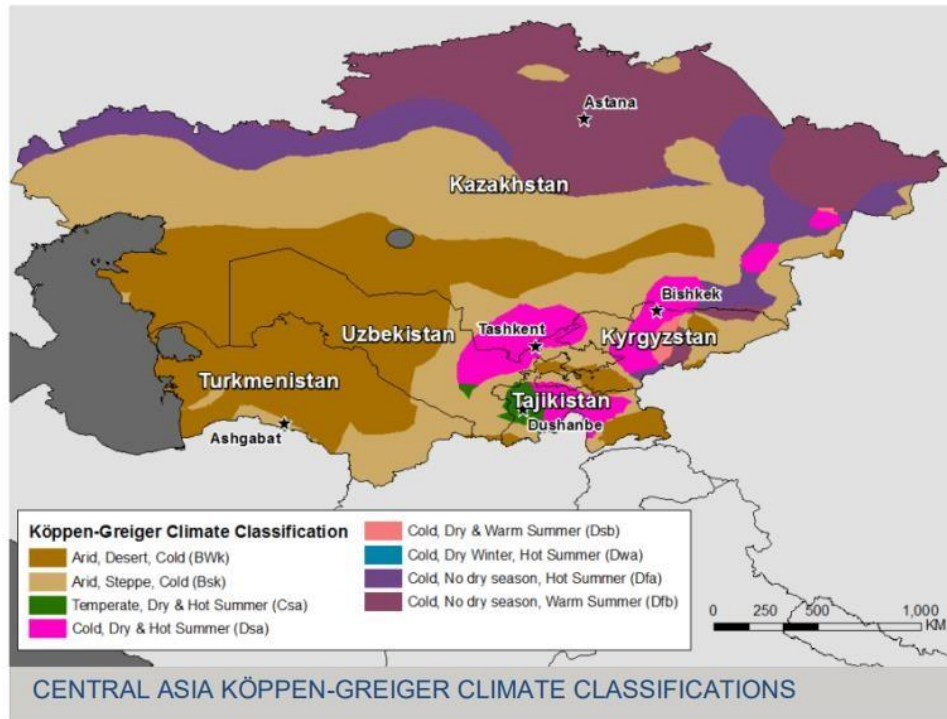
Figure 2: Central Asia Köppen-Greiger Climate Classifications (USAID, 2018)

India and Central Asia should cooperate in building climate-resilient societies, wherein India can extend its international development cooperation. The capacity-building programs undertaken by India would include the aspect of climate action. A people-centric model of climate adaptation should be formulated by India. The transformation of the small village named Ralegan Siddhi in Maharashtra, through community participation will stand as a blueprint that can be replicated in Central Asian countries. The World Bank recognized that the village of Ralegan Siddhi was transformed from a highly degraded village ecosystem in a semi-arid region of extreme poverty to one of the richest in the country. Modern-day technological developments can be fused into the model.

The Syr Darya River flows from the Tien Shan Mountains and the Amu Darya River flows from the Pamir Mountains. Both rivers serve as an important source for irrigation of the crops grown in the region, wheat and cotton being the prominent ones. Uzbekistan, Turkmenistan, and Kazakhstan form the downstream countries and face a restricted supply of water. Combined with this is the outdated canal system, which exacerbates the water shortage. A presidential decree was issued in April 2023 in Uzbekistan which forecasted that the volume of water in the region's two main rivers would shrink by up to 20 percent in the coming irrigation season as compared to a recent multi-year average (Leonard, 2022). The inland water bodies are also undergoing severe pressure due to the continuously reducing water level. The Aral Sea is about to vanish with the entire ecosystem collapsing due to water shortage. It has been called "the most staggering disaster of the twentieth century" by the United Nations Development Programme. It lies between Uzbekistan and Kazakhstan, and the source of water to the lake was the Syr Darya and the Amu Darya rivers, until the 1960s when the then-Soviet government

decided to divert them for irrigation programs. The contraction of the sea has multiple effects on the lives of the people living nearby, whose livelihoods were dependent on the fishing industries and agriculture from the water.

Figure 3: The Aral Sea: August 2000 (left) versus August 2016 (right) by NASA Earth Observatory (Plummer, 2016)

India also faces issues regarding water shortage, and there have been multiple initiatives by the government and civil society across the country to solve the water problem. Currently, the Jal Shakti Abhiyan (JSA) is focused on water conservation and rainwater harvesting. With similar issues of climate change being faced, India and Central Asian countries can come together and exchange ways in which water bodies can be rejuvenated and infrastructure can be strengthened. India is pioneering a new model of economic development that could avoid the carbon-intensive approaches that many countries have pursued in the past – and provide a blueprint for other developing economies (Birol & Kant, 2022). The efficiency of geospatial technologies in the management and monitoring of resources has been proven already. Geospatial technology includes Geographic Information System (GIS) which allows detailed mapping of the water bodies and their underlying features so that rejuvenation can be done. The successful case of using this technology was the rejuvenation of Springs in Resum Forest in Rinchenpong town in West Sikkim district in India (Mishra, 2022). Climate adaptation and mitigation require informed decision-making and judicious resource management which can be enabled by geospatial technologies. The leading NGO on geospatial technology in India, the Association of Geospatial Industries (AGI) has mentioned in its report titled 'Potential of Geospatial Technologies for the Water Sector in India' the scope for multilateral and bilateral relations by the virtue of extending geospatial technology (Association of Geospatial Industries, 2021). India's friendly neighbours like the Central Asian countries can benefit from the other technological developments in which India excels through enhanced interaction between the civil societies. Through track two diplomacy, focused engagement strategies on climate action can be developed. The growth of environmental NGOs in the Central Asian Republics

will contribute to this (Toogood-Luehrs, 2010). The exchange of technology and expertise must also be extended in the field of generating energy from renewable sources. Keeping this in focus, the Federation of Indian Chambers of Commerce & Industry (FICCI), the non-governmental trade association in August 2022, organised the India-Central Asia Business Council Webinar on Energy Cooperation (Chaudhary, 2022). The spirit to strengthen cooperation to reduce greenhouse gas emissions through joint projects has been reflected in the statement by Bandaru Wilsonbabu, Joint Secretary, Ministry of External Affairs, India, "India stands ready to share its experience and expertise in renewable energy and welcomes the Central Asian countries in the International Solar Alliance and the One Sun, One World, One Grid initiative" (Chaudhary, 2022). The maximum potential of solar energy lies in Kazakhstan, recognizing that the Indian Prime Minister has extended the membership of the International Solar Alliance to it in 2018. The Central Asian countries are not constrained by a lack of resources but by the lack of its proper utilization. Forming policies, ensuring good governance, and giving the best practices model for renewable energy can be done by leveraging India's technology and experience. The Connect Central Asia policy's connectivity aspect requires more focus. With greater connectivity and trade flowing between India and Central Asia, India's aim of achieving energy diversification will become more feasible. Currently, India depends largely on coal and oil. With increased investment and political willpower in the Central Asian Countries, India can have positive engagements for energy security.

Initiated by India, Asia can also have a regional grouping dedicated to exchanging best practices, technology, and innovation with a fund that would solely look after combating climate change. This would essentially serve two significant purposes; firstly, it would strengthen India's position and relation with its near and far neighbours while ensuring Asia-centric policies as opposed to the West-focused climate action policy; and secondly, it would make Central Asia a more integrated part of Asia. The Shanghai Cooperation Organisation is centered on the conventional aspects of security, but it also has a say in other global issues that concern its member countries like energy security. With three major countries, India, Russia, and China as its members, the organisation can play a prominent role in promoting the interest of developing countries by stressing more balanced measures to reduce emissions. The statement issued by the SCO in its Annual Summit of 2022 said "Unilateral coercive measures violate multilateral principles, seriously undermine multilateral cooperation and collective and national efforts to address climate change, and weaken the ability of countries to address climate change." This displayed the power that multilateral forums provide in international climate negotiations. India can use the forum to push for greater equity in setting up of goals for reducing emissions. It can push for the adoption of goals that follow the idea of "Common But Differentiated Responsibilities" which focuses on how the developed countries need to take more responsibility.

Conclusion:

Climate action requires collaboration at multiple levels. With India steering inclusive growth, the countries coordinating with it will always have a positive impact. With an ambitious aim of reaching net zero emissions by 2070, India will require to enhance engagement with the Central Asian countries. The civilizational linkages and the strong cultural connection act as fundamental factors that shape the international relations of India-Central Asia. Utilizing them efficiently to implement the connectivity projects and cooperate on climate change should be prioritized. Asia has countries that are developing and regional powers. To achieve sustainable goals, the region will have to strive for a low-carbon growth trajectory. India and Central Asia will have an important role to play.

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EVALUATION AND PUBLIC ACCEPTANCE OF FABRIC AND CLOTHING MADE FROM PLASTIC WASTE MATERIAL

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ABSTRACT: Plastics has been defined as synthetic organic polymers throughout the 20th century (Elias, 2018). Across the modern world, plastics usually replace glass, aluminum, and natural fibers because of their convenient features such as versatility, lightweight, and low cost. The excessive consumption of plastic and failure to manage plastic waste may however lead to several environmental, economic, and health-related complications. Plastics pollute the air, drinking water resources, marine ecosystems, and land habitats. Plastic waste has become an issue in Ghana since it is a major source of pollution. There have been several attempts by government to ban the use of plastic materials. However, some of the plastic material serve as packages for some products which are essential and banning such plastic material proves not to be an option. Recycling however needs to be divers and sustainable for the required outcome to be achieved. Primary recycling which involves the use of the material in its present state is a more cheap and sustainable method to go. Alternatives for primary recycling of plastic which can provide sustainable livelihood is critical. Rasel & Sarkar (2019) have shown the possibility of the use of plastic in the manufacture of fabrics but in this case not in the same state it was used as a packaging material but broken into small bits and melted. This study tries to see how plastic materials can be used to make clothing that are appealing without heating them or taking them through processes that might need high initial capital investment. This is believed would make the recycling process sustainable. A cross-sectional quantitative study done using One Hundred and Fifty (150) fashion students at the Accra Technical University and the four private fashion institutions. The results showed that the best possible use of waste is for clothing with costume being the best possible use of plastic waste for clothing. People would prefer sportswear made from plastic waste compared to other products since it was most liked for design, finishing and overall acceptance.

Key words: Plastic waste, Recycling, Fabric, Clothing.

1 INTRODUCTION :

"Plastics" has been defined as synthetic organic polymers throughout the 20th century (Elias, 2018). Across the modern world, plastics usually replace glass, aluminum, and natural fibers (Critchell et al., 2019) because of their convenient features such as versatility, lightweight, and low cost (Geyer et al., 2017). The excessive consumption of plastic and failure to manage plastic waste may however lead to several environmental, economic, and health-related complications. Plastics pollute the air, drinking water resources, marine ecosystems, and land habitats (Gasperi et al., 2018; Critchell et al., 2019; Schwarz et al., 2019). These substances gradually find their way into the oceans and seas either by direct discharge or by rivers, waterways, sewage, tide, or even by the wind (Geyer et al., 2017). The accumulation of plastics in the marine ecosystems and the pollution caused by them destroy the habitats and force the species to migrate to new areas.

It should be noted that plastics (microplastics, to be more precise) ultimately leads to the human and animal food chains and accumulates in tissues of marine organisms (de Sá et al., 2018). Nowadays, plastics are used for a large and growing variety of products, applications and sectors, becoming an essential part of the daily life (Faraca & Astrup, 2019). Evidence of this is that the European plastic industry had a trade balance of more than 15 billion euros in 2018 (Plastics Europe, 2019a). Plastics are used every day for food packaging, distribution and preservation, housing, healthcare, industrial and agricultural applications, security systems, households and other uses. Therefore, with such wide varieties of usage and demand, it contributes to the ever-rising volume of the solid wastes stream (Babayemi et al., 2019).

Plastic waste has become an issue in Ghana since it is a major source of pollution. There have been several attempts by government to ban the use of plastic materials. However, some of the plastic material serve as packages for some products which are essential and banning such plastic material proves not to be an option. Recycling however needs to be divers and sustainable for the required outcome to be achieved. Rasel & Sarkar (2019) have shown the possibility of the use of plastic in the manufacture of fabrics but in this case not in the same state it was used as a packaging material but broken into small bits and melted. However, there is the need to ascertain uses of plastics that are sustainable to those who intend to use products made from plastic. This is necessary to make the use of such products made from recycled plastic sustainable. This study tries to see how plastic waste materials can be used to make clothing that are appealing without taking them through processes that might need high initial capital investment. This is believed would make the recycling process sustainable.

2. METHODOLOGY:

RESEARCH DESIGN

The study was a cross-sectional study. The study employed a quantitative research method. To carry out the study, a field survey using questionnaires was conducted on fashion students at the Accra Technical University and four other private fashion institutions concerning the possible use of plastic waste and

possible fabric and clothing that plastic waste in their same state can be recycled into. Ideas taken from the students was used to produce sample clothing and fabrics and assessed for its appeal and acceptance from fashion designers. Question asked are based on studies on uses of plastic waste (Maitlo et al., 2022: Rawahi et al., 2022)

POPULATION FOR THE STUDY

The population of the study was fashion students from the Accra Technical University and Four other private fashion schools.

SAMPLING TECHNIQUE(S)/SIZE

This research used the purposive sampling method to select the fashion the Accra Technical University and the private fashion schools for the study. One Hundred and Fifty (150) fashion students at the Accra Technical University and the four private fashion institutions were selected at random and used for the study using the sample size calculation (Nanjundeswaraswamy & Divakar, 2021). The selected students were grouped into the different degree programs offered for fashion students (Advance certificate, HND and degree) at the Accra Technical University using the group sampling techniques. Each program had 50 students. Fifty (50) fashion students at the Accra Technical University and four other fashion institutions were also selected at random used for the acceptance survey for fabric and clothing made from plastic waste based on accepted range of sample for product acceptance test of between 5o to 400 (Gacula & Rutenbeck, 2006).

DATA ANALYSIS TECHNIQUE

The SPSS software was used to perform descriptive statistics on the different variables used for the study to generate frequencies and percentages. The output was represented using a bar chart and graph.

ETHICAL CONSIDERATIONS AND APPROVAL

All ethical processes were duly followed. An introductory letter was given to the department of Fashion Design and Textiles at the Accra Technical University to inform them of my intention before the start of my study to assure the respondents of confidentiality and anonymity of their responses to the various items in the questionnaire before the study was begun. Informed Consent was sort from all participants before the study begun. Ethical approval was obtained from the ethical board of the ATU before commencement of the study.

3 RESULTS :

3.1 BACKGROUND CHARACTERISTICS

The results of the background characteristics of the study show that majority of the respondents (73.3%) are females with a few being males as can be seen in Figure 1. The results imply that more females than males enrolled on the fashion program compared to males. This is indicative that more females prefer to study fashion designing compared to males. Also, it was observed that the majority of the respondents (63.3%) were also identified to be within the age range 21-25 years with just a few being 36 years and above as can be seen in Figure 2. The results from the age distribution of the respondents indicate most of the fashion

students are adults. Most of the respondents (97.3%) were also identified to be single as compared to a few who were married as can be seen in Figure 3. Most of the respondents (91.3%) were also observed to be Christians with a few being Muslims (Figure 4). The results on religion distribution and marital status implied that most Christians enroll on the fashion program. Also, most of the single people enrolled on the fashion program. This observation could be due to the age at which most of them enroll on the program and in Ghana, fewer people get married at the enrollment age in the tertiary institution. The majority of the respondents (25.3%) were HND level 300 students with being advance Level 200 students (Figure 5).
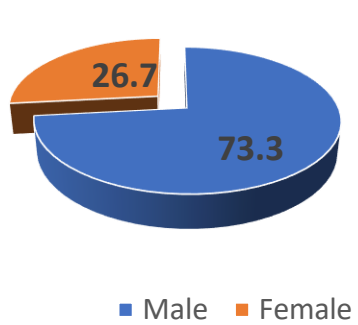
Figure 1: Gender of respondents
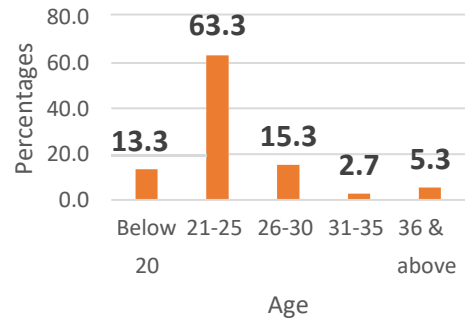
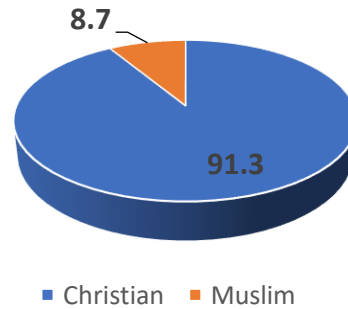Figure 2: Age distribution of respondents
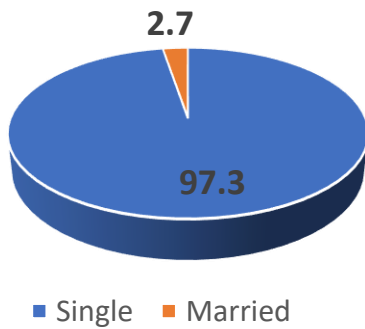
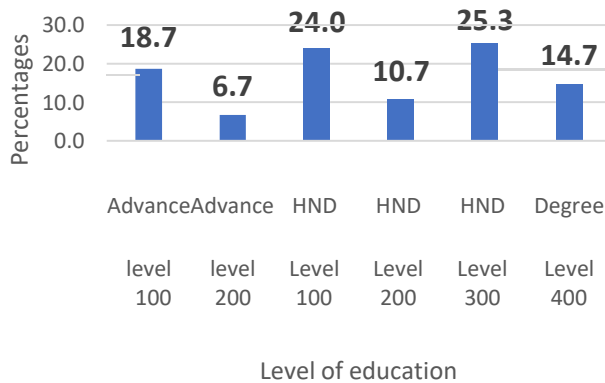Figure 3: Marital status of Respondents


Figure 4: Religion of Respondents

Figure 5: Level of education

3.2 POSSIBLE USES FOR PLASTIC WASTE MATERIAL:

The result on the possible uses for plastic waste as shown in Figure 6 below shows that most of the respondents (32.7%) agreed that plastic waste material can be used for utensils. Most of the respondents (40.7%) also agreed that plastic waste material can be used for electricals. Similarly, most of the respondents (49.3%) agreed that plastic waste material can be used for luggage. Most of the respondents (34.0%) agreed that plastic waste material can be used for waste bins. Most of the respondents (46.0%) however strongly agreed that plastic waste material can be used for clothing with (43.3%) also agreeing to this. Most of the respondents (47.3%) agreed that plastic waste material can be used for construction materials. Most of the respondents (46.7%) also agreed that plastic waste material can be used for furniture. Most of the respondents (36.0%) were however neutral that plastic waste material can be used for pharmaceuticals. Most of the respondents (36.7%) also agreed that plastic waste material can be used for energy generation. Most of the respondents (46.7%) also agreed that plastic waste material can be used for beddings. According to Conilie et al. (2021) to reduce domestic waste, plastic waste can be converted into a variety of useful goods. Maitlo et al. (2022) identifies that plastic waste can be recycled into construction materials, electrical products, home appliances, clothing and accessories etc.

The result on the possible uses for plastic waste implies that most of the fashion students opine that the best possible use of waste is for luggage. Luggage is however made from fabrics. The respondents were not certain on the use of plastic waste material for pharmaceuticals. Rawahi, et al. (2022) identifies that most people would prefer that plastic waste are recycled into fabrics. Ananthan et al. (2020) also in their studies confirms the investment of a number of multinational companies in the use of plastic waste in the production of clothing.

Lugage

Waste bins

Clothing

Construction material

Furniture

Pharmaceuticals
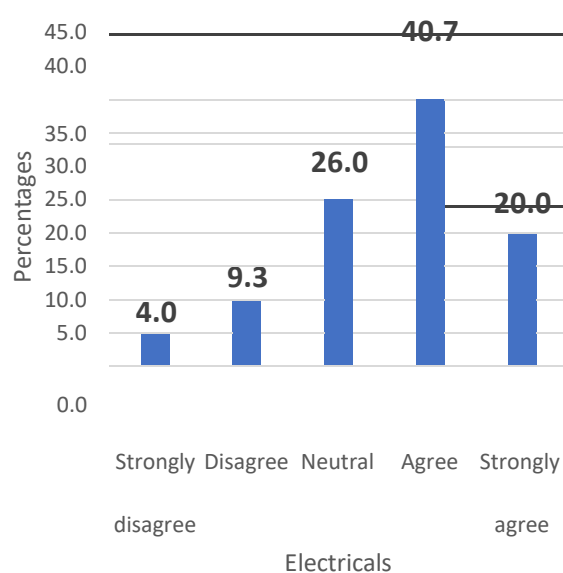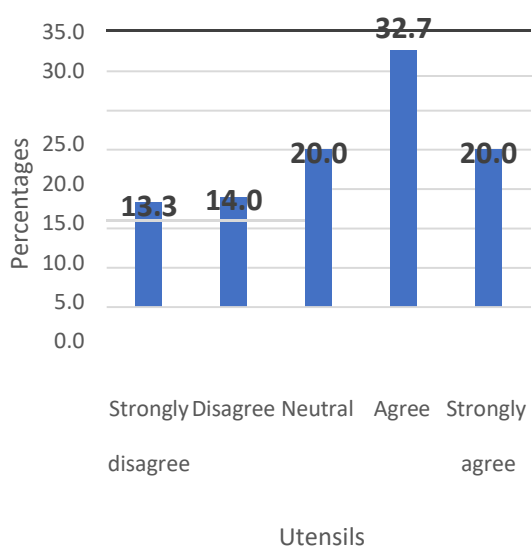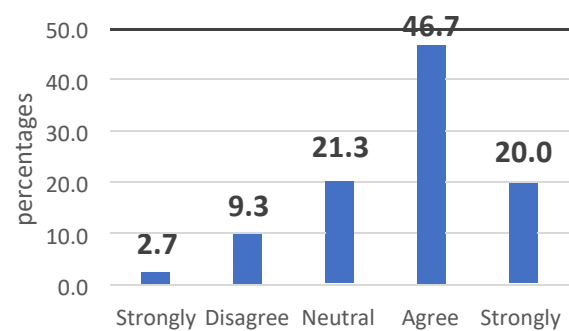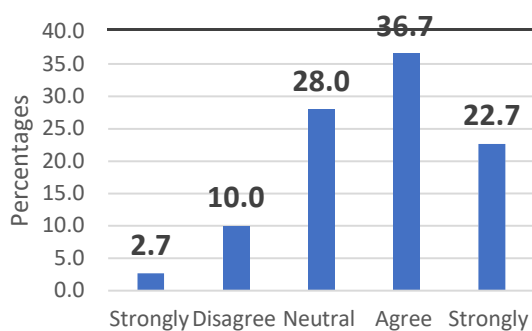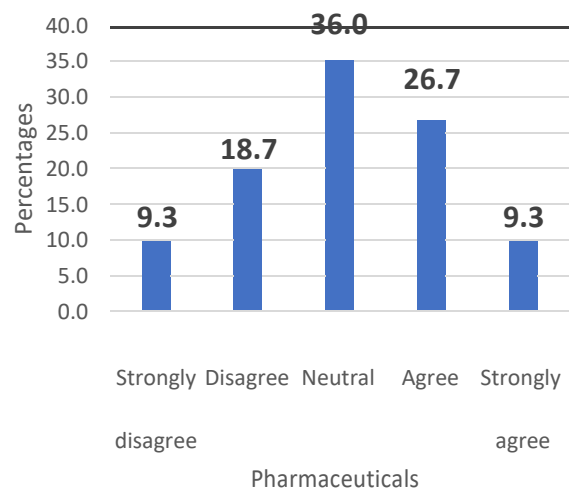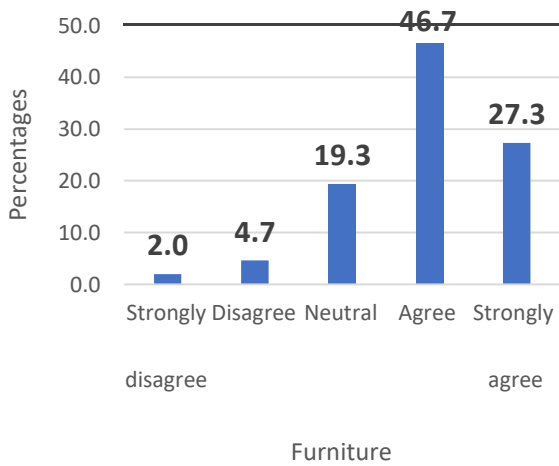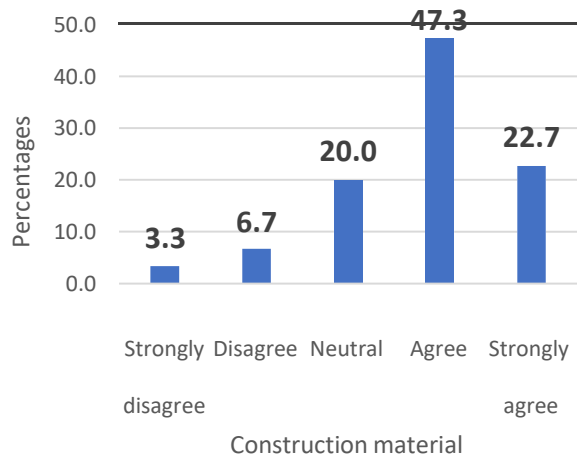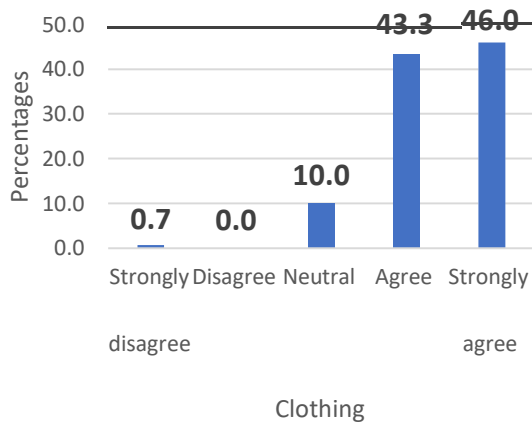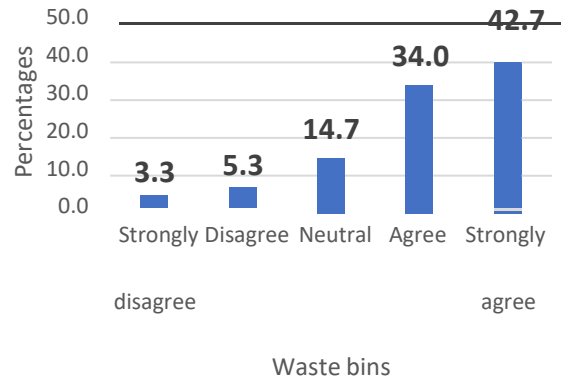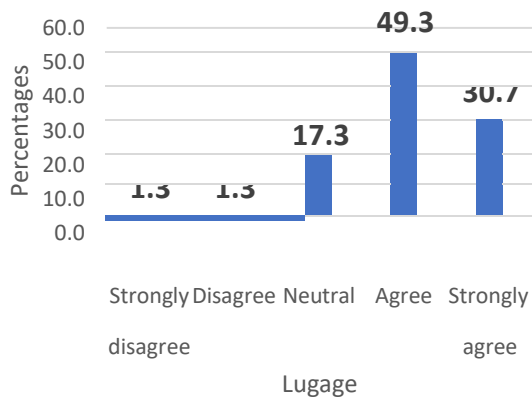
disagree   agree   disagree   agree

Energy generation   Bedding

Figure 6: Possible use for plastic waste

3.3 POSSIBLE USE OF PLASTIC WASTE IN CLOTHING:

The result on the possible use of plastic waste in clothing as in Figure 6 below shows that most of the respondents (46.7%) agreed that plastic waste material can be used for apparel. Most of the respondents (36.7%) also agreed that plastic waste material can be used for footwear. Similarly, most of the respondents (46.7%) agreed that plastic waste material can be used for sportwear. Most of the respondents (40.0%) agreed that plastic waste material can be used for waste traditional ware. Most of the respondents (43.3%) agreed that plastic waste material can be used for formal wear. Most of the respondents (46.7%) agreed that plastic waste material can be used for accessories. Most of the respondents (45.3%) also agreed that plastic waste material can be used for jeweler. Most of the respondents (50.7%) were however neutral that plastic waste material can be used for costumes.

The results on the possible use of plastic waste in clothing indicates that most of the fashion students opine that the best possible use of plastic waste for clothing is for costume with footwear being the least product from plastic waste. According to Rasel & Sarkar (2019) PET can be recycled to produce secondary products such as carpet fibres, pillow stuffing, bags, strapping materials and fibre for yarn.
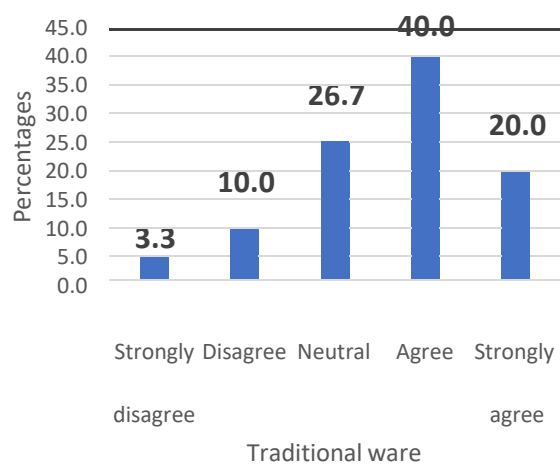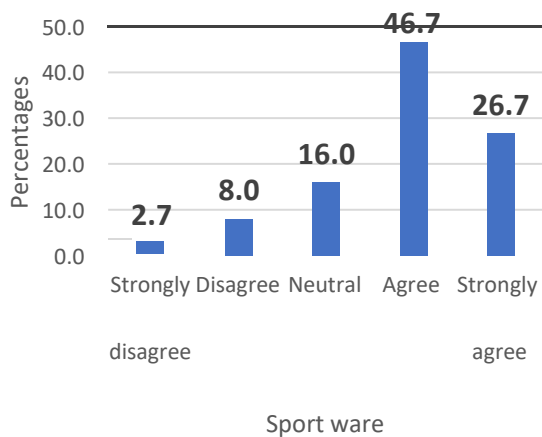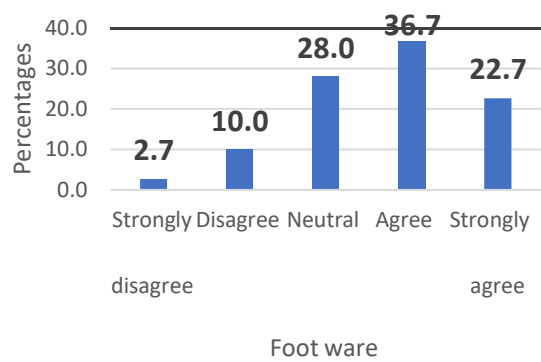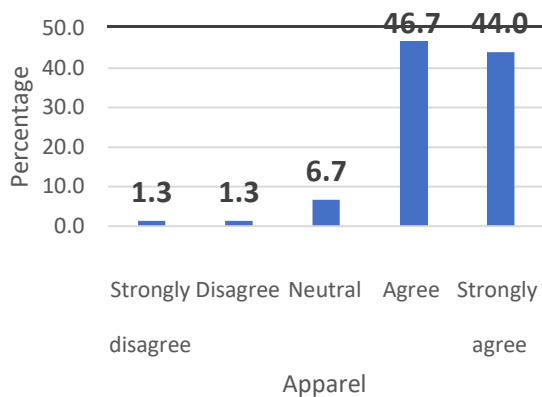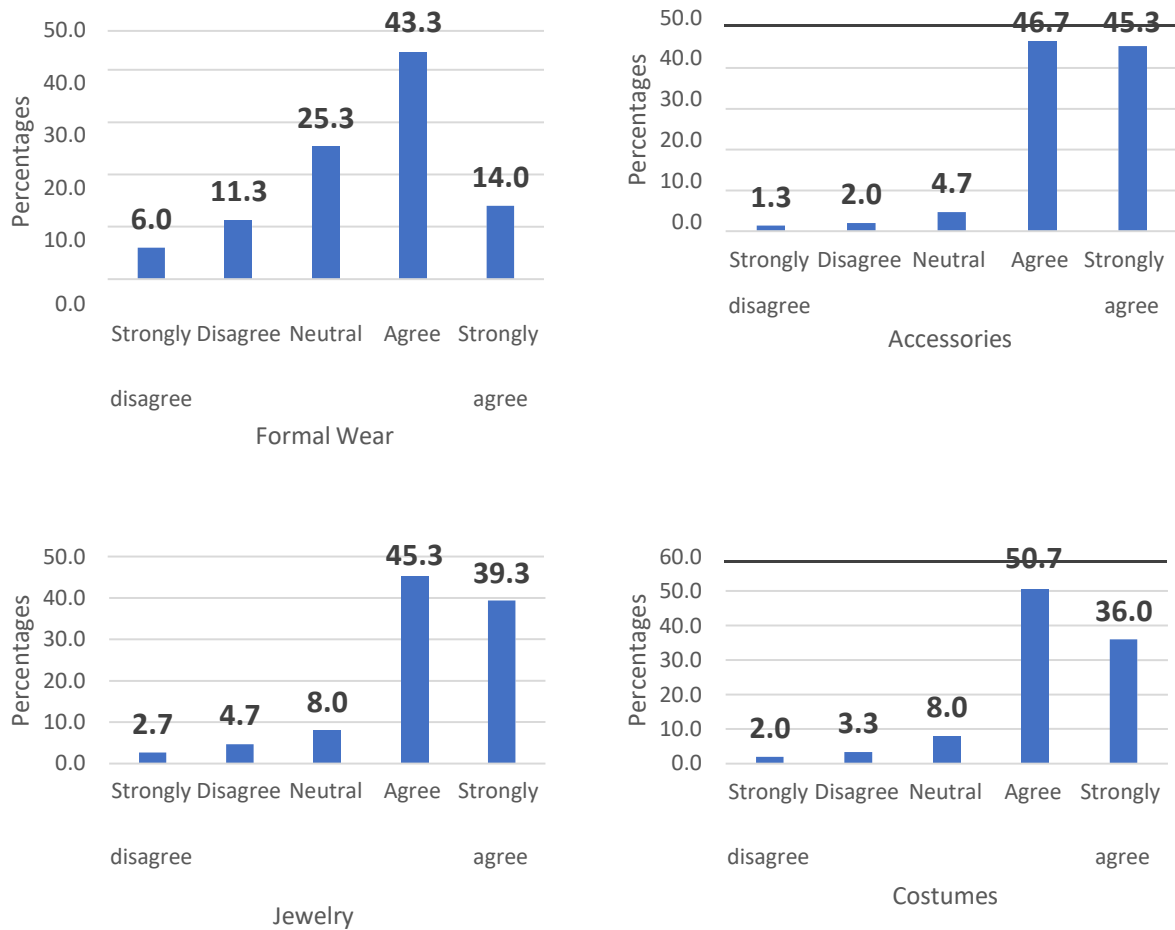
Figure 7: possible use of plastic waste in clothing

3.4 FASHION DESIGNERS' ACCEPTANCE OF FABRIC AND CLOTHING MADE FROM PLASTIC WASTE MATERIAL:

Plastic wastes were made by the researcher into four clothing products (Figure 8) based on the responses from the fashion students and presented to the students for them to indicate their level of likeness for the products for colour, design, finishing and overall acceptance. The results on public acceptance of fabric and clothing made from plastic waste material as shown in figure 9 shows that for colour, majority of the respondents (29) liked extremely the colour for the sportswear. For design, majority of the respondents (29) liked extremely the design for the sportswear. For finishing, majority of the respondents (28) liked extremely the finishing for the sportswear. For overall acceptance, majority of the respondents (29) liked extremely the all the features put together for sportswear.

The results imply that for all the item produced from recycled plastics, comparatively plastic made into a sportswear is most liked in terms of design, finishing and overall acceptance.

Figure 8: Samples of clothing made from plastic waste
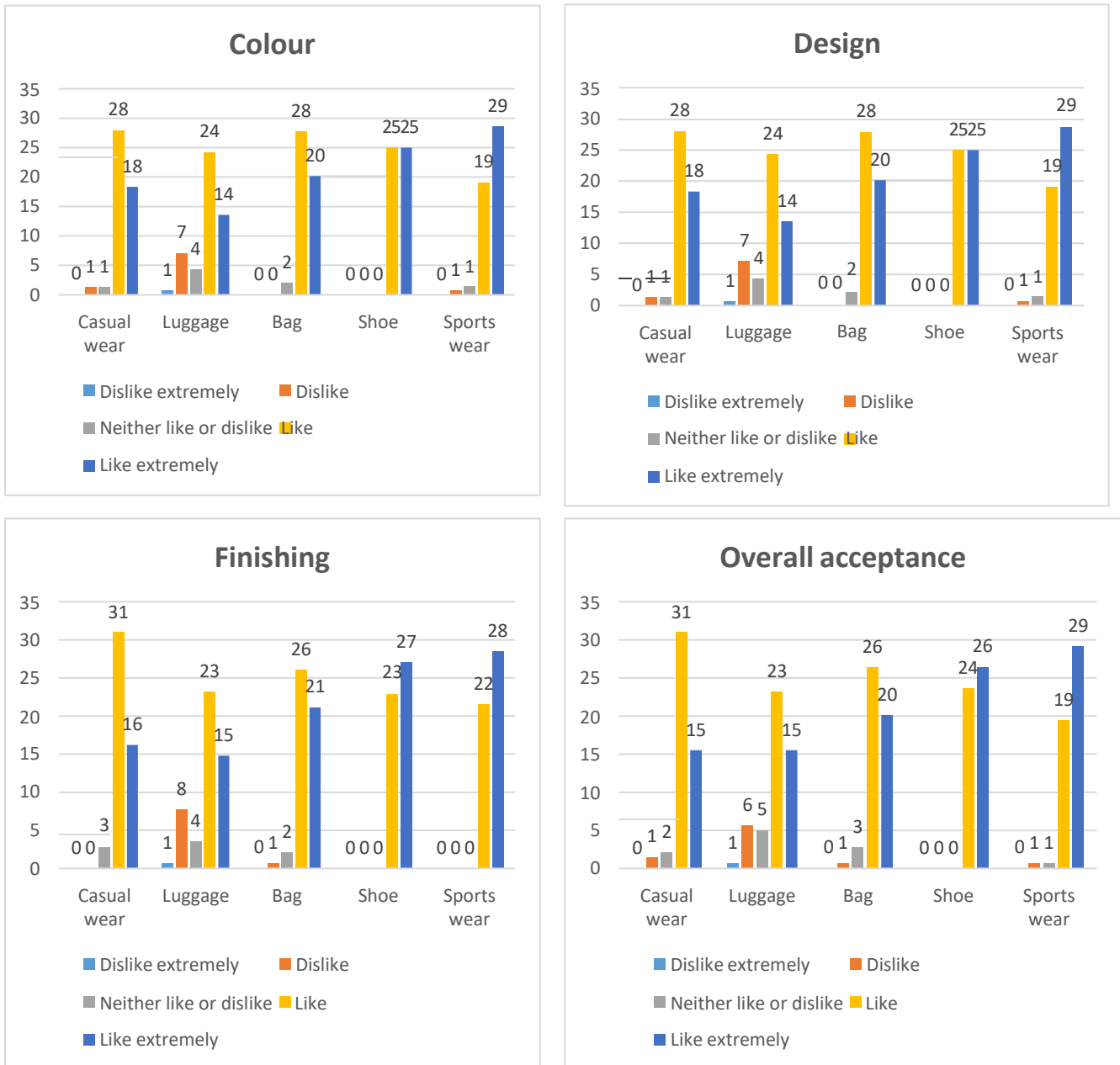
Figure 9: Level of acceptance of fabric and clothing made from plastic waste material

4 CONCLUSIONS :

It can be concluded from the study that there are number of products into which plastic waste can be recycled into. Of these products, the best possible use of the plastic waste is for clothing with the use of plastic waste in making costumes being the best possible use of plastic waste for clothing. People would prefer sportswear made from plastic waste compared to other products since it was most liked for design, finishing and overall acceptance.

5 RECOMMENDATIONS

It is recommended from the study that further studies should be conducted to see how further recycling of the plastic waste can impact on the possible use as well as acceptance of clothing produced from plastic

waste. Also, an exploratory study using mainly participant who consume fashion product should be done to understand how consumers would accept fabric and clothing made from waste plastics.

Limitation to the study:

The study tried to examine acceptance of fabric and clothing made from plastic waste. The study used fashion students from the ATU. Responses on the acceptance of fabric and clothing made from plastic waste is therefore limited to the views of fashion students from the ATU and not the entire population that consume fabrics and clothing.

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Analysing India's Foreign Policy on Energy Connectivity with Central Asia

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ABSTRACT: This research paper aims to analyse India's foreign policy on energy connectivity with Central Asia and its implications for regional stability, economic growth, and energy security. The study adopts a qualitative research methodology, employing a comprehensive review of literature, policy documents, and in-depth analysis to examine the strategic objectives, drivers, and challenges of India's engagement in energy connectivity projects with Central Asian countries. The research findings indicate that India's foreign policy seeks to diversify energy sources, reduce dependence on traditional suppliers, and foster regional cooperation. The study highlights the significant energy resources available in Central Asia, such as oil, natural gas, and renewable energy, and assesses their potential alignment with India's energy needs and security concerns. It evaluates the progress, challenges, and potential benefits of existing energy connectivity projects, including pipeline networks and transportation routes. Furthermore, the research analyses India's bilateral engagements with Central Asian countries and its participation in regional and multilateral forums. The study concludes by providing insights into the future prospects of India's engagement with Central Asia, including potential areas for collaboration and policy recommendations to enhance energy connectivity, promote sustainable development, and strengthen regional cooperation.

Keywords: India, Central Asia, Energy, Connectivity, Foreign Policy.

Introduction:

In recent years, India's foreign policy has undergone a significant transformation, as the country seeks to expand its global influence and diversify its energy sources. One area of strategic focus for India is enhancing energy connectivity with Central Asia, a region rich in energy resources and located at the crossroads of important trade routes (Pradhan, 2022). India and Central Asia share historical and cultural ties that date back centuries, fostering a natural connection between the two regions (Patnaik, 2016). However, despite this historical link, formal energy cooperation between India and Central Asia has been relatively limited. Traditionally, India has relied on the Middle East and other regions for its energy needs (Wani, 2023). However, changing global dynamics and India's growing energy demand have compelled thecountry to seek diversified energy sources and reduce its dependence on traditional suppliers.

India's pursuit of energy connectivity with Central Asia reflects its strategic objectives to diversify energy sources, enhance energy security, and foster regional cooperation. This introduction provides further

context to the topic by highlighting the geopolitical significance of Central Asia, India's growing energy needs, and the potential benefits of energy cooperation (Wani, 2023). Central Asia holds immense geopolitical importance as a region situated at the crossroads of Europe, Asia, and the Middle East (Pradhan, 2019). It is home to vast reserves of oil, natural gas, and renewable energy resources, making it an attractive energy partner for nations like India (Warikoo, 2016). The energy resources in Central Asia not only offer potential solutions to India's energy demand but also provide an opportunity to reduce its dependence on traditional suppliers and mitigate the risks associated with supply disruptions (Wani, 2023).

India's increasing energy consumption, driven by its rapid economic growth and expanding population, has created a pressing need for diversifying its energy mix. As the world's third-largest energy consumer, India faces the challenge of meeting its growing energy demand sustainably while ensuring energy security (Pradhan, 2022). Therefore, forging energy connectivity with Central Asia becomes imperative for India to access new energy sources, promote clean energy transitions, and create a more resilient energy infrastructure. The cooperation between India and Central Asia in the energy sector is expected to yield numerous benefits. It can strengthen economic ties, facilitate trade and investment, foster technological collaboration, and promote regional integration (Levystone, 2022). Furthermore, enhanced energy connectivity can contribute to regional stability, peace building, and sustainable development by addressing energy poverty, fostering economic growth, and reducing disparities within and between nations (Patnaik, 2016).

Thus, the paper aims to analyse India's foreign policy with Central Asia taking the functional linkage of energy through multi-faceted dimensions. This analysis is significant because of several reasons. Firstly, Central Asia is endowed with abundant energy resources, including vast reserves of oil, natural gas, and renewable energy potential (Kothari, 2020). Expanding energy cooperation with this region could contribute to India's energy security by diversifying its energy supply and reducing vulnerability to disruptions in traditional supply routes. Secondly, energy connectivity with Central Asia has the potential to enhance regional cooperation and strengthen ties between India and the Central Asian countries (Kaushiki, 2013). It can serve as a foundation for broader economic and diplomatic engagement, fostering closer political relationships and promoting trade and investment opportunities. Moreover, energy connectivity initiatives can facilitate technology transfer, skill development, and infrastructure development, benefiting both India and Central Asia (Pradhan, 2022).

The research has been driven by important questions for finding out the important drivers and implications of India's foreign policy on energy connectivity with Central Asia, considering the alignment with India's energy needs and security concerns, as well as regional stability, economic growth, and energy security. Also, the research is aimed at answering the questions raised regarding existing energy connectivity projects and initiatives between India and Central Asia. To accomplish the task, the paper shall take the both

numerical and non-numerical data for references. It shall be a qualitative analysis of the India's foreign policy towards Central Asia for connectivity through energy.

Research method:

The research method employed for analysing India's foreign policy on energy connectivity with Central Asia is primarily based on a qualitative approach with few numerical data to justify the claims. It involves a comprehensive literature review of academic articles, research papers, policy documents, and official statements from key stakeholders. The literature review provides insights into the objectives, drivers, challenges, and implications of India's foreign policy in this context. Additionally, the study has analysed existing energy connectivity projects between India and Central Asia. The geopolitical analysis is also conducted to assess the complexities, security concerns, infrastructure limitations, and regulatory issues impacting energy connectivity. The research method combines desk-based research, data analysis, and qualitative assessments to provide a comprehensive understanding of India's foreign policy on energy connectivity with Central Asia. Also, the data is analysed in-depth understanding of existing knowledge and findings in the field, enabling the identification of key themes. The combination of literature review and meticulous geopolitical analysis has provided a nuanced perspective by examining India's foreign policy, its energy interests in Central Asia, as well as geopolitical dynamics and their influence on the research subject, resulting in a robust and well-rounded data analysis.

Geopolitical factor and India's strategic interest in Central Asia on energy connectivity:

Geopolitical factors play a crucial role in shaping India's foreign policy on energy connectivity with Central Asia. These factors encompass regional dynamics, security considerations, and economic interests that drive India's strategic engagement with Central Asia. Additionally, India's aim to diversify its energy sources and reduce dependence on traditional suppliers adds a significant impetus to its foreign policy in this domain. There are several factors that influence India's approach to energy connectivity with Central Asia.

First, India's foreign policy on energy connectivity with Central Asia is influenced by the regional dynamics of the area. Central Asia, with its vast energy resources about 13.7 billion barrels of proved oil reserves, 1.8 trillion cubic meters of natural gases, and 174 billion tons of proved reserves of coal, is strategically positioned between major powers and serves as a bridge between Europe and Asia (Kothari, 2020; Alkuwaiti, 2020). India views Central Asia as a crucial region for enhancing its geopolitical influence and expanding its economic engagement beyond its immediate neighbourhood (Patnaik, 2019). By fostering energy connectivity, India aims to strengthen regional cooperation, create new trade routes, and establish closer political ties with Central Asian countries (Pradhan, 2019).

Second, diversifying energy sources and reducing dependence on traditional suppliers are key objectives for India's energy security (Kaushiki, 2013). Historically, India has heavily relied on the Middle East for its energy needs (Kothari, 2020). In 2022, India imported about 84% of its crude oil from the Middle East, making it the region's largest customer (Russell, 2023). India also imports significant amounts of

natural gas and liquefied natural gas (LNG) from the Middle East (Russell, 2023). Saudi Arabia, Iraq, Kuwait, UAE, and Iran are the top five countries from which India imports energy (Russell, 2023). However, volatile geopolitical situations and supply disruptions in the region have highlighted the need for alternative energy sources. Central Asia's abundant reserves of oil, natural gas, and renewable energy offer an attractive opportunity for India to secure energy supplies from a more stable region, thereby mitigating risks associated with overdependence on a single geographic area (Pradhan, 2019).

Moreover, India's strategic interests lie in reducing its reliance on traditional energy suppliers, particularly those in the Middle East, due to political uncertainties, price volatility, and vulnerability to global geopolitical dynamics (Pradhan, 2020). By diversifying energy sources, India can reduce its vulnerability to supply disruptions and price fluctuations, thereby enhancing its energy resilience (Kothari, 2020). Energy connectivity with Central Asia provides an alternative pathway to access energy resources, allowing India to enhance its energy security and maintain a balanced energy portfolio (Plagemann, Datta, & Chu, 2021). Also, India's engagement with Central Asia also serves as a counterbalancing strategy against the influence of other regional powers (Pradhan, 2020). The region is strategically important for countries like Russia and China, who have established their presence in Central Asia through various economic, political, and security initiatives (Plagemann, Datta, & Chu, 2021). India's energy connectivity efforts act as a means to assert its own presence and influence in the region, reinforcing its role as a significant player in Central Asia's energy landscape.

Furthermore, India's economic interests drive its foreign policy on energy connectivity with Central Asia (Pradhan, 2020). The region offers significant trade and investment opportunities, particularly in the energy sector. In 2017, India signed a USD3 billion deal with Turkmenistan to import 1.5 billion cubic meters of natural gas per year (Kothari, 2020). India has also invested in oil and gas exploration in Kazakhstan and Uzbekistan (Kothari, 2020). Access to Central Asia's energy resources can contribute to India's economic growth and energy-intensive industries.

Besides, energy connectivity enables the development of trade routes, facilitating the movement of goods and enhancing regional economic integration (Kaushiki, 2013). By tapping into Central Asia's energy potential, India can forge mutually beneficial economic partnerships and expand its commercial ties with the region (Kothari, 2020). In 2017, India's state-owned oil and gas company, ONGC Videsh, signed a USD10 billion deal with Turkmenistan to explore for oil and gas in the Caspian Sea (Chaudhury, 2022). Similarly, India's another state-owned power company, National Thermal Power Corporation Limited (NTPC), signed USD1 billion deal with Kazakhstan to build a coal-fired power plant in 2018 and state-owned steel company, Steel Authority of India Limited (SAIL), signed a USD500 million deal with Uzbekistan to build a steel plant in 2019 (Chaudhury, 2022). Also, India's foreign policy on energy connectivity with Central Asia is also motivated by the desire to promote regional stability and connectivity (Patnaik, 2019). Energy infrastructure projects facilitate physical connectivity, promote economic interdependence, and encourage

cooperation between countries. By enhancing energy connectivity, India aims to foster greater regional cooperation, peace, and stability (Singh, 2017). Additionally, improved connectivity paves the way for increased people-to-people exchanges, cultural ties, and knowledge-sharing, further strengthening regional bonds.

Thus, the geopolitical factors that shape India's foreign policy on energy connectivity with Central Asia are rooted in regional dynamics, energy security concerns, reduced reliance on traditional suppliers, counterbalancing strategies, economic interests, and the promotion of regional stability and connectivity. By diversifying its energy sources and engaging with Central Asia, India seeks to secure its energy needs, expand its influence, and foster regional cooperation.

Growing energy demand in India:

India's growing energy demand is a significant driver behind its foreign policy on energy connectivity with Central Asia. With a rapidly expanding economy, rising population, and increasing urbanization, India's energy requirements have witnessed substantial growth. India's total energy consumption is estimated to have increased by 9.5% in 2022 to 995 Mtoe (The Economic Times, 2023). Electricity consumption is estimated to have increased by 9% in 2022 to 1386 TWh (The Economic Times, 2023). Also, the total energy consumption per capita is estimated to have increased to 0.75 toe in 2022, still half the Asian average (Press Information Bureau, 2022). Electricity consumption per capita is estimated to have reached 960 kWh in 2022, about a third of the Asian average (The Economic Times, 2023). Analysing India's energy demand and its implications for foreign policy in Central Asia provides insights into the strategic importance of energy connectivity initiatives.

India's energy demand has been steadily increasing over the years. According to the International Energy Agency (IEA), India's primary energy consumption is expected to nearly double by 2040, making it the fastest-growing energy consumer in the world (International Energy Agency, 2022). India's energy demand is projected to grow by 5.8% per year between 2021 and 2040 (International Energy Agency, 2022). The country's energy demand is driven by various sectors, including industry, transportation, residential, and commercial sectors. The energy imports are also large for India. India imported 232.4 million tonnes of crude oil in 2022, up 9.4% from 2021 (Verma, 2023). The top suppliers of crude oil to India in 2022 were Saudi Arabia, Iraq, and the United Arab Emirates (Verma, 2023). The country imported 32 billion cubic meters (bcm) of natural gas in 2022, up 14.5% from 2021 (Verma, 2023). The top suppliers of natural gas to India in 2022 were Qatar, the United States, and Russia (Verma, 2023). Also, India imported 215 million tonnes of coal in 2022, up 12.5% from 2021 from Indonesia, Australia, and South Africa (The Economic Times, 2023). India also imported significant amounts of other energy products in 2022, including liquefied petroleum gas (LPG), refined petroleum products, and uranium (Petroleum, Planning, and Analysis Cell, 2023).

Furthermore, India's ambition to achieve universal access to electricity has led to a surge in electricity demand. To meet its growing energy demand, India has traditionally relied on fossil fuels, particularly coal, oil, and natural gas. Coal is still the country's top energy source with a share of 45% in 2022, followed by oil (23%) and biomass (20%) (The Economic Times, 2023). Natural gas covers 6% and primary electricity (hydro, nuclear, solar, and wind) contributes 5% (The Economic Times, 2023). However, concerns over environmental sustainability, air pollution, and climate change have prompted India to diversify its energy mix and prioritize cleaner and renewable energy sources. This transition towards cleaner energy is evident in India's ambitious renewable energy targets, including the goal of achieving 450 gigawatts of renewable energy capacity by 2030 (Petroleum, Planning, and Analysis Cell, 2023).

India's growing energy demand and the need to diversify its energy sources have a significant impact on its foreign policy in Central Asia. By connecting with Central Asia's energy-rich countries, India aims to secure its energy needs, promote regional stability, and enhance economic cooperation. The analysis of India's energy demand provides a contextual understanding of the strategic importance of energy connectivity initiatives with Central Asia.

Inspecting energy resources in Central Asia:

Central Asia is endowed with abundant energy resources, including oil, natural gas, and renewable energy, which hold significant potential for enhancing India's energy security and driving economic growth. Central Asia is a region rich in energy resources, including oil, natural gas, and renewable energy. The region has the potential to play a significant role in India's energy security and economic growth.

Central Asia has significant oil reserves, with Kazakhstan, Turkmenistan, and Uzbekistan being the leading producers (Mehta, Ehrenwirth, Trinkl, Zörner, & Greenough, 2021). Kazakhstan, in particular, is one of the region's largest oil producers. Its oil reserves, estimated at around 30 billion barrels, make it a key player in the global oil market (Hughes, 2022). Turkmenistan also has significant oil reserves, though its production levels are relatively lower. In 2022, Kazakhstan produced 185 million tonnes of oil, Turkmenistan produced 85 million tonnes, and Uzbekistan produced 35 million tonnes (Daye, 2023). These three countries account for more than 90% of the region's oil production (Mehta, Ehrenwirth, Trinkl, Zörner, & Greenough, 2021).

Central Asia boasts abundant natural gas reserves, making it a significant source of this energy resource. Turkmenistan holds the world's fourth-largest natural gas reserves, with substantial untapped potential (Hughes, 2022). Kazakhstan, Uzbekistan, and Tajikistan also possess significant natural gas reserves (Hughes, 2022). In 2022, Turkmenistan produced 60 billion cubic meters (bcm) of natural gas, Uzbekistan produced 45 bcm, and Kazakhstan produced 25 bcm (Daye, 2023). These three countries account for more than 90% of the region's natural gas production (Daye, 2023). Similarly, Central Asia has substantial renewable energy potential, particularly in hydropower and solar energy (Hughes, 2022). The region's mountainous terrain offers favourable conditions for the development of hydropower projects.

Countries like Tajikistan and Kyrgyzstan have significant hydropower resources, with the potential to generate large amounts of electricity (Shadrina, 2019). Solar energy is another promising renewable resource in Central Asia due to the region's abundant sunlight. In 2022, Kazakhstan installed 1.5 gigawatts (GW) of solar power, Uzbekistan installed 1 GW, and Turkmenistan installed 0.5 GW (Murodbek, Ruslan, & Almaz, 2022). These three countries account for more than 90% of the region's solar power capacity (Murodbek, Ruslan, & Almaz, 2022).

The energy resources available in Central Asia have the potential to play a significant role in India's energy security and economic growth (Pradhan, 2020). India is a growing economy with a rapidly increasing demand for energy. The country is currently reliant on imported oil and natural gas, and this reliance is a major vulnerability. Central Asia's energy resources could help India to reduce its reliance on imported energy and become more energy secure (Pradhan, 2020). In addition, the energy resources available in Central Asia could help to boost India's economic growth. The development of energy infrastructure in Central Asia could create new opportunities for Indian businesses and create jobs. The region could also become a major source of energy exports for India, which would help to boost the country's foreign exchange earnings.

Existing energy connectivity projects:

There are a number of energy connectivity projects between India and Central Asia, including pipeline networks, transportation routes, and transmission lines. These projects have the potential to improve energy security and economic growth in both regions. Existing energy connectivity projects between India and Central Asia have gained momentum in recent years, with the aim of facilitating the transportation of energy resources and strengthening regional cooperation. One of the most important energy connectivity projects between India and Central Asia is the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline. The TAPI pipeline would transport natural gas from Turkmenistan to Afghanistan, Pakistan, and India (Ali, Khan, Sabir, & Jaisinghani, 2022). The project is still in the development stage, but it has the potential to provide a reliable source of energy for all four countries and neighbouring countries as well (Ali, Khan, Sabir, & Jaisinghani, 2022).

Another important pipeline project is the Central Asia-South Asia Power Project (CASA-1000). The CASA-1000 project would transmit electricity from Kyrgyzstan and Tajikistan to Afghanistan and Pakistan (Abbas, Kalim, & Malik, 2019). The project is already under construction, and it is expected to be completed in 2023 (Ghumman, 2023). The CASA-1000 project aims to transmit surplus electricity from Tajikistan and Kyrgyzstan to Afghanistan and Pakistan, with potential for future expansion to India (Abbas, Kalim, & Malik, 2019). The project has faced delays due to security concerns, financing challenges, and technical complexities (Abbas, Kalim, & Malik, 2019). CASA-1000 holds the potential to address electricity shortages in South Asia, promote regional energy trade, and contribute to economic development (Ghumman, 2023). Furthermore, there are also a number of transmission lines being developed between India and Central Asia.

These transmission lines could be used to transmit electricity from Central Asia to India. One important transmission line is the Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan (TUTAP) line (Putz, 2016). The TUTAP line is already under construction, and it is expected to be completed in 2024 (Putz, 2016).

There are also a number of transportation routes being developed between India and Central Asia. These routes could be used to transport energy resources, as well as other goods and services. One important transportation route is the Chabahar Port in Iran. The Chabahar Port is being developed by India and Iran, and it could be used to transport energy resources from Central Asia to India (Pant & Mehta, 2018). Another important transportation route is the International North-South Corridor (INSC). The INSC is a multi-modal transportation corridor that would connect India to Central Asia through Iran and Russia (Vinokurov, Ahunbaev, Shashkenov, & Zaboev, 2021). The INSC is still in the planning stage, but it has the potential to provide a reliable and efficient transportation route for energy resources and other goods (Vinokurov, Ahunbaev, Shashkenov, & Zaboev, 2021). The Chabahar Port provides India with access to Afghanistan and Central Asia, bypassing Pakistan (Pant & Mehta, 2018). The INSC project aims to establish a multimodal transport network connecting India, Iran, Russia, and Central Asia. These initiatives enhance connectivity, facilitate trade, and provide alternative routes for energy transportation, thereby benefiting India's energy security and economic interests.

The progress of these energy connectivity projects has been mixed. Some projects, such as the TAPI pipeline, have made significant progress. Other projects, such as the CASA-1000 project, have faced delays. However, overall, there has been significant progress on energy connectivity between India and Central Asia. The energy connectivity projects between India and Central Asia have the potential to improve energysecurity and economic growth in both regions. However, there are a number of challenges that need to be addressed in order to fully realize the potential of these projects.

Bilateral and multilateral forums for India to promote energy connectivity:

India has been actively engaging with Central Asian countries on energy connectivity and cooperation for several years. This engagement has taken place at both the bilateral and multilateral levels. India has bilateral energy cooperation agreements with all five Central Asian countries. These agreements cover a wide range of areas, including the development of oil and gas pipelines, the transmission of electricity, and the exploration of renewable energy sources.

India and Kazakhstan have established a strong partnership in the energy sector. They have signed agreements on cooperation in oil and gas exploration, production, and transportation (Pradhan, 2022). Indian companies have invested in Kazakhstan's oil and gas projects, including the Satpayev oil block and the Caspian Sea offshore fields (Pradhan, 2022). Additionally, Kazakhstan supplies oil to India through the Caspian Pipeline Consortium, contributing to India's energy security (Pradhan, 2022). Likewise, India has pursued close energy cooperation with Turkmenistan, primarily through the TAPI pipeline project. India's

engagement in TAPI aims to secure natural gas supplies from Turkmenistan, diversify its energy sources, and strengthen regional energy cooperation (Jalilo, 2022). India has also explored opportunities for cooperation in the development of Turkmenistan's oil and gas fields (Jalilo, 2022). Also, India and Uzbekistan have signed agreements on cooperation in the energy sector, focusing on areas such as oil and gas exploration, joint ventures, and technology transfer (Chaudhury, 2021). Indian companies have invested in oil and gas projects in Uzbekistan, contributing to bilateral energy cooperation. India has expressed interest in accessing Uzbekistan's energy resources and developing transportation corridors to facilitate trade and connectivity (Chaudhury, 2021). And, India has engaged with Tajikistan and Kyrgyzstan primarily in the context of the CASA-1000 project, which involves the transmission of surplus electricity from these countries to Afghanistan and Pakistan (Abbas, Kalim, & Malik, 2019). India has supported the project through financial assistance and technical cooperation, demonstrating its commitment to regional energy cooperation and clean energy initiatives (Abbas, Kalim, & Malik, 2019).

Regarding regional efforts, India's membership in the SCO provides a platform for engaging with Central Asian countries on energy connectivity and cooperation. The SCO Energy Club facilitates discussions on energy-related issues, including resource exploration, transportation, and energy security (Giri & Agarwal, 2019). India's participation in the SCO Energy Club allows for dialogue and collaboration with Central Asian countries, enhancing regional energy connectivity and cooperation (Giri & Agarwal, 2019). India's participation in the INSTC demonstrates its commitment to regional connectivity, trade, and energy cooperation (Vinokurov, Ahunbaev, Shashkenov, & Zaboev, 2021). The INSTC aims to establish a multimodal transport network connecting India, Iran, Russia, and Central Asian countries. This initiative facilitates the movement of goods, including energy resources, and reduces transportation costs and time (Vinokurov, Ahunbaev, Shashkenov, & Zaboev, 2021). India's engagement in the INSTC supports its energy connectivity goals by providing alternative transportation routes for energy supplies.

India's participation in bilateral engagements and regional forums reflects its strategic interests in Central Asia's energy resources, connectivity, and cooperation. These engagements contribute to India's energy security, diversification of energy sources, and regional integration. By fostering energy connectivity and cooperation, India aims to strengthen its economic ties, enhance energy access, and promote stability in the region.

Challenges to India's for energy connectivity with Central Asia:

Implementing energy connectivity projects in the context of India's engagement with Central Asia faces several challenges. Some challenges include geopolitical and security concerns, limitations to infrastructural development, difficulty on regulatory and legal frameworks, financially and economic difficulties, severe environmental impacts, and others. First, the geopolitical landscape in Central Asia is complex, with multiple countries involved, each with its own strategic interests (Warikoo, 2016). Competing regional dynamics, historical rivalries, and territorial disputes can complicate project implementation and

cooperation (Warikoo, 2016). Balancing the interests and concerns of various stakeholders requires diplomatic efforts and effective coordination. For example, the TAPI pipeline project involves four countries: Turkmenistan, Afghanistan, Pakistan, and India (D'Souza, 2011). These countries have different political interests, which can make it difficult to reach an agreement on the project.

Second, the region faces security challenges, including terrorism, insurgency, and political instability. Security risks along the transportation routes, especially in Afghanistan and parts of Pakistan, pose threats to the safe and uninterrupted flow of energy resources (Levystone, 2022). Ensuring the security of pipelines, transmission lines, and transportation infrastructure is crucial to the success of energy connectivity projects (Levystone, 2022). TAPI pipeline project passes through Afghanistan, which is a country with a history of instability and presently ruled by Taliban (Wani, 2023). This could make the pipeline a target for terrorists or other criminals. Third, developing robust infrastructure for energy transportation, including pipelines, transmission lines, and transportation networks, requires significant investment, technical expertise, and long-term planning (Wani, 2023). This infrastructure can be expensive and time-consuming to build. For example, the TAPI pipeline project is estimated to cost USD10 billion and take 10 years to build (D'Souza, 2011). Central Asia's rugged terrain, remote locations, and inadequate existing infrastructure pose challenges in constructing and maintaining energy connectivity projects (D'Souza, 2011).

Moreover, harmonizing diverse regulatory frameworks and navigating complex legal procedures across different countries is a challenge in implementing energy connectivity projects (Alkuwaiti, 2020). Disparities in laws, regulations, and administrative processes can hinder the smooth functioning of projects. Streamlining regulatory frameworks and establishing clear legal frameworks are essential for project implementation and long-term sustainability (Ghosh, 2022). Also, energy connectivity projects often require significant financial resources, and securing adequate funding can be challenging. Attracting investment, mobilizing financial resources, and ensuring the economic viability of projects can be demanding (Alkuwaiti, 2020). Political and economic uncertainties, as well as project-specific risks, can affect investor confidence and project financing (Ali, Khan, Sabir, & Jaisinghani, 2022).

Furthermore, energy connectivity projects can have environmental and social implications, including land acquisition, displacement of local communities, and ecological concerns (Ghosh, 2022). Mitigating these impacts through sustainable project design, community engagement, and environmental assessments is crucial to ensure the projects' social acceptance and long-term sustainability. Similarly, coordinating policies, regulations, and institutions among multiple countries involved in energy connectivity projects can be challenging (Warikoo, 2016). Addressing regulatory gaps, aligning policy objectives, and establishing effective coordination mechanisms are essential for project implementation and operation (Ali, Khan, Sabir, & Jaisinghani, 2022).

Hence, there are a number of challenges to implementing energy connectivity projects. However, there are also a number of reasons to be optimistic about the future of these projects. Addressing these challenges requires close cooperation, diplomatic efforts, and a comprehensive approach involving governments, international organizations, and private sector entities. With the right political will and financial support, energy connectivity projects could play a significant role in improving energy security and economic growth in the region. Overcoming these obstacles will contribute to the successful implementation of energy connectivity projects, promoting regional integration, energy security, and economic development.

Implications and future prospects for India towards Central Asia on energy connectivity:

India's foreign policy on energy connectivity with Central Asia has significant implications for regional stability, economic growth, and energy security (Pradhan, 2022). One of the main implications of India's energy connectivity policy is that it could help to promote regional stability (Kothari, 2020). This is because energy connectivity projects could help to bring countries in the region together and create a sense of shared purpose. This could help to reduce tensions and promote cooperation. They provide a platform for dialogue, trust-building, and conflict resolution among countries. Strengthening economic ties through energy trade can mitigate political tensions and promote peace and stability in the region.

Similarly, energy connectivity between India and Central Asia offers substantial economic opportunities. It facilitates the exchange of energy resources, promotes trade, and supports economic diversification (Alkuwaiti, 2020). Access to Central Asia's energy resources helps meet India's growing energy demands and reduces dependence on traditional suppliers (Kaushiki, 2013). Additionally, energy connectivity projects create employment opportunities, stimulate infrastructure development, and attract foreign investment, contributing to economic growth and development in both regions (Patnaik, 2019). India's engagement with Central Asia in energy connectivity plays a vital role in enhancing its energy security. Diversifying energy sources and supply routes reduces vulnerability to disruptions and price fluctuations. By accessing new energy resources, India can strengthen its energy security and ensure a reliable and stable energy supply (Shadrina, 2019). Energy connectivity projects also facilitate technology transfer and knowledge sharing, promoting energy efficiency and sustainability. Finally, India's energy connectivity policy could help to improve energy security in the region (Pant & Mehta, 2018). This is because energy connectivity projects could provide new sources of energy for countries in the region. This could help to reduce dependence on imported energy and make the region more energy secure.

The future prospects of India's engagement with Central Asia are bright. This is because there are a number of potential areas for collaboration between the two regions. Some of the future prospects and area a collaborations are:

- Expansion of Energy Connectivity Projects: There are opportunities to expand existing energy connectivity projects and initiate new ones. Strengthening cooperation on the TAPI pipeline, CASA-1000 project, and power transmission initiatives can enhance energy connectivity and trade (Abbas, Kalim, & Malik, 2019; D'Souza, 2011). Exploring additional pipelines, transmission lines, and transportation routes will further deepen regional integration and energy cooperation.

- Renewable Energy Cooperation: India's expertise in renewable energy technologies can be leveraged to foster collaboration with Central Asian countries. Joint efforts in renewable energy projects, such as solar and wind power, can contribute to sustainable development and reduce carbon emissions. Sharing best practices, promoting research and development, and facilitating technology transfer will accelerate the growth of renewable energy in the region.

- Policy Coordination and Institutional Cooperation: Enhancing policy coordination and institutional cooperation is crucial for effective energy connectivity. Establishing coordination mechanisms, harmonizing regulatory frameworks, and facilitating information sharing among countries will streamline project implementation and operation. Strengthening regional organizations like the SCO and leveraging their platforms for energy cooperation will further enhance collaboration.

Overall, India's foreign policy on energy connectivity with Central Asia has a number of positive implications for regional stability, economic growth, and energy security. The future prospects of India's engagement with Central Asia are bright, and there are a number of potential areas for collaboration between the two regions.

Conclusion:

India's foreign policy on energy connectivity with Central Asia holds significant implications for regional stability, economic growth, and energy security. By engaging in bilateral partnerships, participating in regional forums, and pursuing energy connectivity projects, India aims to diversify its energy sources, reduce dependence on traditional suppliers, and foster regional cooperation. The availability of Central Asia's energy resources presents valuable opportunities for India's energy needs and economic development. Despite challenges related to geopolitics, security concerns, infrastructure limitations, and regulatory issues, India's commitment to sustainable development and collaboration underscores its long-term vision. The future prospects of India's engagement with Central Asia in energy connectivity are promising, with potential areas for collaboration in expanding projects, renewable energy cooperation, policy coordination, and regional integration. By following policy recommendations and forging stronger partnerships, India can unlock the full potential of energy connectivity for mutual benefits, promoting stability, growth, and sustainability in the region.

Therefore, India's foreign policy on energy connectivity with Central Asia represents a significant step towards regional integration, economic prosperity, and energy security. It offers avenues for cooperation, dialogue, and collaboration, fostering stability, growth, and sustainability in both India and Central Asia. As India continues its pursuit of energy connectivity, it must navigate challenges, adapt to changing dynamics, and forge stronger partnerships to unlock the full potential of this strategic endeavour.

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Relationship between trauma, alexithymia and problematic internet use among adolescents and adults: Systematic Review.

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ABSTRACT Previous research has shown that trauma is associated with PIU and alexithymia has mediated the relationship between the two. The aim of the present study is to understand the possible reasons associated with childhood trauma and alexithymia in developing problematic internet use and so recommending appropriate interventions to prevent PIU by reducing the symptoms of alexithymia and childhood trauma. Records were included in the systematic review if they presented original data, assessed associations, and interventions with respect to the three published in a reputed journal between 2001 and 2021 and were written in English. Sage, Science direct, PubMed and Scopus databases were searched. After duplicates removal, 150 studies were found eligible for scrutiny. Among the screened full texts, 28 studies met the eligibility criteria. The selected studies included the total of 12,108 participants. Analysis of data was done by putting the studies in four appropriate themes. Results showed that Individuals with childhood trauma and alexithymia are more likely to develop problematic internet use later in life due to harmful effects of different types of traumas leading to dysregulation of emotions. It was also found that various factors associated with alexithymia can cause problematic internet use among adolescents and adults. Furthermore, it was found that mindfulness, group therapy and Cognitive behavioral therapy can be the effective interventions for trauma survivors, alexithymia and PIU. This review is relevant in terms of its educational & preventative actions as well as clinical implications described in the text.

Keywords: Trauma, Alexithymia, Problematic internet use, Adolescents

1. Introduction:

Round the clock availability of the internet nowadays has blurred the boundaries between leisure time to use the internet and having the control to use it. Too much internet use has become a huge problem in today's scenario, especially among adolescents and emerging adults as they are more prone to use the internet for social media and work-related purposes which is also interfering with their daily life activities and creating social, personal, occupational and physical disturbances (Young, 1998). Though overuse of the internet has been coined with a lot of terms such as internet addiction, pathological internet use, computer addiction, and compulsive internet use (Caplan, 2002; Davis, 2001; Morahan-Martin & Schumacher, 2000; Young, 1998). In this paper, the specific term that would be used is problematic internet use (PIU). Though many factors can lead to the development of problematic internet use such as loneliness, depression, stress, and anxiety but psychological trauma and alexithymia (difficulty in describing and identifying feelings) as the indicator of problematic internet use are central for this review paper. In the past decades, there are a lot of research done on how traumatic experiences can lead to the development of alexithymia and how alexithymia can further lead to problematic internet use in emerging adults and adolescents. However, the previous review studies have focused individually on alexithymia and problematic internet use but not on the relationship between them. Hence it is important to do this review to enhance an understanding and awareness among people about the concept of alexithymia and how early life traumatic experiences can create emotional difficulties later on due to which a person can engage in addictive behaviors including problematic internet use which can also have negative effects on psychological and psychosocial aspects of an individual (Kuss et al., 2014).

People can experience trauma in their everyday life which can range from slight exposure to trauma to having adverse traumatic experiences. According to the American psychological association, Trauma is defined as an emotional response to an extremely negative event that may interfere with an individual's daily life activities. It is a unique experience of an individual towards a negative event or situation in which the person's ability to respond emotionally is exceeded and he/she experiences a threat to his/her life as well as others. Most traumatic events occur during the developmental period of a person i.e. during childhood and adolescence. There are mainly four types of traumatic experiences that occur during childhood: *Physical abuse, sexual abuse, emotional abuse/psychological abuse and neglect* (WHO, 1999.)

The term alexithymia was first given by psychotherapist Sifneos (1973). It means "no word for emotions". It is a personality construct that varies from person to person. The term alexithymia is defined as an inability to identify and express one's feelings and emotions and those of others. People with alexithymia often show disrupt emotional and social attachment and poor interpersonal relationships, often find difficulty in empathizing with people and appreciating what others feel. Alexithymia includes both cognitive and

affective deficits. Cognitive deficits include the inability in recognizing, distinguishing, and describing feelings from bodily sensations of emotional arousal and affective deficits involve the inability in empathizing and fantasize. Alexithymia is associated with emotional dysregulation and difficulty in guiding self-behavior using one's feelings (Taylor et al., 1997).

The use of internet in today's time has become highly useful for people for various purposes such as socializing, entertainment, research purposes etc. (Chao et al., 2020). However, its overuse might create problems in a person's life. Problematic internet use has some symptoms including inability to control overuse of internet, preoccupation and repetitive thoughts about internet activity and impulse control problems associated with internet (Durak & Durak, 2016). According to Caplan (2010), Problematic internet use includes four main components: Preferring social interaction rather than face to face interaction with people; using internet to deal with negative emotional states; reduced self-awareness and regulationregarding internet use and Negative consequences on health, academics & social life of a person. Problematicinternet use can be related to many specific activities such as cybersex addiction, online gambling, online video game playing, online shopping addiction, etc. (Billieux & Linden, 2012).

Present Study:

Trauma is the main risk factor for alexithymia because trauma has often been investigated as an environmental factor for alexithymia. Traumatization occurring both in childhood and adulthood has been identified as the most important known risk factor for developing alexithymia (Eichhorn et al., 2014). Alexithymia has been linked with problematic internet use because in various studies it has been associated with various types of addiction as individuals with alexithymia may compensate their lack of emotional skills by engaging in addictive activities (Taylor et al., 1997). Several recent studies have shown a positive relation between alexithymia and Problematic internet use (PIU) among emerging adults specially the difficulty identifying feelings factor of Alexithymia (Dalbudak et al., 2013). Early childhood experiences of maltreatment and problematic Internet use among adolescents and emerging adults have also partially mediated by alexithymia (Yates et al., 2012). Despite the copious research on trauma, alexithymia, and problematic internet use no systematic review has yet covered the relationship between the three and its implications in developing interventions. This review paper further focuses on the combined interventions and their effectiveness to reduce alexithymic tendencies, effect of trauma memories, and overuse of the internet among adolescents and adults. This is important as nowadays the majority of the work, studies, and even entertainment involve the use of the internet and in near future, its use will further increase making people too occupied with the internet mentally and emotionally.

Following this, this systematic literature review focuses on the studies from 2001 to 2021 on the relationship between trauma, alexithymia & problematic internet use and the effectiveness of interventions to deal with them.

The objectives guiding this systematic review literature are:

- To review and synthesize the studies analyzing the relationships among trauma & problematic internet use, trauma & alexithymia and alexithymia & problematic internet use.
- To review and synthesize the studies involving interventions to deal with trauma, alexithymia, and problematic internet use.

2. Method:

This study followed the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement and the PRISMA statement website.

2.1. Information sources and search strategy:

This study is a systematic review aimed at exploring the relationship between trauma, alexithymia, and problematic internet use following the intervention literature to deal with them. The literature search was conducted from January to June 2021 in the English language in the databases of Sage, Science direct, Scopus and PubMed. The search strategy included multiple key elements identified to address the research question of this systematic review, with the Boolean operators and restricted within Titles, Abstract and Keywords. The terms which were used while searching were "trauma", "traumatic experience", "traumatic event", "psychological trauma", "alexithymia", "problematic internet use", "internet addiction", and "internet use" in English. Furthermore, the reference lists of relevant empirical articles and reviews were scrutinized to identify potential additional articles.

2.2 Eligibility Criteria:

Studies included required to have all of the following inclusion criteria (IC):

IC1: use of quantitative papers (empirical data).

IC2: Studies examining the relationship between trauma and alexithymia.

IC3: Studies examining the relationship between Alexithymia and Problematic Internet Use.

IC4: Studies examining the relationship between Trauma and Problematic Internet Use.

IC5: Studies that show the effectiveness of interventions to deal with trauma.

IC6: Studies that show the effectiveness of interventions to deal with alexithymia, and

IC7: Studies that show the effectiveness of interventions to deal with problematic internet use.

Studies were excluded if they didn't meet any of the following exclusion criteria (EX):

EX1: review papers, theoretical papers, case reports, commentaries, editorials, and published conference proceedings;

EX2: studies involving specific social media platforms such as Facebook, Instagram, etc.

EX3: studies related to bullying or cyber bullying and victimization as this paper focuses on traumatic events not necessarily on bullying behavior.

2.3 **Identification and selection of empirical studies** *:*

Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement and PRISMA statement website establishes the eligibility criteria for the selection of studies that make up the sample. In the first instance, manual coding was necessary by systematically reviewing each study according to the inclusion and exclusion criteria. First, studies were selected by reviewing their title and abstract. Asignificant number were eliminated in this process. The criteria of methodological rigor led to the exclusionof many studies.

2.4 Synthesis of results:

The extracted data was synthesized in the following domains: Author(s); Year; Location; Study design (e.g., cross-sectional survey); Sample characteristics; Conceptualization of problematic internet use, trauma, and alexithymia; Types of traumas and factors associated with alexithymia; Intervention strategies to deal with the three; key findings.

3. Results:

3.1 **Overview of empirical studies:**

Initially 269 records were identified from various databases and 15 from other sources. 150 articles were selected after removing the duplicates. Out of these, 65 articles were excluded by the studies not meeting the inclusion and exclusion criteria and 57 articles were further excluded with various other reasons presented in figure 1. Finally, 28 articles were considered in this systematic review.

3.2 **Characteristics of Studies:**

Here are the characteristics of the final sample, i.e., 28 studies included in the systematic review. Most of the studies were cross-sectional except for intervention studies which were mainly pre and post-test

and randomized control trials and were conducted in a total of 12,108 participants (M=750.16) (data was not specified for three studies) with sample sizes ranging from 38 to 2507 and individuals of both genders participated in all the studies but five. 5 studies were on trauma and problematic internet use (Table 1), 7 studies were on trauma and alexithymia (Table 2), 8 studies were on alexithymia and problematic internet use (Table 3), and 8 studies were intervention based (Table 4). Twelve studies were conducted in Europe (Sweden, Germany Italy, and Greece), five studies were conducted in Asia (Malaysia, and Iran), one from Canada, five from Turkey, two from Korea while three studies were not specified.

Figure 1

Flow diagram of the search strategy
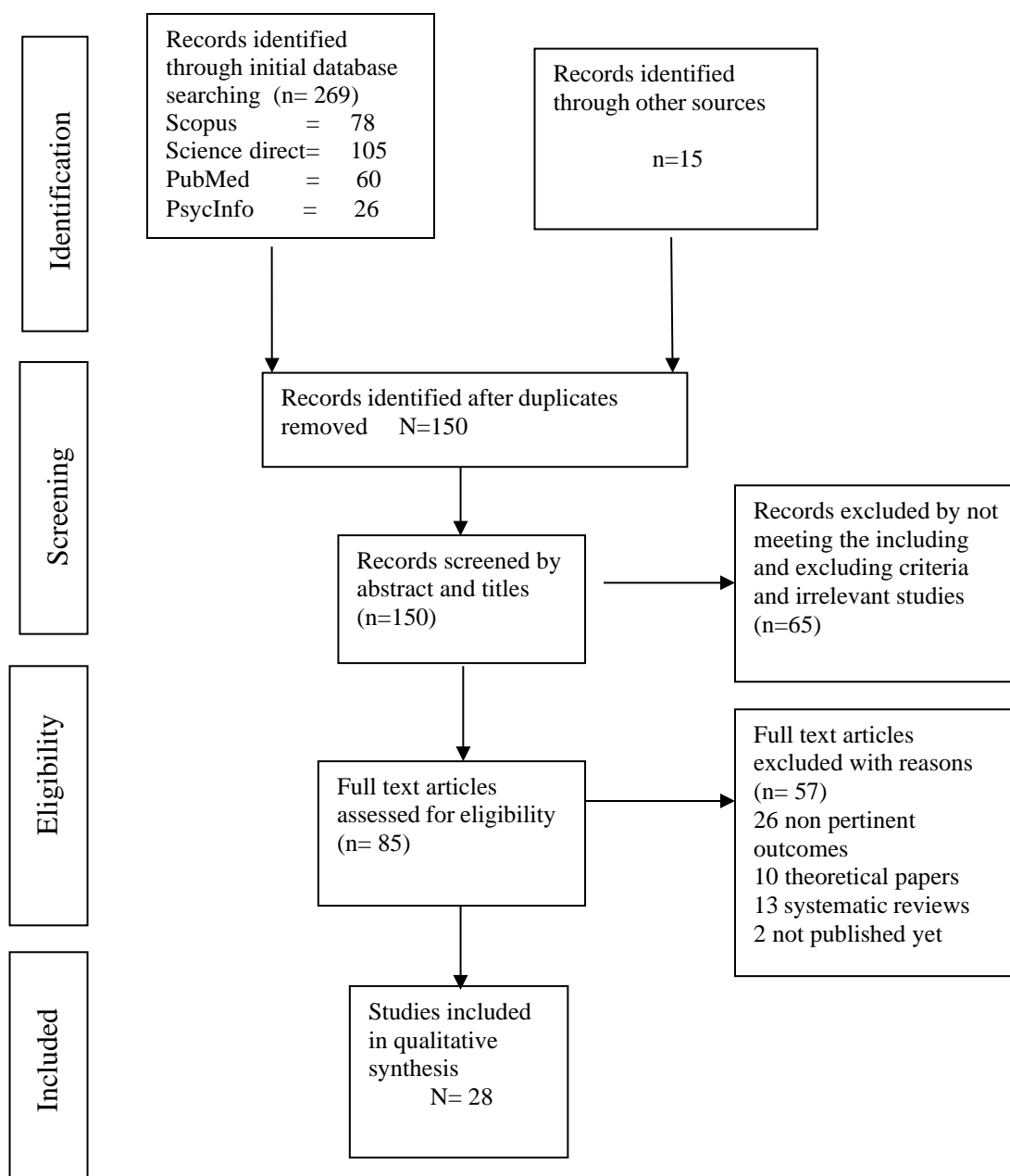
The conceptualization of PIU and the corresponding terminology varied between studies. Various studies (n=9) endorsed the addiction framework and used terms such as "internet addiction".

3.3 Main Findings:

3.3.1 Relationship between Trauma and Problematic Internet Use:

Any traumatic experience during the early developmental years of a person can make them indulge in various problematic and compulsive behaviors in their adulthood. Using the internet problematically is one of them. Table 1 shows various types of traumas and their relationship with problematic internet use.

3.3.1.1 Studies involving child maltreatment:

Some studies indicated that there are a variety of early traumatic events /experiences which can lead to the excessive use of the internet. It has been shown that *child maltreatment which includes family violence, harsh parenting & parent-child conflict* has been positively associated with problematic internet use. Further, it was found that child maltreatment may illustrate low self-esteem, decreased social relationships, and increased psychopathology which makes people more prone to problematic internet use (Yates et al., 2012). Traumatic experiences especially *child sexual abuse* among males can increase the risk of development of problematic internet use whereas among females affect regulation can do the same (Schimmenti et al., 2017). It was also found that there was a significant positive association between *sexual victimization* and problematic internet use among adolescents partially mediated by low self- esteem and increased depressive symptoms (Kim et al., 2017). Concerning social media, it was found that *childhood emotional maltreatment* was indirectly associated with problematic social media use among adolescents (Kircaburun et al., 2020).

3.3.1.2. Studies showing positive benefits of social media among trauma survivors :

It was found that sharing of information in groups i.e. group sharing can sometimes help trauma survivors in relieving their pain and perceiving their traumatic experience from a different point of view. It was found that *computer-mediated communication* (CMC) facilitates the participation of traumatized people in virtual discussions as Participants were willing to share their personal information. There were feelings of *universality, installation of hope, catharsis, self-understanding, and existential factors* during participation (Salzmann-Erikson & Hicdurmaz, 2017).

Table 1

Studies on trauma and problematic internet use included in the review (n=5).

Authors (year)	Country	Design	Sample Characteristics N (gender distribution) Age=Range (M,SD)	Type of Trauma	Findings
Kim et al. (2017)	Korea	Cross-sectional	N=802 (35.16% females) AGE= between 7th and 11th grade (M=14.06, SD=1.37 years)	Sexual abuse	Path Analysis In the path model, sexual abuse predicted lower self-esteem (β=-0.11; 95% CI=-0.20, -0.04; p=0.009), which predicted higher depressive symptoms (β=-0.34; 95% CI=-0.40, -0.27; p=0.008). Depressive symptoms predicted problematic internet use in a positive way (β=0.23; 95% CI=0.16–0.29, p=0.013). Sexual abuse also predicted problematic internet use directly (β=0.20; 95% CI=0.12-0.27; p=0.012).

Kircaburun et al. (2020)	Turkey	Cross-sectional	N=385 (57% female) AGE= 14 to 18 years (M=15.62 years, SD=1.00)	Childhood emotional maltreatment	Path Analysis Results demonstrated that all three mediation models with total sample ($\chi2/df$ = 3.00, RMSEA = 0.07 (CI 90% [0.06, 0.09]), CFI = 0.94, GFI = 0.95), males ($\chi2/df$ = 1.26, RMSEA = 0.04 (CI 90% [0.00, 0.07]), CFI = 0.98, GFI = 0.96), and females ($\chi2/df$ = 2.33, RMSEA = 0.08 (CI 90% [0.06, 0.10]), CFI = 0.94, GFI = 0.94) indicated adequate-to good fit to the data. CEM was indirectly associated with PSMU via BID among the total sample (β = 0.06, p < 0.01, 95% CI [0.01, 0.12]) and among males (β = 0.07, p < 0.05, 95% CI [0.01, 0.16]). The relationship

					between CEM and PSMU was fully mediated by BID, although the total effect of CEM on PSMU was small among both the total sample (β = 0.16, p < 0.05, 95% CI [0.01, 0.30]) and in males (β = 0.24, p < 0.05, 95% CI [0.03, 0.43]).
Schimmenti et al. (2017)	Italy	Cross-sectional	N=358 (57% females) AGE= 18 to 19 years (M=18.36, SD=.48)	Traumatic experiences	Regression The proposed moderated mediation model was tested. TEC total scores were positively predicting TAS-20 scores (t = 2.36, p = .02; B = .70, SE = .30, CI [.12, 1.29]), and TAS-20 scores were positively predicting IAT scores (t = 3.00, p b .01; B = .19, SE = .06, CI [.06, .31]). Also, TEC total scores were positively associated with IAT scores (t = 2.68, p b .01; B = .90, SE = .33, CI [.24, 1.56]), suggesting that

					only partial mediation occurred in the sample.
Yates et al. (2012)	Not specified	Cross-sectional	N=1470 (62.9 % females) AGE= not specified (M=19.13 years, SD=1.49)	Child Maltreatment	Mediation Analysis Mediation analyses found that there was a significant indirect effect between child maltreatment and PIU through alexithymia. After controlling age (b = - 0.01, ns), school years (b = - 0.06, ns), gender (b = - 0.06, p = 0.03; male = 0, female = 1), and race (b = 0.22, p < 0.001; non-Asian = 0, Asian = 1), child maltreatment was significantly associated with increased levels of alexithymia (b = 0.34, p < 0.001) and increased levels of PIU (b = 0.22, p <0.001). Furthermore, alexithymia was associated with increased levels of PIU (b = 0.22, p < 0.001).

Salzman-Erickson & Hicdurmaz (2016)	Not Specified	Cross-sectional	The data comprised of 16 YouTube videos from 12 posters, the videos together containing 166 minutes of recordings, eight blogs&9 threads.	Post-traumatic stress	The findings includes five basic categories: a) Structure of the narrative, b) Narrating the trauma, c) Restrictions in life, d) Strategies in everyday living, and e) Online interaction

3.3.2 Relationship between Trauma and Alexithymia:

Alexithymia can be the most common risk factor among trauma survivors (Eichhorn et al., 2014). Table 2 shows various kinds of childhood traumas and their relationship with alexithymia.

3.3.2.1. Studies involving childhood trauma:

In previous studies, it has been found that individuals with alexithymia have trauma histories. Yilmaz et al. (2016) found a positive association between *childhood sexual abuse* and alexithymia. They also found that sexually abused people have difficulty identifying feelings. Consistent with this study, Scigata & Szczepaniak (2018) also found that sexual trauma survivors are more likely to have higher alexithymia levels and post-traumatic stress disorder compared to non-sexual trauma survivors. Somewhat contrasting results have also been shown in a study by Lichev & Wolfradt (2016) that it is not always the trauma survivors who develop alexithymia but the *child sex offenders* too showed a greater degree of alexithymia and had difficulty in regulating & managing their emotions. Out of all types of traumas, *emotional neglect and physical neglect* rather than abuse were found to be significantly associated with alexithymia (Zlotnick et al., 2001) whereas in other studies mixed results have been found. According to Aust et al. (2013), only *early emotional neglect* was found to be associated with alexithymia. According to Chen et al. (2017), *chronic interpersonal trauma* in early developmental stages and *negative emotions* are thought to increase the risk of alexithymia. Further, it has shown that *multiple or complex traumatization* can also be associated with alexithymia. Further Eichhorn et al. (2014) found that a person can experience *numbing and emotional avoidance* post one or many traumatic experiences which can lead to the development of alexithymia.

Table 2

Studies on Trauma and Alexithymia (n=7)

Authors (year)	Country	Design	Sample Characteristics N (gender distribution) Age= Range (M,SD)	Type of trauma	Findings
Aust et al. (2013)	Germany	Cross-sectional	N=90 (46.66% females)	Early emotional neglect (EN)	Correlation Early EN was the only CTQ subscale significantly higher in the h-ALEX group as

			Age= 20 to 65 years (M=35.2, SD= 10.1)		compared with l-ALEX. Within the h-ALEX group only, early emotional neglect was still positively related to alexithymia as measured by the BVAQ (r .32, p .05; controlled for age) and the TAS-20 (r .19, p .05; controlled for age).
Yilmaz et al. (2016)	Turkey	Cross-sectional	N=140 (32.85% females) Age= 18 to 65 years (M=34.37, SD= 9.06 years)	Childhood sexual abuse	Regression and correlation Linear regression analysis did not reveal any asssociation between CTQ-28 total score, TAS 20 total score, and DES score of the patient group (p=0.52). On the other hand, positive correlations were found between CTQ-28 sexual abuse and TAS-1 and TAS-2 scores in the patient group. Additionally, there were positive correlation also between DES score and TAS-1, TAS-2, TAS total, and episode frequency in patient group.
Zlotnick et al. (2001)	Not Specified	Cross-sectional	N=252 (59% females) Age= not specified (M=40.43, SD=14.01)	Childhood trauma	ANCOVA and Regression A series of ANCOVAs (controlling for level of education) found that there were significant differences in alexithymia levels between subjects with PTSD and without PTSD, F (2.249) = 4.04, p < .05, and those with BPD and without BPD, F(2.203) = 18.87, p < .OOO1. Furthermore, there were no significant differences between subjects with substance abuse and those without, F (2,249) = 2.12, ns, those with an eating disorder and without an eating disorder, F (2,249) = 1.89, ns, and those with and

					without panic disorder, $F_{(2,249)} = 1.60$, ns, controlling for level of education.
Lichev & wolfradt (2016)	Germany	Cross-sectional	N=99 AGE= not specified (M= 42.26, SD=11.3)	Child sex offenders	Correlation and regression Correlation analyses based on the entire sample revealed significant relations among depersonalization, alexithymia and its facets, and reflection and rumination. All correlations ranged from r D 0.04 to r D 0.67. Results from the regression analysis indicate that the predictor model provides statistically significant improvement over the constant only model, x2 (6, N D 99) D 30.73, p <.001. The Nagelkerke pseudo R2 indicates that the model accounted for 36% of the total variance. This suggests that the set of the predictors discriminates significantly between both groups.
Eichorn et al. (2014)	Germany	Cross-sectional	N=2507 AGE= 14 years or above (M=49.2 years; SD=17.9 years)	Traumatic experience	Mediation Analysis To test mediating effects of post traumatic symptomatology on this association, two mediation analyses were conducted (Model A with the mediator PTSD symptom score; Model B with the mediators re-experience, avoidance/numbing, and hyper-arousal). There is an explained variance of 15% for model A and an explained variance of 17% for model B.

| Chen et al. (2017) | China | Cross-sectional | N= 1705 (37.9% females)

AGE= >=18 years (M = 66.17, SD = 4.49) | Childhood trauma | Correlation and Regression

TAS-20 total score has a significant and positive correlation with duration in prison (r = 0.15, p < 0.01), CTQ total score (r = 0.21, p < 0.01) and five subscales scores. TAS-20 total score has a significant and positive correlation with education of prisoners (r = 0.18, p < 0.01).

Specifically, adult prisoners with secondary school/technical school and college level were less likely to experience alexithymia. The experience of childhood trauma was also identified as a significant risk factor associated with alexithymia among adult prisoners. |
| Scigata & Szczepaniak (2018) | Poland | Cross-sectional | N=117 women

AGE= 18 to 64 years (M=34.68 years, SD = 13.861) | Sexual trauma | Regression

The dependent variable depth of PTSD is explained by the level of dissociation and alexithymia. There was a positive relationship between the predictor variables and the dependent variable for dissociation (β = 0.339; p < 0.01). The results suggested that sexual trauma (ST) survivors are likely to experience significant and higher alexithymia, PTSD symptoms and dissociation levels than non-sexual trauma survivors (NST) |

3.3.3. Relationship between Alexithymia and Problematic Internet Use:

Table 3 shows the various factors associated with Alexithymia and problematic internet use and their relationship.

3.3.3.1. Factors associated with alexithymia and problematic internet use:

Twelve factors are associated with the relationship between alexithymia and problematic internet use. These include negative activities, attachment styles, low self-esteem, dissociation, loneliness, probability of suicide, self-efficacy, resilience, avoidance coping, resilience temperament &character.

Negative Activities: Khodami & Sheibani (2019) have shown that students with a moderate and high level of addiction to the internet obtained high scores in other aspects of negative activities such as stress, anxiety, depression, emotion regulation, and alexithymia. Dalbudak et al. (2013) has also shown that alexithymia, depression, and anxiety were higher among moderate/high internet users.

Attachment style style: Craparo (2011) has found a positive association between alexithymia, internet addiction, and insecure attachment style among emerging adults and that there is an association between attachment in childhood and adulthood. Soranidou & Papastylianou (2018) have found a weak association between perceived parenting among university students with alexithymia and internet addiction.

Low self-esteem and Dissociation: Iskender et al. (2017) have found that People who experience dissociative tendencies and alexithymia are more likely to engage in problematic internet use while alexithymia was found to be a good predictor of dissociative experiences. They also found a positive relationship between low self-esteem and problematic internet use. Consistent with this, Craparo (2011) has found that there was a positive association between alexithymia, dissociation, and internet addiction.

Loneliness and suicide probability: Alpaslan et al. (2014) found that Problematic internet use was found to be higher among males and was significantly associated with alexithymia, loneliness, and the probability of suicide.

Self-efficacy and Resilience: Ebrahimi et al. (2019) have found that there exists a significant positive relationship between internet addiction, general self-efficacy, difficulty in emotion regulation, and resiliency. They further found that general self-efficacy, difficulty in emotion regulation, and resilience were able to predict 27% internet addiction variance among medical students.

Avoidance coping and Psychological Distress: McNicol & Thorsteinsson (2017) found that among adolescents, high use of discussion forums, high rumination levels, and low self-care were the main contributing factors to internet addiction whereas, among adults, high anxiety, high emotion & avoidance coping responses, engagement in video gaming and sexual activity predicted internet addiction.

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Temperament and Character: Dalbudak et al. (2013) found that the relation between alexithymia and problematic internet use is associated with certain personality traits such as temperament and character, where people who are high in novelty-seeking (temperament) and low in cooperativeness as well as self-directedness (character) were found to be moderate/high in internet addiction.

Table 3

Studies on Alexithymia and Problematic Internet Use (n=8).

Authors (Year)	Country	Design	Sample Characteristics N(Gender Distribution) Age (M,SD)	Factors associated with alexithymia	Findings
Khodami & Sheibani (2019)	Iran	Cross-sectional	N=743 (48.86% females) Age= >=16 years	Negative activities such as stress, anxiety, depression and impulsiveness	Correlation and Regression A significant positive relationship was found between students with moderate and severe addiction to the Internet, Stress, Emotion Regulation, and Identifying feelings. Binary logistic regression predict Emotion Regulation, Alexithymia, and Negative activities based on Internet Addiction range (which applied on the Severity and moderate users). These factors predicted the range for 66.3% and 77.8% for Emotion Regulation and Alexithymia and 66.7% negative activities for users with moderate and severe addiction to the internet.
Iskender et al. (2017)	Turkey	Cross-sectional	N=463 (55% females) Age= 18 to 26 years (M=20.93, SD=1.87)	Low self esteem and dissociative tendencies	Correlation and Structural equation Modelling The model had a good fit ($\chi2 = .81$, df = 1, p = .36952, GFI = 1.00, AGFI = .99, CFI = 1.00, NFI = 1.00, RFI = .99, IFI = 1.00, SRMR = .0062, and RMSEA = .000) and also accounted for 13% of the dissociative experiences, 21% of the alexithymia, and

					0.1% of the self-esteem variances.
Dalbudak et al. (2013)	Turkey	Cross-sectional	N=319 university students	Personality traits such as temperament and character	Correlation and Regression IA severity was positively correlated with DIF (r = 0.38, p < 0.001), DDF (r = 0.37, p < 0.001), and alexithymia (r = 0.41, p < 0.001) and negatively correlated with SD (r = -0.28, p < 0.001). Other than these, there were no significant correlations. The results showed that the DIF and DDF factors of alexithymia, low C and high NS dimensions of personality were the determinants of IAS score in the final model
Craparo (2011)	Italy	Cross-sectional	N=335 (55% females) Age=18 to 21 years (M = 18.2, SD = .50)	Insecure attachment style	Correlation There were significant correlations between IUAD, alexithymia, and dissociation. The difficulty of identifying feelings played an important role on students' dissociative experiences. Furthermore, significant correlation were found between ADD and the first factor of TAS-20.
Soranidou & Papastylianou (2018)	Greece	Cross-sectional	N=206 (68% females) Age= Not specified (M=21, SD = 1.9).	Childhood perceived parenting	Correlation, Regression and Mediation Analysis Statistically significant correlation was found between alexithymia and internet addiction r (206) = 0. 37, p < .01. Regression Analysis showed that Alexithymia (b = 0. 37, t = 5. 71, p < .001) was able to predict 14% variance in internet addiction. It was partially proved that Depression had a non significant indirect effect between Alexithymia and Internet addiction as indicated by confidence

intervals b = .07, BCa CI [-.004, .16].

Alpaslan et al. (2014)	Turkey	Cross-sectional	N=328 (55.8% females) Age=19-25 years (M= 20.5, SD=1.8 years)	Loneliness and probability of suicide	Correlation Significant correlation was found between YIAT, UCLA, TAS and SPS with the strongest correlation between YIAT and SPS (r=0,426, p<0.001).In addition, significant correlation was found between YIAT and three subscales of TAS-20. The highest correlation was between DIF (difficulty in identifying feelings) and YIAT (r=0,342, p<0.001).
Ebrahimi et al. (2019)	Iran	Descriptive study	N=96 (47.9% females) Age = not specified (M=19.73, SD=1.11)	Difficulty in emotion regulation and low resilience	Correlation and regression There was a significant positive relationship between the difficulties in emotion regulation and IA (r=0.321). There is a significant negative relationship between self-efficacy and resilience (r= -0.424, r= -0.222). Self-Efficacy (GSE) and difficulty in emotion regulation could predict 0.276 of the variance of IA in the samples. This rate is 25% if adjusting that to the real community (R2=0.276, R2adj=0.257, P<.01) among independent variables, self-efficacy (B=-0.37; t=-3.81) had a higher predictive value than difficulties in emotion regulation (B=0.27; t=2.80).

| McNicol & Thorsteinsson (2017) | UNE | Cross-sectional | N=449 (64.1% females) Age=16 to 71 years (M = 27.93, SD = 13.22) | Avoidance coping, higher rumination and lower self care | Correlation, Regression and mediation analysis Maladaptive coping responses in adults (emotional and avoidance coping), and in adolescents (rumination, and acting out) were positively correlated with IA. For adolescents, Internet activities accounted for 29.2% of the variance in IA (R2 adjusted), F (20, 114) = 3.77, p < 0.001, with high discussion forum use, high rumination, and low self-care being the strongest predictors of IA. The main predictors of IA for adults were high use of video gaming and sexual Internet activity, low use of email, and high anxiety and avoidant coping levels. Adjusted R2 = 0.47, F(19, 221) = 12.26, p < 0.001. |

3.3.4. Effectiveness of Interventions:

Table 4 shows the effectiveness of interventions for dealing with trauma, reducing alexithymia symptoms and problematic internet use.

3.3.4.1. Programs based on Mindfulness for Trauma survivors and Alexithymia:

The interventions based on mindfulness can be effective with both the trauma survivors and people who showed the symptoms of alexithymia. A Study by Thieleman et al. (2014) has revealed that traumatic experiences of grief and bereavement can be reduced with the help of a mindfulness-based approach. They further found a decrease in depression, anxiety, and trauma symptoms following counseling with the ATTEND model.

In contrast with trauma, mindfulness has also been found to be an effective intervention for reducing alexithymia among women (Viding et al., 2015). They found that with the help of different cultural activities including mindfulness, participants can become more aware of their emotions and can improve their ability to describe and identify emotions. However, there was not found any significant difference between the intervention and control groups concerning the externally oriented thinking dimension of alexithymia. Similar results were found by Bornemann & Singer (2016) in another population. It was found that a decrease in alexithymia scores was caused by the presence and affect modules of intervention that focus on mindfulness meditation and being in present.

3.3.4.2. Programs based on Group Therapy for Trauma survivors and Alexithymia:

According to Zorzella et al. (2019), Alexithymia plays an important role in trauma therapy outcomes, especially among women with childhood abuse. Their study showed improvements in Post traumatic stress disorder, dissociation, and interpersonal problems that were associated with decrease in alexithymic symptoms following WRAP which is a group program that aims at increasing affect regulation skills in the form of trauma symptoms. Further, Rufer et al. (2010) also found that in post-short-term group therapy, there was a significant decrease in alexithymia concerning factor 1 and factor 2 suggesting that CBGT outcome does not appear to be negatively affected by alexithymia.

3.3.4.3. Programs based on Cognitive Behavioral Therapy for Problematic Internet Use:

Ke & Wong (2018) have developed the psychological intervention program-Internet use for youth (PIP-IU-Y), CBT- based program designed for adolescents which focuses on preventing internet addiction rather than treating it. Their pre-intervention and post-intervention scores revealed that there is a significant decrease in their PIUQ scores suggesting their decreased inclination toward the internet. Another CBT-based program was PROTECT + intervention which can be applied to school-based adolescent populations. Their findings showed a significant decrease in self-report and parental reports of internet symptom severity after 12 months. In contrast with this, in a study by Bong et al. (2021), it was found that music therapy along with cognitive behavioral therapy of 8 weeks was found to be more effective and leads to improved symptoms of smartphone/internet addiction, anxiety, ADHD and impulsivity among adolescents. Music therapy gave emotional comfort to the participants and helped in forming a rapport with a therapist while encouraging them to do CBT homework.

Table 4

Intervention Based studies (n= 8)

Target Variable for intervention	Authors (year)	Country and Design	Participants	Name of Intervention	Program	Outcomes
Trauma	Thieleman et al. (2014)	Southwestern United States. Quasi experimental design	N=42 clients seeking grief counseling at a mental health agency. (M=38.98, SD=11.2)	ATTEND model, a mindfulness-based intervention	This intervention contains following six elements: • Attunement • Trust • Therapeutic touch • Egalitarianism • Nuance • Death education Similar to other mindfulness-based approaches, goals of the ATTEND model are to increase emotional tolerance of clients by helping them respond with greater awareness rather than reacting habitually to events and emotions. With the help of ATTEND model, Mindfulness practices are implemented throughout therapy	minutes.
Alexithymia	Viding et al. (2015)	Sweden. Randomized control trial	N= 48 women participants Age= 41 to 70 years (M=53.8 SD= 8.15).	The culture palette: six different cultural packages. Baseline, 3months (the length of the programme) and 6months (follow-up)	Six cultural packages include: *Mindfulness and contemplation.* *Interactive theatre* *Discussions* on thoughts and feelings *Vocal improvisation and drawing* *Dance movements* with focus on bodily awareness Musical show Each session in every cultural package lasted for about 90	

Study revealed that there is a statistical significant decline in both the instruments from pre test to post test (Cohen's d = 0.92) for IES-R and (Cohen's d = 0.70) for HSCL-25. They further showed that there were statistically significant differences between groups in terms of hours at follow up (p<.01) and on the amountof change in pre test and post scores (p<.001). The results significantly revealed a pronounced decrease in the intervention group compared to the control group in the alexithymia items of totalscore, (P=0.007, mean treatment

						effect size=5.4 (SE=2.2) at 6 months in favor of the intervention group), difficulty describing (P=0.004, 2.4 (0.9), difficulty identifying (P=0.051, 2.6 (1.3)
Alexithymia	Bornemann & Singer (2016)	Germany. Randomized control trial	318 participants (59% female, Age= 20 to 55 years (M = 40.8, SD = 9.3)	The ReSource training is comprised of three modules called Presence, Affect, and Perspective. Each module lasts 3 months, begins with a 3-day silent retreat, includes 13 weekly group sessions of 2 h, and about 30 min of daily practice	In addition to weekly group sessions, each module consists of two core exercises to be practice by participants five times a week. In the Presence module, participants learn to focus on present moment experience. The two main practices are Breathing Meditation and Body Scan. In the Affect module, participants learn to develop an attitude of kindness, care, and compassion toward themselves and others. In the Perspective module, participants involve in metacognition, and in cognitive perspective taking on the self and others. The main exercises are meditation practice and dyadic exercise.	Alexithymia decreased in the intervention groups more as compared to the control group from T0 to T3 (p<0.001, d=−0.331) and T0 to T2 (p=0.026, d=−0.155) but not T0 to T1 (p=0.143, d=−0.166). The effect at T3 was significant for all TAS subscales. Post hoc tests showed that Presence and Affect modules were responsible for decreases in TAS scores but not the Perspective module.
Trauma and alexithymia	Zorzella et al. (2019)	Canada.	N=167 treatment	WRAP is a Stage I based, multimodal,	WRAP addresses issues of affect regulation, skill	Improvements in PTSD,

			seeking women Age= >=18 years (M= 39.23 years, SD=11.51)	8-week trauma treatment group program. 2 to 3 group sessions each day held for four days a week with individual therapy sessions once a week.	building, stabilization, education and support. It combines various therapies such as interpersonal, cognitive behavioral, psychodynamic, psycho educational and somatic oriented therapies.	dissociation, and interpersonal problems were associated with decrease in alexithymic symptoms following therapy. Alexithymia was able to predict approximately 57% of the variance in PTSD, 50% of the variance in dissociation, and 50% of the variance in interpersonal problems during WRAP program.
Alexithymia	Rufer et al. (2010)	Germany	N=55 (61.8% females) Age= Not specified (M= 39.7, SD=11.3)	Short term cognitive behavior group therapy. 5 weekly sessions of 150 min each.	Session 1 and 2 consists of psycho education about anxiety, coping strategies and treatment of anxiety disorders ending with 20 min training in progressive muscle relaxation. Session 3 focused on therapist guided exposure to panic like physical sensations to teach them management of anxiety and other negative emotional states to improve their coping ability to deal with aversive emotions.	Improvement of alexithymia remained significant over time [F (2, 61.8) = 3.98, p = 0.024]. Results further showed that the decrease in alexithymia total scores was mainly due to changes in factor 1 (difficulty identifying feelings) and factor 2 (difficulty

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					Session 4 and 5 deals with cognitive restructuring.	describing feelings), whereas factor 3 (externally oriented thinking) almost remained stable over time.
Problematic internet use	Bong et al. (2021)	Korea Intervention based study	N=155 (55.2% females) Age= 10-16 years (M= 12.4, SD=1.778) for CBT-MT group	Cognitive behavioral therapy based music therapy. In both groups, MT and CBT were held for a total of 8 sessions. Each session lasted for 75 minutes, with the initial 10 minutes used to identify the CBT homework task. The CBT-only group was supervised by a psychologist.	Music therapy (MT) In first session, rapport formation was done with the help of songs and percussion. In second session, emotional cards were presented by the participants. In third session, they explored their emotions. Fourth session focused on consequences of behavioral patterns. In fifth session, they improve leadership abilities and ability to control their behavior by writing 'my power' songs to reflect on themselves. In sixth and seventh session, they created a song using worksheet and performed on it. In eighth session, notes of first seven sessions were gifted to them.	In both the groups, SAPS and YIAT were significantly reduced after the interventions. SAPS in the CBT-MT group decreased from 32.75±8.619 to 26.48±10.970 (t=-5.880, p< 0.001) whereas YIAT in the CBT-MT group also decreased from 46.79±13.800 to 32.16±19.245 (t=-7.373, p<0.001)
Problematic Internet Use	Ke & Wong (2018)	Malaysia. Pretest–Posttest, one-group experimental design	N= 157 (54% females) Age= 13 to 18 years (M=14)	Psychological Intervention Programme-Internet Use for Youth (PIP-IU-Y) It consists of 8 weekly	The eight sessions were categorized into three phases: formulation, restructuring of thought and behavior, and modification of thought and behavior.	Comparing the pre-intervention and post-intervention scores (T0 - T1), there was a significant

				group sessions of 90 min each.	First phase focuses on increasing participant's self-awareness.

Second phase focuses on cognitive restructuring and challenging the behavior of the participants with the help of social interaction habit diary and exposure ladder. Third phase consists of three sessions and focus on thought modification and behavior. | decrement in the participants PIUQ scores [t (156) = 13.53, p\0.01, d = 1.03] on comparison with pre-intervention and post-intervention scores, suggesting that their preference for PIU has decreased. |
| Problematic internet use | Szasz-Janocha et al. (2020) | Germany. Randomized controlled study design to a one-armed intervention study without a control group | N=54 (16.7% females) Age= 9 to 19 years (M=13.48, SD=1.72) | The PROTECT + intervention It consisted of 4 group sessions at 100 minutes (1 session per week in 4 subsequent weeks). | PROTECT program consists of cognitive behavioral techniques such as psycho education, cognitive restructuring and life skills. The session goals were (1) handling of boredom and increasing motivation, (2) reducing procrastination and performance anxiety, (3) reducing social anxiety and promoting social skills, and (4) promoting functional emotion regulation skills, respectively. | There was a significant reduction of all primary outcome variable in symptom severity over time and medium to large effect sizes between pretest and 12-month follow-up. The reduction in the quantity of time spent on internet was not significant. Considering second outcome measures, there was a significant reduction in symptom severity in SDQ-PR, DIKJ, SIAS, and PHOKI |

Discussion:

The present study aimed to systematically review and critically assess the existing literature on the relationship between trauma, alexithymia, and problematic internet use. All the studies contributed in specific ways to the explanation of the associations between trauma, alexithymia, and problematic internet use. Present systematic review results showed that various types of traumatic experiences such as child maltreatment, different types of abuse and neglect can lead to the development of alexithymia over time as well as to the development of problematic internet use, especially among adolescents and adults and that various factors associated with alexithymia can make a person use internet problematically. These results further showed the various intervention strategies such as mindfulness, group therapy and cognitive behavioral interventions can reduce the effect of trauma, alexithymia and problematic internet use respectively. This study of interventions is useful for developing adequate prevention and intervention programs for trauma, alexithymia, and PIU and also for improving the community policies.

4.1 Implications:

4.1.1. Educational and preventative actions :

Psychoeducation to all the relevant stakeholders i.e., teachers and parents is important for them to understand that maladaptive use of the internet is strongly related to a person's emotional dysregulation and metacognitions (Akbari, 2017). Enhancing the ability to describe, identify and regulate feelings for those high in problematic internet use especially adolescents could be more useful than trying to control problematic internet use externally. Dealing with their traumatic experiences in a group can be an additional therapeutic exercise for the prevention of PIU as trauma is also one of the most important factors for PIU.

4.1.2. Clinical implications:

Applying an integrative process-based approach to the clinical interventions, specific trauma-based emotional and interpersonal factors affecting the relationship between trauma, alexithymia, and problematic internet use should be the major targets of psychological interventions. Some other therapeutic techniques such as art therapy, acceptance and commitment therapy, and expressive writing interventions could be used to alleviate alexithymia and PIU symptoms.

4.2. Limitations:

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The present systematic review has several limitations. Due to multiple names of PIU surrounded by broad terms such as "internet addiction", "pathological internet use", "problematic use of the internet" and "internet use disorder" some relevant and important studies might have been overlooked. In addition, this paper did not investigate specific internet activities and specific traumas since the focus were on the general overuse of the internet and its origin from childhood trauma as a cause. Another important limitation is the nature of the studies as most of them relied on cross-section design, self-reported measures which are prone to biases, and selection of participants from various age groups including adolescents from school, university students, and adult population. Finally, the present review paper did not analyze various measures used in different included studies which would have shed more light on the characteristics of the results.

4.3 Conclusions and Future Directions:

A present systematic review has presented an updated summary of the studies which investigated the relationship between trauma, alexithymia, and problematic internet use with an additional emphasis on interventions. Early childhood traumatic experiences have consistently been associated with alexithymia and problematic internet use among adolescence and adults while intervention research has separately focused on trauma, alexithymia, and problematic internet use. Individuals with childhood trauma such as child maltreatment, sexual abuse, emotional abuse, emotional neglect, physical neglect, chronic interpersonal trauma and multiple traumatization are more likely to develop alexithymia and problematic internet use later in their life in order to regulate themselves emotionally and so alexithymia may mediate the relationship between the two (Schimmenti et al., 2017). There are various factors associated with alexithymia which are leading to problematic internet use among adolescents and adults such as negative activities, attachment style, low self-esteem & dissociation, loneliness, resilience, avoidance coping style and psychological distress which needs to be taken care of while providing interventions for alexithymia and problematic internet use. The present study also reviewed various intervention literatures to effectively deal with childhood trauma, alexithymia and problematic internet use. It has been found that mindfulness-based programs and group therapy can be very effective for trauma survivors (Thieleman et al., 2014) and to reduce alexithymia levels among individuals (Bornemann & Singer, 2016). To reduce problematic internet use, Cognitive Behavioral therapy has been widely used (Szasz-Janocha et al., 2020) along with music therapy (Bong et al., 2021). The intervention literature can provide useful information for behavioral researchers to implement them in further research. Future research suggests qualitative and longitudinal studies to be conducted on large and diverse samples that would include individuals from various countries and of different age groups (e.g., older adults). In addition, experimental sampling methods using a behavioral measurement of trauma and problematic internet use (e.g., specific traumatic event, number of traumas, time spent on the internet) would address the temporal and causal relations between trauma and problematic internet use. Intervention studies focusing jointly on trauma, alexithymia, and problematic internet use

should be incorporated into future researches. Various individual, mediating and interpersonal factors in traumatized and alexithymic individuals who display Problematic internet use are warranted.

Conflict of Interest:

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Declaration for original contribution and non-plagiarism:

On behalf of all the authors, I would like to state that this work is original and there is no plagiarism of any kind.

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