

Charting the Development of O-S-R-O-R Communication Mediation Model: A Systematic Literature Review of Media Effects Trends in New Media Research

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ABSTRACT

The concept of communication as mediation has now become a crucial metric for analysing various behavioural patterns, particularly in relation to new media. Several psychological and structural factors interpreting the relationship between engagement and the consumption of information and cognitive processes have been emphasised through the use of O-S-O-R and O-S-R-O-R communication mediation models. However, there remains a variety of viewpoints concerning theoretical perspectives and thematic patterns, leading to difficulties in obtaining a structured overview and so advance the development of communication mediation research. This study consists of a systematic literature review of 739 articles, published between 2015 and 2020, across three databases, Scopus, Google Scholar and EBSCOhost, resulting in thirty-four being identified as usable for providing a synthesis of current knowledge focusing on new media. This highlights a considerable variation in existing constructions and trends, along with communication effects and O-S-R-O-R measures. This review undertakes a thematic classification of prior studies in order to: firstly, identify key gaps in the literature, secondly, identify potential areas for additional research, and thirdly, offer recommendations for future studies. By offering an in-depth analysis, this review will enhance information and assist scholars to expand the existing literature. In addition, this study examines the implications for the investigation of potential pre-emptive factors for O-S-O-R and O-S-R-O-R.

Keywords: *Communication effect model, systematic literature review, O-S-O-R, O-S-R-O-R, new media.*

INTRODUCTION

A number of studies have been previously undertaken into communication as process of mediation, in order to measure different behavioural patterns. These studies have identified the influence of a variety of psychological and structural factors (all exerting a significant influence on behavioural outcomes), which are comprehensively combined in existing communication mediation models. The framework of communication mediation has been adopted by researchers to interpret the relationship between information consumption, as well as cognitive process and engagement (Lee, 2017). This includes the Orientation-Stimulus-Reasoning-Orientations-Response (O-S-R-O-R) model, which measures indirect influences by means of personal cognitive outcomes to predict human behaviour (Cho et al., 2009; Jung, Kim, & Zúñiga, 2011; Lee, 2017).

Communication mediation demonstrates media's considerable potential to influence various aspects of life, with users' level of engagement being enhanced by the recent revolutionary advancement in media technology as a venue of user-generated content (McLean & Wilson, 2019). Previous studies (e.g., Boulianne, 2019; Kaosiri, Fiol, Tena, Artola, & García, 2019; Coyne, Rogers, Zurcher, Stockdale, & Booth, 2020; Zolkepli & Tariq, 2021) have determined the global influence of these new media outlets on various aspects of society, focusing primarily on new directions to foster political information and stimulate

engaged citizenry (Peifer, 2018). In addition, this phenomenon of communication mediation, along with advanced media technology, has attracted substantial attention in the field of communication process.

The theoretical basis of the O-S-R-O-R model of communication effects (see Table 1) was initially examined by Pavlov (1902) and Watson and Rayner (1920), who focused on the use of a simple S-R (Stimulus-Response) framework to discuss cognitive changes and the resulting behavioural outcomes. Pavlov's landmark experiment studied the conditioned response in relation to dogs (Hebb, 1949; Kandel et al., 1991), employing food as an unconditioned stimulus and salivation as an unconditioned response. After observing that the dog in his experiment began to associate the laboratory assistant with food, Pavlov employed a bell as a neutral stimulus. After repeatedly ringing a bell whenever he fed the dog, Pavlov found the animal associated the neutral stimuli (i.e. the bell) with food. Pavlov's dog subsequently salivated when hearing the bell ring, even if food did not appear. This behaviour developed the classical Stimulus-Response (S-R) (Ziegler et al., 2012).

Watson and Rayner (1920) subsequently tested the S-R connection in humans in their study of a nine-month-old infant known as the "Little Albert Experiment". The researchers followed an identical procedure to that taken with Pavlov's dog. During the first stage, Albert was exposed to objects such as a white rat, rabbit, dog, fur coat, cotton wool, blocks and a Santa Claus mask. The child demonstrated no fear of, or phobia towards, any of these objects. During the second stage, a laboratory rat (neutral stimulus) was presented to Albert, with a loud noise (unconditioned stimulus) being generated by striking hammer by steel bar whenever he attempted to touch the rat. After repeated pairing of the two stimuli, Albert reacted with crying, i.e. fear (unconditioned response). Albert subsequently continued to cry, even if he was presented with rat without any accompanying sound. In this way, the rat (neutral stimuli) became conditional stimuli creating fear (conditional response). Furthermore, the researchers found that Albert generalised his phobia to all objects sharing the characteristics of a rat, including cotton wool, dogs, cats and Santa Claus (Watson & Rayner, 1920). This experiment thus formed the first human test of the stimulus-response connection.

Watson and Rayner's (1920) experiment was followed by Markus and Zajonc (1985), who substituted the S-R framework with the Orientation-Stimulus-Orientations-Response (O-S-O-R) cognitive social psychology model, which was illustrated within the media context by McLeod, Kosicki and McLeod (1994). This phenomenon of communication mediation has been further explored and elaborated as a citizen communication mediation model, offering interpersonal political discussion and interactive civic engagement. Moreover, this also resulted in considerable focus on the use of the Internet as a media information source, along with its role within citizen communication and civic engagement (Shah et al., 2005).

A growing body of empirical evidence has initiated an investigation of the mediating effect of citizen communication, particularly in relation to campaign advertisements (Lee, 2017). This argument has prevailed on the basis of campaign communication mediation model, as discussed by Shah et al. (2007), who argued that communication between citizens forms a significant intervening variable between exposure to information and participatory behaviours. Furthermore, citizen communication possesses a direct relationship with the levels of added exposure and engagement, leading to additional research following the in-depth insights obtained once a campaign communication mediation model was combined with prior models of communication mediation (McLeod et al., 1994), i.e. the cognitive

mediation model (Eveland et al., 2003), and the citizen communication mediation model (Shah et al., 2005).

Markus and Zajonc's (1985) O-S-O-R has been identified as a source of inspiration for these models, despite the framework failing to provide an absolute flow of mediation process (Shah et al., 2007). In order to understand the impact of message processing and communication, Shah et al. (2007) suggested inserting an additional step of Reasoning (R) at the center of the O-S-O-R framework, to establish the O-S-R-O-R framework. This was then tested by theorising the role of political conversation in developing citizens' understanding of media messages. However, Shah et al. (2007) referred to reasoning as either interpersonal or intrapersonal phenomena, observing that this mediation process is sufficiently substantial to obtain information and to facilitate expression through the Internet (Cho et al., 2009). Table 1 (below) summarises the significant development of the O-S-R-O-R model of communication.

Table 1: Development of the O-S-R-O-R model of communication

Authors	Field of study	Model
Pavlov (1902) Watson and Rayner (1920)	Cognitive social psychology	S-R (Stimulus-Response)
Markus and Zajonc (1985)	Cognitive social psychology	O-S-O-R (Orientation- Stimulus- Orientations-Response)
McLeod, Kosicki and McLeod (1994)	Communication mediation model	
Cho et al. (2009)	Communication mediation model	O-S-R-O-R (Orientation-Stimulus-Reasoning- Orientations-Response)

This study focuses on the development of the communication mediation model in contemporary research, being prompted by the significance of the communication process in new media technology, alongside increasing number of studies focusing on the communication mediation effect of the O-S-O-R and O-S-R-O-R models. This article therefore undertakes a literature review of recent scholarship concerning the impact of both models between 2015 and 2020. The core objective of this study is to explore and identify the trends of this model in the new media era, based on the research disciplines, methodological preferences, theoretical perspectives and thematic patterns followed by scholars over the previous six years. This study therefore provides an overview of modern research trends in this area of study, as well as offering a number of valuable suggestions for future research.

METHOD

Search Strategy and Evaluation Process

In order to locate studies for use in a systematic review, it is vital to first establish a comprehensive search strategy (Noar et al., 2018). This paper examined communication mediation studies published in the English language focusing on the impact of O-S-O-R and O-S-R-O-R models of communication in the disciplines of sciences, social sciences, humanities, and the arts. This commenced with a search of three databases frequently used by scholars across disciplines, i.e. Scopus, Google Scholar and EBSCOhost, with publication dates limited to between 2015 and 2020. The search used the keywords "communication mediation

model,” “O-S-O-R,” and “O-S-R-O-R”, determining the relevance of each manuscript by means of its title, abstract, keywords and theoretical framework. The use of the keywords in Google Scholar initially found 407 articles, with an identical search of EBSCOhost resulting in with 66 relevant studies and 266 relevant articles in Scopus. Each relevant manuscript was then downloaded (including references) for further evaluation.

Screening for Inclusion

In order to minimise the margin of error, two researchers then performed independent and parallel assessments of the research articles (including titles, abstracts, introduction, and theoretical frameworks), resulting in sixteen, eighty-eight and fifty-two relevant articles in EBSCOhost, Google Scholar and Scopus folders, respectively. All manuscripts retrieved from the three different databases were then combined in a single folder, with any duplicates then removed, leaving in a total of seventy-three articles. During the final stage of screening for inclusion, we included only those studies employing the O-S-O-R or O-S-R-O-R frameworks, resulting in a total thirty-four studies being identified as relevant and usable, as illustrated in Figure 1.

Descriptive Textual Narrative Synthesis

The categorisation employed for a Systematic Literature Review (SLR) depends upon the intended purpose. We therefore followed the categories introduced by Paré, Trudel, Jaana, and Kitsiou (2015), and Templier and Paré (2015) and proceeded with the description of each category using textual narrative synthesis.

A descriptive review explores literature related to a specific research question, concept or topic area (Xiao & Watson, 2019). We therefore searched for concepts related to “communication mediation model,” “O-S-O-R,” and “O-S-R-O-R.” In addition, we employed a textual narrative synthesis form of a descriptive review for further data extraction, analysis, and synthesis, due to considering that this assists with the standard data extraction format employed to identify study characteristics, i.e. findings, context and quality (Lucas et al., 2007).

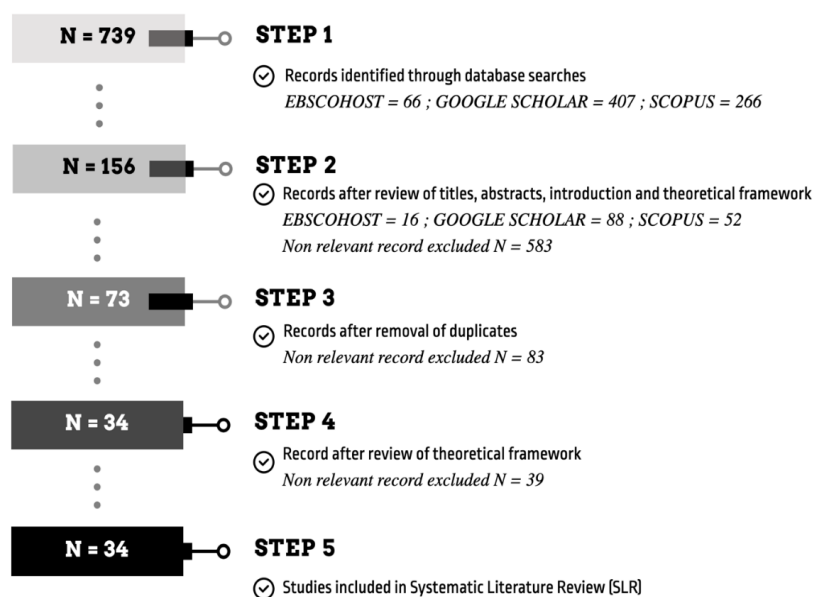


Figure 1: PRISMA flow diagram of the screening process

Data Extraction

The data extraction was conducted by the researchers with parallel checks. This resulted in the following details being extracted from the studies included in SLR to chart the development of the latest trends in O-S-O-R and O-S-R-O-R: study characteristics; country; theories; measures of first orientation O1; measures of stimuli S; measures of reasoning R; measures of Second Orientation O2; measures of response R; and significant recommendations.

RESULTS

Study Characteristics

As noted above, the PRISMA screening method, which was screened across sixteen countries, resulted in thirty-four relevant studies, some of which had been conducted in a single country, while others integrated differing populations. The greatest number of studies came from the United States of America (12) followed by the following: China (6); South Korea (6); Hong Kong (6); Japan (1); Taiwan (1); Portugal (1); Italy (1); Greece (1); Spain (1); Denmark (1); Finland (1); Sweden (1); Germany (1); Australia (1); and Mexico (1). It is important to note that, of the thirty-four articles, four were based on multinational data.

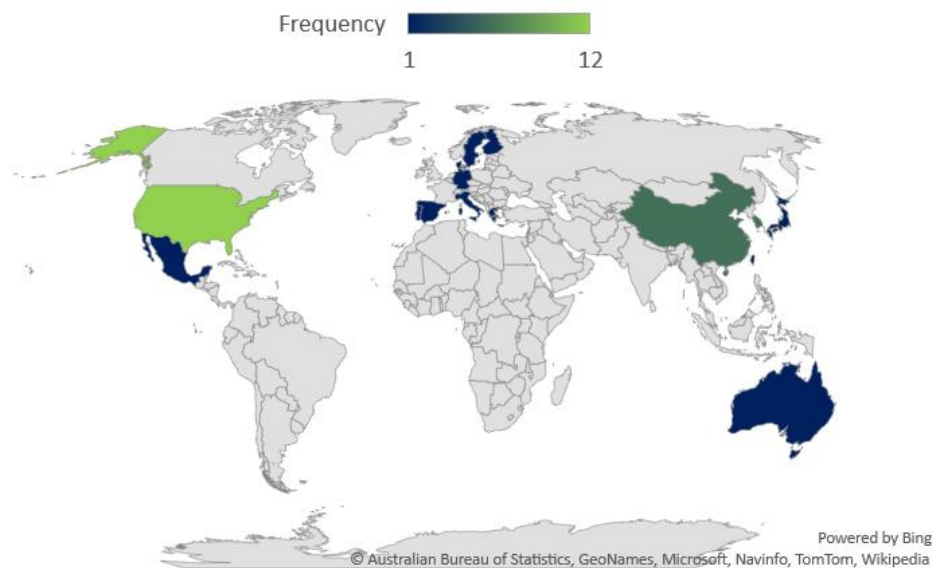


Figure 2: Global trend of publication

The design of the included studies was found to primarily consist of twenty-seven cross-sectional studies, followed by three longitudinal studies and four using two wave panel data. We consider it significant that the implementation of O-S-O-R and O-S-R-O-R models was not confined to media and communication studies. Thus, despite most of the research areas being in the context of media and communication (i.e. twenty-one studies, 61.8%), six studies focused on computers and IT (17.6%), five on the area of health communication (14.7%), and two on sociology (5.9%).

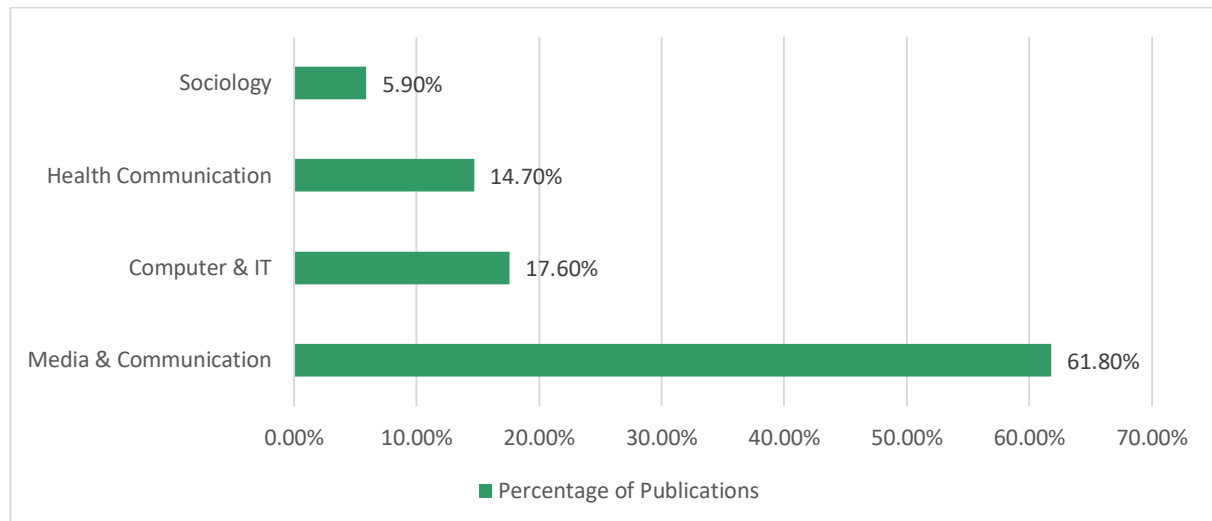


Figure 3: Communication mediation model trends based on disciplines

This study also found that a variety of populations had been selected for data collection purposes, with eleven studies having collected samples from the adult population, twelve from the general population, eight from students and three from a sample of registered voters. Moreover, twenty-one studies were found to have collected data through an online survey, while twelve consisted of physical surveys and a single study used a telephone survey.

Sampling strategies are highly significant when it comes to strategising the research, with existing systematic literature reviews identifying a variety of sampling techniques. These include: convenient sampling (6); simple random sampling (5); stratified quota sampling (5); quota sampling (5); purposive sampling (3); stratified sampling (2); multistage sampling (1); multistage probability sampling (1); systematic sampling (1); multistage cluster sampling (1); multistage random sampling (1); and proportional sampling (1).

In addition, the study conducted by Lee, Kim, and Kang (2019) utilised probability sampling without identifying the technique employed and Reichert and Print (2017) used the data of Australian National Program: Civics and Citizenship Assessment (NAP-CC), but without elaborating on the sampling technique.

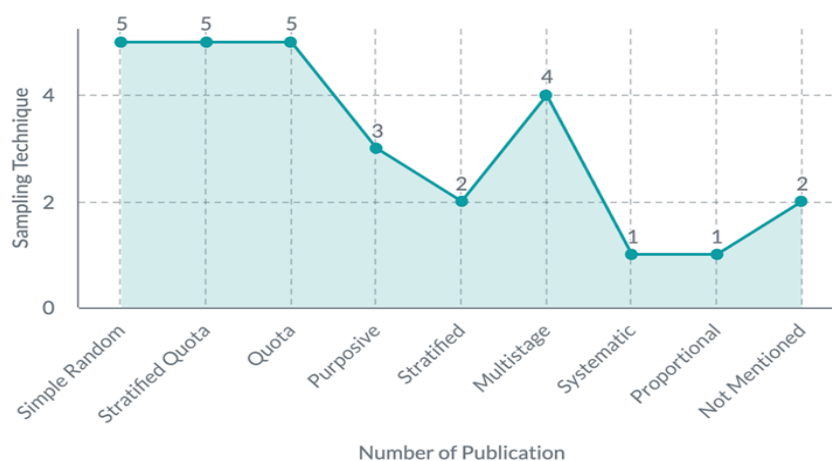


Figure 4: Comparison of sampling strategies

Additionally, this current study identified that, over the previous six years, twelve studies of communication mediation phenomena have employed the O-S-O-R framework, twenty studies the O-S-R-O-R framework, with only two studies (e.g. Graham, Tang, & Mahoney, 2020; Namkoong, Nah, Record, & Van Stee, 2017) applying a multi theoretical framework alongside O-S-R-O-R.

Measures of First Orientation (O₁)

Orientation 1 represents “the set of structural, cultural, cognitive and motivational characteristics the audience brings to reception situation that affect the impact of messages” (McLeod, Kosicki, & McLeod, 2009, p. 238).

Our SLR identified that twenty-one studies used respondents’ demographics as first orientation (e.g. Ardèvol-Abreu, Diehl, & Gil de Zúñiga, 2019; Chan & Ng, 2014; Chen, 2019; De Zúñiga, Diehl, Huber, & Liu, 2019; Hills & Shah, 2020; Jung, 2020; Kelm & Dohle, 2018; Kim, Barnidge, & Kim, 2019; Li & Chan, 2017; Li & Guo, 2018; Liu, Zhou, & Zhang, 2020; Macafee, 2018; Mun, Yang, & Yoo, 2020; Namkoong, Nah, Record, & Van Stee, 2017; Park, 2019; Park & Kaye, 2019; Romer, Jamieson, & Pasek, 2009; Sasaki, 2017; Xia & Shen, 2018; Yamamoto & Morey, 2019; You, Lee, Kang, & Go, 2015). The remaining thirteen studies used unique constructs and demographics, including: health consciousness (Lee et al., 2019); national pride (Xiang & Hmielowski, 2017); political interest (Chan, Chen, & Lee, 2017; Park & Kaye, 2019; Warner, 2018); life satisfaction, social values and political satisfaction (Atkinson, 2015); civic interest (Reichert & Print, 2017); guidance, surveillance and entertainment (Chen & Chan, 2017); considerable time spent in playing online games (Jung, 2020a, 2020b); paying attention to political media content (Muñiz et al., 2017); social media presumption (Yamamoto et al., 2020); Facebook size and connections (Chan, 2016); exercise identity; and ethnic identity (Wirtz et al., 2017).

Measures of Stimuli (S)

In both the O-S-O-R and O-S-R-O-R frameworks “S” stands for stimuli, representing media messages. It also deals with initial selective control of individuals’ mental activity in deciding which stimuli to focus upon and which to ignore (Lee, 2017). Research into communication has found ample evidence that media influence is conditional and dependent on the individual’s views and exposure to stimuli (McLeod et al., 2009). Reichert and Print (2017) found that exposure to media content stimulates discussion, further enhancing cognisance of different issues, as well as developing confidence in engaging in various activities.

Existing SLR has explored various stimuli employed over the previous five years, including use of the following: media; news media; social media; social media news; Facebook news; foreign media; incidental news exposure; social media campaign content; information seeking; mobile news; traditional media exposure; information seeking; campaign information seeking; affinity; cross media; online political news consumption; online entertainment news consumption; interpersonal communication; TV programs used for health and online health information sources; follow up web pages; follow up social networks; in-game media; IT news; second screening for news media; general second screening; online political information; social media elaboration; exposure to both pro and anti-smoking content; and network expression.

Measures of Reasoning (R₁)

Shah et al. (2007) suggested including an additional step of reasoning “R” at the center of the long-standing O-S-O-R framework, to act as a core mediator of the influence of stimuli on second or outcome orientations and subsequent responses. Furthermore, placing reasoning at the center of this framework highlights the role of cognitive processes and deliberative discussion. Reasoning generally takes a variety of forms, including: firstly, reflections on media content (Eveland, 2001), secondly, anticipation of conversations (Eveland et al., 2005), and thirdly, composition of ideas to enable self-expression (Pingree, 2007).

On the other hand, Shah et al. (2007) conceptualised interpersonal discussions (along with these intrapersonal mental processes) as essential to the reasoning process. Moreover, Cho et al. (2009) considered reasoning as either interpersonal or intrapersonal phenomena, or their collective consideration.

As noted above, scholars of existing SLR identified twelve studies based on the O-S-O-R framework. However, reasoning R₁ is encapsulated in O-S-R-O-R framework, and therefore twenty-two studies incorporated different behavioral constructs under R₁, whose variables include the following factors: political discussion weak ties; political discussion strong ties; mass media use; interpersonal discussion; online discussion; offline discussion; positive perception; political discussion; effect on self and on others; information sharing; online political expression; interpersonal political discussion; civic discussion; news elaboration on social media; news curation on social media; social media expression; perceived deliberation; factual and electoral political sophistication; second screening for political expression; interpersonal political discussion; social media elaboration; online political discussion heterogeneity; Facebook expression; elaboration on cross cutting perspectives; favorable and unfavorable views of smoking; and political talk.

Measures of Second Orientation (O₂)

O₂ (also known as outcome orientation), encompasses any cognitive or behavioural outcomes arising from media exposure (McLeod, Kosicki, & McLeod, 2002). This represents the immediate consequences of any discussion denoting how an audience responds to media messages (Cho et al., 2009; McLeod et al., 2009). Reichert and Print (2017) stated that media has an indirect influence on participation through other mediating variables.

Over the previous five years, a number of constructs have been utilised under O₂, with some studies using a single variable and others multiple variables. Those tested under O₂ include: reflective integration; government trust; internal political efficacy; reciprocity; social capital; attitude; social norms; perceived behavioral control over smoking; online political efficacy; political efficacy; online discussion; efficacy; political discussion; civic knowledge; confidence to engage; political knowledge and confidence; online discussion; news blogging; political satisfaction; community involvement; sense of community belonging; medical check-up belief; online and offline conventional political participation; cooperative game playing; game discussion; social media political efficacy; reflective integration; PA-media conversation; political interest; perceived risks and benefits of smoking, and external political efficacy.

Measures of Response (R₂)

R₂ represents a response or outcome (McLeod et al., 2009), viewed by Cho et al. (2009) as a possible behavioural outcome, identified as participation. Moreover, several previous studies

Table 2: Targeted constructs in communication mediation model (CMM)

Source	CMM	O ₁	S	R ₁	O ₂	R ₂
Atkinson (2015)	O-S-O-R	Life satisfaction, social values, corporate values, political knowledge, and Political satisfaction; Political trust	Television, press, and online social networks	N/A	Political discussion	Corporate justice
You et al. (2015)	O-S-R-O-R	Demographics	Online news consumption (i.e. political news consumption and entertainment news consumption) FB news	Perceived deliberation	Online interaction, online discussion, and news blogging	Social status, social trust, and political participation
Chan (2016)	O-S-R-O-R	FB size and connections	Follow-up of web pages and social networks	FB expression.	Political efficacy.	Political protest and participation civic participation
Muñiz et al. (2017)	O-S-R-O-R	Attention to content concerning politics in traditional media	Social media campaign contents	Factual political sophistication and electoral political sophistication Mass media use, internet use, and Interpersonal discussion.	Online and offline conventional political participation	Behavioral intention for smoking
(Namkoong et al., 2017)	O-S-R-O-R and Theory of Planned Behavior	Demographic, situational, and motivational variables related to the campaign context, interactive social media campaign	Information seeking and social media use.	Online discussion and offline discussion.	Attitudes, social norms and perceived behavioral control over smoking	Online political participation and offline political participation.
Li and Chan (2017)	O-S-R-O-R	Social context	Internet use	Positive perceptions	Political trust	Online political participation and offline political participation.
Sasaki (2017)	O-S-R-O-R	Education level	Foreign media use and internet use	N/A	Increase in online political efficacy Government trust	Regime support
Xiang and Hmielowski (2017)	O-S-O-R	National pride				

Chan et al. (2017a)	O-S-R-O-R	Sociodemographic factors and political interest	mobile news and social media news	Political discussion	Political efficacy.	Online and offline political participation.
Chan and Ng (2017)	O-S-R-O-R	Demographics	Affinity	Interpersonal political discussion	Political efficacy	Offline political participation
Wirtz et al. (2017)	O-S-O-R	Exercise identity and ethnic identity	PA-related media	N/A	PA-media conversation and reflective integration.	Physical activity
Chen and Chan (2017a)	O-S-R-O-R	Guidance. Surveillance, Entertainment, and social utility	Social media news	Social media expression	Political efficacy and political knowledge.	Online and offline participation
Reichert and Print (2017)	O-S-R-O-R	Socio demographics and civic interest	News use of media	Civic discussion	Civic knowledge, and Confidence to engage (efficacy).	Expected participation.
Xia and Shen (2018)	O-S-R-O-R	Demographics.	Traditional news media use, alternative news media use, and news media use		Internal efficacy and political satisfaction.	Political participation.
Warner (2018)	O-S-O-R	Political interest	Pro media, pro cross media, cross media.	N/A	Political confidence.	Polarization.
Kelm and Dohle (2018)	O-S-O-R	Demographics.	Information.	N/A	Offline and online communication	Political consumerism.
Graham, Tang, and Mahoney (2020)	O-S-R-O-R and information repertoires theory	FCP conversation and FCP conformity.	Information seeking	Information sharing	Efficacy	Political participation.
Li and Guo (2018)	O-S-R-O-R.	Sociodemographic	Traditional media exposure and new media exposure.	Effect on self and others.	Online discussion.	Nationalism and government evaluation.
Macafee (2018)	O-S-O-R	Demographics.	Network expression.	N/A	Social media efficacy	Offline participation.

Ardèvol-Abreu et al. (2018)	O-S-R-O-R	Demographics	News media usage	Political discussion weak ties and political discussion strong ties	Reciprocity	Social capital.
Ardèvol-Abreu et al. (2019)	O-S-R-O-R	Demographics and Social orientations.	News media use and incidental news exposure.	Political discussion weak ties and political discussion: strong ties	Internal political efficacy.	Political participation.
Park and Kaye (2019)	O-S-R-O-R	Demographics and political interest	Social media use for news	News elaboration on social media and news curation on social media	Political knowledge.	Political participation
Park (2019)	O-S-R-O-R	Demographics.	Traditional news and social media news.	Political Talk.	Internal political efficacy and external political efficacy.	Expressive political participation and collective political participation.
Kim et al. (2019)	O-S-R-O-R	Demographics	Use of social media news	Elaboration on cross-cutting perspectives	Political efficacy, interest, and knowledge.	Political persuasion.
Chen (2019)	O-S-R-O-R	Demographics	Second screening for news and information.	Second screening for political expression and interpersonal political discussion	Political knowledge and efficacy.	Political participation.
Lee et al. (2019)	O-S-O-R	Health consciousness	Media use	N/A.	Reflective integration.	Stomach cancer knowledge.
Yamamoto and Morey (2019)	O-S-R-O-R	Incidental news exposure on social media	Campaign information searches	Online political expression.	Internal political efficacy.	Political participation.
Zúñiga et al. (2019)	O-S-O-R	Demographics.	News use.	N/A	Political discussion.	Political participation.
Mun et al. (2020)	O-S-R-O-R	Demographics, exposure to pro smoking content, and exposure to anti-smoking content	Perceived impression of smokers.	Favorable expressions of smoking and unfavorable expressions of smoking	Perceived risks and benefits of smoking	Smoking intention

Hills and Shah (2020)	O-S-O-R	Socio demographics, health insurance and patient provider relationship.	Online health information sources, TV program use for health	N/A	Medical check-up belief	Timelines of medical check-ups
Yamamoto et al. (2020)	O-S-R-O-R	Social media prosumption.	Online Political information seeking	Online political discussion heterogeneity		Online political participation
Liu et al. (2020)	O-S-R-O-R	Demographics	Second screening	Social media elaboration.	Social media political efficacy.	Online political participation
Jung (2020a)	O-S-O-R	Demographic attributes, ideology, interest in game issues and game play hours	Media use, interpersonal communication	N/A	Community involvement and sense of belonging in the community.	Political participation
Jung (2020b)	O-S-O-R	Ideology, interest in game issues, and game play hours as gamer situational variables.	In-game media & IT news	N/A	Cooperative game playing and discussion.	Community involvement.

DISCUSSION

The purpose of this systematic literature review was to firstly, summarise and synthesise research concerning the O-S-O-R and O-S-R-O-R frameworks in all applied fields published between 2015 and 2020, and secondly, to identify major developments and recommendations for future research. The researcher acknowledges the significance of SLR as a source of information and a clear outline of the available literature, which can assist scholars in establishing foundations of future empirical studies, including broadening their relevance. These advantages have motivated scholars to conduct SLR for the emerging trend of communication mediation research in context of O-S-O-R and O-S-R-O-R frameworks. This current review employed thirty-four studies using the communication mediation approach as a theoretical framework to examine the majority of publications found relevant to media and communication, as well as the increasing trend in the fields of health communication and the computer-based gaming industry.

In addition, the result depicts the trend in data collected from both single and integrated populations, with the United States of America contributing the greatest number of studies. The majority of empirical studies were found to employ a cross sectional design, with an online survey proving the main tool of data collection, along with a convenience sampling strategy. These characteristics indicate the difficulties relate to generalisation when it comes to study research.

The theoretical context of this review identified that the majority of the studies focused on the O-S-R-O-R framework, with only two utilizing multiple theoretical frameworks. This offers a significant contribution to facilitating a broader scope for future researchers to consider additional theories and utilise multiple theoretical frameworks in communication mediation research. Furthermore, this review found that demographics and the use of news media, as well as political discussions, efficacy, and participation, tend to be the constructs most frequently used under the first orientation (O_1), stimuli (S), reasoning (R_1), outcome orientation (O_2) and response (R_2) respectively.

Furthermore, this study has provided a number of significant recommendations related to the theoretical context of the O-S-O-R and O-S-R-O-R frameworks. It considers that existing SLR can play a representative role in future research, following the recommendations examined in full and presented in Table 3.

Namkoong et al. (2017) emphasised the benefits of using a multi theoretical framework and recommended the need for the O-S-R-O-R framework to consider the emotional dimension (e.g., fear), including combining with the cognitive model of planned behavior. In addition, Ardèvol-Abreu et al.'s (2018) research into the building of social capital recommended the need to identify additional "reasoning" and subsequent orientation in order to develop a better understanding of what constitutes a cohesive society.

Similarly Chan, Chen, and Lee, (2017), in their discussion of the role of mobile phones and social media as an aspect of political participation, suggested the need for future researchers to test additional variables under the first orientation (O_1), in order to improve the current understanding of cognitive and motivational characteristics. Likewise, Yamamoto and Morey (2019) recommended future research should examine the complexity of incidental news exposure in the context of social media, as well as identifying the specific types of incidental news exposure resulting in an active search for online information. Furthermore, Park and Kaye (2019) considered that future research should measure structural knowledge

under outcome orientation, in order to confirm its relevance to news curation and understand the political context of social media.

Meanwhile, Chen and Chan (2017) proposed that future research into social media should concentrate on additional aspects to its current use for surveillance and entertainment. They further suggested a cross national comparison of O-S-R-O-R framework in order to highlight the role played by political systems. Similar suggestions of cross national comparison include that of Jung (2020b), who considered that this would improve understanding of gamers' communicative ecology, recommending that future research should focus on introducing new measures of interrelated reasoning (R₁).

Hills and Shah's (2020) O-S-O-R study on online health information seeking behaviours among African Americans recommended the benefits of the O-S-R-O-R framework with longitudinal analysis to investigate the potential mediational pathway to explore the impact of health media. Moreover, Zúñiga et al. (2019) examination of citizen communication mediation models concluded that future research should explore the inverse relationship between discussion and participation in a closed society.

Table 3: Significant recommendations

Source	Significant Recommendations
Ardèvol-Abreu et al. (2018)	Continue searching for additional reasoning devices and subsequent orientations, in order improve understanding of the routes towards a more cohesive society.
Namkoong et al. (2017)	Consider emotional and affective dimensions under O-S-R-O-R, coupled with the cognitive model of planned behavior in the domain of health communication.
Li and Chan (2017)	Explore the antecedents of political trust by incorporating such concepts as 'motivated skepticism' and 'selective exposure' within the O-S part of the O-S-R-O-R model.
Chan et al. (2017)	Test a number of additional variables under the first "O" with links to the first "R".
Yamamoto and Morey (2019)	Consider the complex nature of incidental news exposure enabled by social media. In addition, assess how incidental exposure to different type of political content (e.g., satire and humorous memes) might influence political participation.
Park and Kaye (2019)	Measure structural knowledge as an outcome orientation to see its relevance to news curation and better understand the role of social media in political learning.
Chen and Chan (2017)	Ensure political communication research focuses on cross national comparisons of the O-S-R-O-R framework to examine the role played by political systems within the relationships.
Hills and Shah 2020)	Utilize longitudinal analysis and other techniques to investigate the potential mediational pathways for the impact of different health media use relating to behaviors using O-S-R-O-R. In addition, assess the impact of ethnic differences on online health information-seeking among the black population in the US to fully understand what drives preventative health.
Jung (2020b)	Introduce new measures of interrelated reasoning (R) in the extended communication mediation model (O-S-R-O-R) to develop a more comprehensive model.
De Zúñiga et al. (2019)	Explore the inverse relationship between discussion and participation in closed societies.

CONCLUSION

This article undertook a systematic review of studies focusing on communication mediation, including the O-S-O-R and O-S-R-O-R models. To the best of our knowledge, this study represents the first systematic literature review on this topic to date, and therefore an initial step towards consolidating the diverse and vibrant body of knowledge on this topic. In particular, we reviewed the literature examining the global publishing trends concerning firstly, O-S-O-R and O-S-R-O-R study design followed by researchers, secondly, the populations considered for data collection; thirdly, study disciplines; fourthly, sampling strategies; fifthly, measures of first orientation; sixthly, stimuli; seventhly, reasoning, eighthly, O₂; tenthly, responses, and finally, significant recommendations.

Furthermore, we have made several major contributions. Firstly, we offer a comprehensive insight into the different constructs utilised under O-S-O-R and O-S-R-O-R. Secondly, we provide a novel discussion concerning the roots of development of the O-S-R-O-R model of communication, by illustrating how the research interest in O-S-O-R and O-S-R-O-R has evolved over the previous six years, i.e. between 2015 and 2020. Thirdly, our compilation of future recommendations has drawn up an agenda for future research into O-S-R-O-R, including by means of further empirical studies and theoretical developments.

However, this study also has a number of limitations. Firstly, the increasing number of publications in this area makes it impossible to confirm that all available studies have been covered in this review. Secondly, the literature search was confined to three repositories (i.e. Scopus, Google Scholar and EBSCO host), so excluding any studies published in other data bases. Finally, although this research grouped together studies from various different countries, the difference between the relative antecedents and outcomes was not discussed in our results.

Nevertheless, this study concludes that this systematic literature review offers a comprehensive insight into this subject and, as such, offers considerable benefits value for future research in this area.

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