UNIVERSITY OF GOTHENBURG

CULTIVATION EFFECTS IN A FRAGMENTED MEDIA ENVIRONMENT

Examining the reciprocal relationship between selective media use and crime perceptions

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Abstract

Cultivation effects in a fragmented media environment

Our media environment has changed rapidly since the cultivation theory was proposed by Gerbner in the late '60s. The amount of news media content has increased to an unprecedented level and the surge of alternative media sites has given news media consumers the option to selectively expose themselves to news that conveys a version of reality which is aligned with their own perceptions. This study aims to examine whether the cultivation theory, as it is currently defined, is still relevant in today's fragmented media landscape or if it should be redefined to better capture selective reinforcing cultivation effects. This will be done by theoretically synthesising the cultivation theory with the reinforcement spirals model. To address these questions empirically, this study relies on a combination of a quantitative media content analysis (N=904) matched with longitudinal panel survey data (N=1508). Thereby, content differences in violent crimes news reporting can be linked to public perceptions about the development of violent crimes in society. The findings from the content analysis suggest that there are significant differences between violent crimes news content in alternative media and in traditional media. The results from the cross-lagged panel analyses suggest that reinforcing cultivation effects only occur for alternative media use. The theoretical implication of this is that it is no longer reasonable to assume that significant cultivation effects will occur on the large mass. Instead, reinforcing cultivation processes occur on smaller segments of the population where media selectivity is the driving force. Cultivation theory should, thus, be redefined to include the selectivity aspect of media consumption. To synthesise cultivation theory with the reinforcement spirals model is, as shown in this study, one way of doing this but an even better way would be to develop the original theory to include the aspect of selectivity and exclude the idea of mainstreaming.

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1. Introduction

1.1 Background and societal relevance

Our media environment has changed rapidly during the last few decades. One of the most significant changes is the enormous increase in content choice. In Sweden, the state had a monopoly on radio and TV until the late '80s and since its dissolution, the number of TV and radio channels has increased significantly (Weibull & Wadbring, 2014). With the rise of the Internet and the advent of social media, this expansion of content choice has increased even more. Today, people can pick and choose from an endless amount of content at any given time or place through various distribution mechanisms. We are no longer restricted by national borders or gatekeepers, and there is no reason to believe that this trend will not continue to accelerate as mobile devices and distribution mechanisms constantly develop and improve (Graber & Dunaway, 2018).

The surge of alternative media is another recent development that has given the media landscape new conditions and individuals increased choice (Holt, Ustad Figenschou & Frischlich, 2019). Alternative media can be defined as the media which are "not corporately owned and which circulate political messages felt to be underrepresented in mainstream media" (Chandler & Munday, 2016, p. 12) and they often present an alternative interpretation of reality (Holt, 2018).

This development has raised concerns since it creates a fragmented media audience where people have increased possibilities to select media content in accordance with their political predispositions. This is known as the selective exposure theory, and it might have implications for people's perceptions of society and their political attitudes and behaviour. Selective exposure might also, in the long run, lead to more extreme attitudes and create an increasingly polarised society (Dahlgren, Shehata & Strömbäck, 2019; Feldman, Myers, Hmielowski & Leiseowitz, 2014). Adding the surge of alternative media into the equation, the potential of attitudinal polarisation increases even more (Holt, 2018). Increased polarisation is, for most schools of democratic theory, considered as a democratic concern since it makes it more difficult to achieve mutual understanding when citizens perceive the social reality in vastly different ways (Strömbäck, 2005).

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A societal issue which in Sweden is politically contested is the crime development. A common discussion in the media and among political opinion-makers is whether crime rates have had a positive or negative development over time (see for example Danielsson, 2020; Lindström, 2020; Taubert & Ulander, 2018). One side is arguing that the crime rates have exploded to an unprecedented level and often describe Sweden as if it was a warzone (see for example Ranelid, 2019). The other side is arguing the opposite, "Sweden has never been safer" and point to statistics where overall crime rates are going down (see for example Magnusson, 2019). Simultaneously, people are becoming increasingly worried about crimes. Brottsförebyggande rådet (2019a) report that the share of people with great concern about crime in society has increased since 2011 and in 2019, 43% of the population had great concern about crime in society and 49% are concerned about crime to some degree. Only 8 % were not concerned about crime in society. Moreover, according to the 2019 national SOM survey, law and order have become an increasingly important societal issue for Swedes. In 2014, only 4 percent considered law and order being one of the three most important issues, whereas, in 2019, this number was 28 percent (Martinsson, 2020).

Most scholars agree that the amount of politically biased news and information has increased - especially in the online environment. Moreover, there is also little doubt that people prefer to consume media content that is in accordance with their own beliefs. However, there is less consensus in the scholarly world regarding the notion that selective exposure leads to increased attitudinal polarisation. Studies that have focused on this particular topic have found mixed results (Dahlgren et al., 2019). However, with changes in the media landscape and the increased availability of alternative media, there is a risk that the issue of crime and how we perceive the crime development will become increasingly polarised. This study will, thus, focus on the new media landscape's potential to reinforce and increase polarisation on people's perceptions of the crime development.

1.2 Academic relevance and knowledge contribution

A classic subject within media- and communication research is the relationship between media use and perceptions of the social reality. One of the first theories that examined a particular media's effect - television - on viewers' conception of their social reality is called the cultivation theory. The cultivation theory was initially formulated by Gerbner in the '60s to understand how people's perception of, and concern for, crimes were influenced by the images that

dominated television. The theory hypothesised that people who watched a lot of television were more likely to become overly concerned with crimes of violence since these types of crimes were overrepresented in television news and entertainment (Gerbner, 1998).

During the last few decades, the cultivation theory has been widely used to understand how crime perceptions are formed and reinforced but an important question to raise is if cultivation theory, as it is currently defined, is still relevant in today's media landscape. The basis of the theory is the notion that the audience receives the same information and that it through resonance and mainstreaming increases its impact. As the media choices increase at an unprecedented pace and as there has been a surge of alternative news sites in recent years, one could indeed argue that there are several weaknesses in the cultivation theory when applying it on today's increasingly fragmented media audience. That is not to say that the cultivation theory has played out its role, it is plausible that cultivation, instead, occurs in much smaller and more homogenous groups of people today.

A theory which incorporates selective media exposure in its model is called the reinforcement spirals model (RSM). The RSM focuses on the interplay between selective exposure and media effects and suggests that media use is a longitudinal, dynamic process that "reinforce patterns of identity, belief, and behaviour for various individuals and subpopulations" (Slater, 2009, p. 2). The RSM shares several characteristics with the cultivation theory while it also differs in many important ways (Slater, 2015). The most obvious difference between the two theories is that the cultivation theory is concerned with "the influence of elements of media content …. which are relatively uniform and disseminated broadly through society via major media broadcast outlets or distribution channels" (Slater, 2015, p. 371). In contrast, the RSM is concerned "with selection of differentiated media content consistent with and reflecting the values of subgroups within a larger society" (Slater, 2015, p. 371).

In this study, I will synthesise the cultivation theory with the RSM to better understand how media selectivity longitudinally affects cultivation of crime perceptions in a media landscape where people have increased possibilities to get their perception of the world confirmed. By synthesising these two theories, it is possible to examine whether cultivation effects are stronger among people who selectively expose themselves to alternative news. It will also make it possible to examine whether selective exposure to alternative news sites attracts people that

have a negative perception about the Swedish crime development and whether these sites, subsequently, reinforce that perception, i.e. a mutually reinforcing spiral.

There are large gaps in the literature on the relationship between media selectivity and crime perceptions. Previous research on the cultivation theory has focused on traditional media effects, and the theory has never been applied to study the effects of selective exposure to alternative news on people's crime perceptions. Furthermore, cultivation research on crime perceptions has almost exclusively been based on cross-sectional data which cannot capture the dynamic nature of the processes in which perceptions are formed and reinforced (Shi, Roche & McKenna, 2019). Previous research on the RSM has examined reinforcing effects on a more general topic such as ideology (Stroud, 2010; Beam, Hutchens & Hmielowski, 2018; Dahlgren et al., 2019; Hutchens, Hmielowski & Beam, 2019) but also on more specific issues such as climate change (Feldman et al., 2014) and immigration (Schemer, 2012; Theorin, 2019). The model has, however, never been applied to the specific issue of crime perceptions which is surprising since crime perceptions have been a prevalent issue to study within media effects research, most notably within cultivation research. This study will address the lack of research on the relationship between media selectivity and crime perceptions by examining the cultivation effects of exposure to alternative news. It will also address the need for studying cultivation effects with a longitudinal design by applying the RSM which makes it possible to fully capture the dynamic process of crime perception reinforcement.

The effect peoples' interpersonal discussions have on perceptions being formed and reinforced is an additional gap in the literature. This is true for both perception reinforcement processes in general but also crime perception reinforcement processes in particular. Within RSM research, there have been a few efforts trying to fill this void. Hutchens et al. (2019) found that discussions with like-minded friends and family increased political ideological polarisation and Song & Boomgarden (2017) found that the reciprocal relationship between selective media exposure and attitudinal effects is conditioned by interpersonal discussion networks. They note that "attitudinal composition of one's network amplifies the effect of consonant media while diminishing the effect of counterattitudinal media, therefore serving as an important social "anchor" upon which partisan media exposure is evaluated" (Song & Boomgarden, 2017, p. 274) and emphasise that the research field needs to improve their theoretical integration of interpersonal communication into media effects theories and frameworks. With that as a background, this study will also contribute to the existing literature by examining if

interpersonal discussions condition reinforcing effects between selective media use and crime perceptions.

1.3 Aim and research questions

This study's aim is to examine whether the cultivation theory, as it is currently defined, is still relevant in today's fragmented media landscape or if it should be redefined to better capture selective reinforcing cultivation effects. This will be done in three steps. First, it aims to determine if the original cultivation hypothesis holds when using longitudinal data by examining if there is a mutually reinforcing relationship between overall media consumption and crime perceptions. Second, it aims to examine whether mutually reinforcing cultivation effects are outlet-specific. Third, it aims to examine whether cultivation effects are isolated to the broad patterns of traditional media use or if it is actually driven by alternative media use. By synthesising the cultivation theory with the reinforcement spirals model, it aims to achieve a more holistic understanding of the mutually reinforcing relationship between media use and crime perceptions since this makes it possible to examine not only how media use affects crime perceptions, but also how crime perceptions affect media use.

The study also aims to examine whether the potential reinforcing relationship between alternative media use and crime perceptions is conditioned by interpersonal discussions with friends and family. In that way, a better understanding of the relationship between alternative media use, interpersonal communication and reinforcement of crime perceptions can be achieved.

In terms of theory development, this will shed new light on the cultivation theory by examining if changes in the media landscape where people have increased possibilities to get their perception of the world confirmed could potentially amplify cultivation processes among certain groups of people. It will also bring clarity in whether cultivation effects are driven by alternative media exposure by examining if alternative news sites attract people that have a negative perception about the Swedish crime development and whether these sites, subsequently, reinforce that perception. In addition to that, it will contribute with evidence on whether such processes are moderated by interpersonal communication.

To reach these aims, the following research questions were formulated:

Research question 1

   a. Is overall news media consumption positively related to a negative view of the Swedish crime development?

   b. Is there a mutually reinforcing relationship between overall news media consumption and crime trend perceptions?

Research question 2

   a. Are correlations between frequent news media exposure and perceiving the Swedish crime development as negative outlet-specific?

   b. Are mutually reinforcing relationships between frequent news media exposure and perceiving the Swedish crime development as negative outlet-specific?

Research question 3

   a. Is exposure to alternative news media positively related to a negative view of the Swedish crime development?

   b. Is there a mutually reinforcing relationship between alternative news media exposure and crime trend perceptions?

   c. Is this potential reinforcing relationship conditioned by interpersonal discussions about violent crimes?

1.4 Disposition

In terms of the structure, the next chapter will outline the theoretical framework which will begin with presenting the cultivation theory and the reinforcement spirals model which are the two major theoretical cornerstones of this thesis. These two theories will be presented separately but also discussed in light of how they can be intertwined and understood in relation to each other. The theoretical framework also includes a discussion on the role of interpersonal communication in media effect research. The subsequent chapter will present an overview of previous research on the cultivation theory and the reinforcement spirals model, respectively. The chapter will be concluded by proposing hypotheses related to the research questions. The fourth chapter is devoted to the methodology used when conducting the research with a particular focus on material, model, measures and statistical techniques. It will also include my epistemological perspective and reflections regarding the choice of method and quality criteria. Chapter 5 focuses on presenting the findings of the study. In the thesis' final chapter, the results will be summarised and discussed, and I will, thereafter, discuss the limitations, contributions and directions for future research.

2. Theoretical framework

To achieve a theoretical understanding of crime perception reinforcement processes, this chapter will present a theoretical framework where central concepts will be described and discussed. It will begin by describing the cultivation theory which in media effects research have been used as the main theory to explain crime perception formation and reinforcement processes. However, as the media landscape has changed vastly since the cultivation theory was originally developed, it has several weaknesses. With selective exposure becoming an increasingly important phenomenon in the contemporary media environment, this needs to be accounted for when analysing crime perception reinforcement processes. A media effects theory that incorporates media selectivity in its model is called the reinforcement spirals model (RSM) and this theory will, thus, be included in the theoretical framework to supplement the cultivation theory. These two theories will, thereafter, be discussed in light of how they can be intertwined and understood in relation to each other. This will be followed a discussion on the role of interpersonal communication in media effects as this is another aspect which has proven to be an important factor in conditioning the relationship between media exposure and media effects, and which is not extensively discussed in the cultivation theory or the RSM.

2.1 The Cultivation theory: background and its relevance today

To understand how the cultivation theory can stay relevant in the contemporary media environment, we must first understand Gerbner et al.'s original theory and how it has developed over the last few decades. This section will, thus, be devoted to describing the background of the cultivation theory and, thereafter, be concluded with a discussion on its relevance in today's media landscape.

2.1.1 Gerbner's original theory

The cultivation theory was proposed by Gerbner in the late '60s to address the shortcomings of traditional media effects research which at the time had a narrow focus on short-term effects. Gerbner with colleagues considered the short-term focus problematic since repeated exposure

to media was likely to influence people over the course of their lives and argued that media effect research would benefit from measuring long-term effects as well (Laughey, 2007).

Gerbner proposed that repeated exposure to television will eventually cultivate people's perceptions about the world in the way that aligns with the messages that are frequently conveyed by the medium. In other words, individuals who watch television frequently will start to perceive and think of the world similarly to how reality is portrayed on television. By influencing individual's perceptions, television will also have an impact on how people shape their attitudes, values and beliefs (Gerbner, Gross, Morgan & Signorielli, 1986). The theory was set to "help us understand the consequences of growing up and living in a cultural environment dominated by television" (Morgan, Shanahan & Signorielli, 2009, p. 34) and was based on the notion that television conveyed repeated messages which as a whole misrepresented the reality. An important aspect of the cultivation theory is that television viewing was hypothesised to have a gradual, dynamic and ongoing effect on people's perceptions over time and it should thereby not be seen as a static and unidirectional process (Morgan et al., 2009).

When Gerbner developed the cultivation theory, it was a component in a broader project called "Cultural Indicators" (Shanahan, 2009). The project included three kinds of analysis: 1) Institutional process analysis: examined "all major powers, roles and relationships that have a systematic and generalized influence on how messages will be selected, formulated and distributed" (Gerbner et al., 1973, p.559), 2) Message system analysis: examined the messages conveyed by television through content analyses 3) Cultivation analysis: examined how people's perceptions of reality were influenced by the media messages (Laughey, 2007).

The project's original focus was media's portrayal of violence and how repeated exposure to such portrayals would influence people's perceptions (and associated behaviour) about violent crimes in the "real world". It was hypothesised that people who watched television frequently would be more prone to believe that the world is much more dangerous and violent than it actually is. A phenomenon referred to as the "mean world syndrome". With a biased perception of the amount of crime in society, fear and anxieties of crime were also hypothesised to increase (Shanahan, 2009; Jamieson & Romer, 2017).

2.1.2 From overall television consumption towards genre-specific effects

The original cultivation theory was, as described above, focusing on the impact general television consumption had on people's perceptions about the world they lived in. This focus came with several assumptions about the specific medium television. Gerbner viewed television as the most dominant and influential story-telling medium that the humankind had seen. Even as the variety of television channels increased, Gerbner continued to argue that the content was, at large, consistent and conveyed a similar pattern of messages which, in turn, would cultivate people's opinions in the same direction. By relying on these assumptions, Gerbner remained interested in how the broader patterns of media messages being conveyed across television channels and programs influenced people's perceptions. Gerbner was thereby not interested in examining the cultivation effects of a specific genre, program or other media types (Potter, 2014).

A common critique towards Gerbner and the cultivation theory is that all types of television exposure is clustered together and treated as one homogenous mass. Although early cultivation researchers such as Gerbner was quite specific in that it was television viewing in its aggregate that was of interest, no cultivation scholar ever suggested that exposure to different television programs would not have various effects on people (Morgan & Shanahan, 2010). Shanahan and Morgan (2010) point out that it is a question whether "such genre-specific effects should be called 'cultivation'"(p. 240) and that the "focus on superficial distinctions among genres risks losing sight of what different types of programs have in common, which cultivation emphasizes" (p. 340). However, Hawkins and Pingree (1981) were one of the first to suggest that different types of television programs would cultivate people's perceptions in different ways since different genres differ in the way messages are being conveyed. Henceforth, they suggested that research should examine and compare genre-specific cultivation effects rather than treating all types of television viewing as uniform. Rightfully so, one of the most distinct developments within cultivation research in recent years is that scholars have moved away from examining the impact television has as a whole towards more genre-specific cultivation research. Another shift in cultivation research, which relates the one above, is that some researchers have moved away from examining cultivation effects from entertainment media exposure towards examining the effects of news media exposure (Morgan & Shanahan, 2010). In this study, the more recent research tradition to examine cultivation effects from news media exposure rather than from entertainment media exposure will be followed.

2.1.3 Cultivation theory in the contemporary media environment

That leads us into how cultivation theory can be understood today. Already in 1986, Bryant argued, "if cultivation research is to remain current, it will have to accommodate, rather than subordinate, notions of program diversity and audience selectivity" (p. 233). An important question to raise is if cultivation theory, as it is currently defined, is still relevant in today's media landscape. The basis of the theory is the notion that the audience receives the same information and that it through resonance and mainstreaming increases its impact. As the media choices increase at an unprecedented pace, one should consider if individuals have an actual choice or if the explosion of content is a strategy by the major networks to give the illusion of choice. Proponents of the original cultivation hypothesis (e.g. Shanahan & Morgan, 1999) would argue that it is still the major networks that control the broad patterns of content consumed even though we are under the impression that we have endless choices. However, with the rise of the Internet and social media as well as with the surge of alternative media, a more reasonable conclusion is that people truly have a choice when it comes to selecting media content. For some scholars, this means that cultivation theory is no longer relevant (Shanahan, 2009) but I would instead argue that we, because of the fragmented media audience, have a situation with a lot of niches where cultivation occur on much smaller and homogenous groups of people.

2.2 The Cultivation theory: key concepts

To understand the central concepts of the cultivation theory and how they relate to the present study, this section will describe and discuss the following key concepts of the cultivation theory: light and heavy viewers, first- and second-order cultivation effects, mainstreaming and resonance.

2.2.1 Light and heavy viewers

Cultivation theory differentiates between different types of television consumers by dividing them into groups of "heavy", "medium" and "light" viewers. It is hypothesised that cultivation effects are dependent on to what extent television dominates a person's information intake. "Heavy" viewers will, thereby, start to perceive the world in the way that it is depicted on television and, in that way, get a different understanding of the world compared to "light" viewers (Gerbner, 1998; Jamieson & Romer, 2017)

This distinction can also be applied to other media consumption variables. In relation to this study, it can be translated into "heavy", "medium" and "light" consumers of alternative media as well as other media use measures. The implication would be that people who often consume alternative media will be more likely to show cultivation effects compared to those that seldom consume alternative media.

2.2.2 First- and second-order cultivation effects

Another central distinction within cultivation theory is first- and second-order cultivation effects (Hawkins & Pingree, 1982). First-order cultivation effects are individuals' beliefs about the world in general. This is measured through people's quantitative estimation of the frequency of demographic facts such as the level of violent crimes or how crime trends have developed over the years (Schnauber & Meltzer, 2015). These estimations can easily be compared with "real facts" to see whether they are accurate or rather a product of frequently consuming the television reality (Shrum, 2004). Second-order cultivation effects concern individuals' personal perceptions, such as attitudes, beliefs and value judgements (Jamieson & Romer, 2017) that are "supposedly inferred by viewers from first-order information" (Potter, 1991, p. 92). Second-order effects are measured by asking respondents questions such as 'if the world is a mean and violent place', 'if they are afraid at walking home alone at night', 'if people can be trusted' (Potter, 1991; Jamieson & Romer, 2017).

In cultivation research on crime perceptions, a common dependent variable is "fear of crime". "Fear of crime" has been conceptualised in many different ways and included both first- and second-order effects. Some have conceptualised fear of crime as "people's perceptions of the amount of violence in society" (Morgan & Shanahan, 2010, p. 343) which is a first-order effect. Others have examined "perceived personal risk" or "the personal degree of fear of being victimized" (Morgan & Shanahan, 2010, p. 343) which are second-order effects. These measures are not necessarily related which can be exemplified by the fact that a person who overestimates the frequency of crimes do not necessarily perceive the personal risk of being victimised of crime as higher. With regard to how strong these effects might be, Morgan and Shanahan (2010) suggest "television is more likely to teach us societal-level lessons about what 'the world' is like, but not necessarily impact our perceptions of our own personal reality, where a much wider range of influences and everyday non-mediated experiences may play a stronger role" (p. 343).

Although this study will not only test cultivation effects from television exposure, the distinction between first- and second-order effects remains the same. Since this study is based on a problematisation of increased polarisation of crime perceptions, it will focus on first-order effects, i.e. how people perceive the development of violent crimes. Second-order effects are as pointed out above less likely to occur (Morgan & Shanahan, 2010) and they are also not as relevant in relation to polarisation. First-order effects can better capture polarisation of perceptions since it gives an indication of how people perceive the world they live in, rather than give an indication of how fearful they are on a personal level.

2.2.3 Mainstreaming and resonance

Two other key concepts within the cultivation theory are mainstreaming and resonance. These concepts were not part of Gerbner and colleague's original theory but were added a few years later.

Mainstreaming

Mainstreaming is the idea that people who normally hold vastly different opinions will, by watching television regularly, get more similar opinions over time. In other words, the messages which the medium convey will, over time, draw its frequent viewers' opinions closer together and towards a mainstream position. For example, while a left-wing and a right-wing are likely to disagree on an issue like crime sentences, according to the idea of mainstreaming, the difference between the two groups are expected to be smaller among those that are heavy viewers (Shanahan, 2009).

A media landscape filled with content choice which has paved the way for selective exposure makes the idea of mainstreaming questionable. Mainstreaming builds on the idea that people who hold vastly different opinions will eventually converge because the media content people consume convey similar messages. But what happens in a world where people pick whatever media content that suits them and is aligned with previously held opinions? It could be so that the idea of mainstreaming has played out its role and that we today, instead, are more likely to have the opposite outcome - polarisation.

Resonance

Resonance is the idea that the effect of media messages amplifies when it coincides with an individual's personal experience while it is minimised when it counters an individual's personal experience. Gerbner describes the phenomena as the following "everyday reality and television provide a 'double dose' of messages that 'resonate' and amplify cultivation" (Gerbner, 1998, p. 182). An example of this could be that media messages about violence will resonate particularly well with people who live in neighbourhoods with high crime rates (i.e. have direct experiences with crimes). The degree of homogeneity in interpersonal discussions is another way of understanding resonance. This would imply that interpersonal communication which resonates with a person's own understanding could amplify cultivation effects while interpersonal communication that counters a person's own understanding could minimise cultivation effects. The role of interpersonal communication within media effects will be extensively discussed in section 2.6.

2.3 Critique of the cultivation theory

The cultivation theory has been the subject of a lot of scholarly criticism. Some of the early criticism revolved around issues like "violence" being defined too vague (Shanahan & Morgan, 1999) and humanistic critique which emphasised that symbols were too complex and subjective for being studied on the aggregate level (Newcomb, 1978). Another critique that cultivation research has faced is the potential of spurious relationships and lack of controls. For example, scholars have argued that cultivation effects on fear of crime are a result of other demographic factors such as crime rates in the neighbourhood, education level, age, gender etc., rather than from heavy television viewing (Jamieson & Romer, 2017). With regards to general controls, this critique led to methodological improvement whereas the accusation that cultivation effects being an effect of living in a high-crime area resulted in Gerbner's concept of resonance (Shanahan, 2009).

Cultivation research has also been criticised for not employing longitudinal designs. Potter (2014) notes that cultivation research has "failed to generate more than a few cultivation analysis tests that moved beyond cross-sectional surveys to engage the more challenging task of examining the role of time" (p.1030). He further suggests that future studies should use "longitudinal designs to examine long-term influence of exposure in order to be considered an adequate test of Gerbner's claim about the influence of widespread meanings that are exhibited

in cultivation indicators as a result of people's everyday exposures over the long term" (Potter, 2014, p.1026). Another recent critique towards cultivation theory regards its adaptability in the new media landscape where the sceptics argue that television has come to play a less important role in people's media consumption habits as the audience has become increasingly fragmented (Shrum, 2017).

This critique points to several weaknesses of the cultivation theory and especially when applying it on the contemporary media environment. To address these weaknesses, this study will complement the cultivation theory with the RSM which allows for media selectivity and emphasise the longitudinal and dynamic nature of media use and effects in its model.

2.4 The Reinforcement Spirals Model

Slater (2007; 2015) introduced the RSM in an attempt to combine theories and research on media selectivity with theories and research on media effects into one comprehensive framework (Schemer, 2012). RSM views media use and effects as a mutually reinforcing spiral (Feldman et al., 2014) and seeks to understand "media's role in helping create and sustain both durable and more transient attitudes, as well as behaviours associated with those attitudes" (Slater, 2015, p. 370). The model suggests that media use is a longitudinal, dynamic process that "reinforce patterns of identity, belief, and behaviour for various individuals and subpopulations" (Slater, 2009, p. 2).

2.4.1 The origins of the model

The RSM is in a sense built upon the classic work of Berelson, Lazarsfeld, & McPhee (1954), Klapper (1960) and Lazarsfeld, Berelson and Gaudet (1968). These studies note that there seems to be a mutually reinforcing process between media selectivity and media effects, although this notion is not developed extensively by the authors. For example, Berelson et al. (1954) found "not only that political campaign content primarily reinforced existing beliefs but also that increased exposure to the campaign led to selective exposure to media content consistent with their beliefs" (Slater, 2007, p. 283). In the classic media effects review by Klapper (1960), he suggests that the most common media effect is to reinforce already existing beliefs (Slater, 2007). Lazarsfeld et al. (1968), similarly, found that voters engaged in selective

exposure and that it had reinforcing effects on attitudes and beliefs when they examined the 1940 American presidential election.

The RSM shares several characteristics with the cultivation theory while it also differs in many important ways. The most obvious difference between the two theories is that RSM emphasises people's selection of attitude-consistent content within today's high-choice fragmented media environment whereas cultivation theory proceeds from the idea that media content is disseminated from the leading broadcasters who convey relatively homogenous media messages (Slater, 2015). The RSM also have certain technical similarities with Noelle-Neumann's (1974) spiral of silence theory through its focus on a dynamic process in attitude development and maintenance. However, it draws almost the opposite conclusion when it comes to how minority opinions can be sustained through the media (Slater, 2015).

2.4.2 The two fundamental assumptions

The RSM is built upon two fundamental assumptions. First, the RSM proposes that media use functions both as a predictor variable and as an outcome variable. In statistical terms, this means that media use should be understood as a mediating or endogenous variable. In more general terms, this means that "media use is shaped by social context and individual characteristics" and that "media use may, in turn, influence many attitudes and related behaviors" (Slater, 2015, p. 372). Examples of such individual characteristics are education level and whether a person had a religious upbringing while examples of attitudes that can be affected can be anything from ideological or religious identification to attitudes towards drugs (Slater, 2015).

The second fundamental assumption the RSM is built upon is that "media selection and effects of exposure to selected media is dynamic and ongoing" (Slater, 2015, p. 372). This suggests that selective exposure to media content, which is influenced by social identity and social context, will "influence subsequent strength and accessibility of social group identification, attitudes, and behaviors—which, in turn, will influence subsequent media use, which should continue to reinforce those associated elements of social identity, attitude, and behavior over time" (Slater, 2015, p. 372). The central aspect of the dynamic process is, thus, the mutually reinforcing relationship where selective media exposure reinforces individuals' attitudes and individuals' attitudes influence media choice. This relationship is ongoing, meaning that the

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components continue to reinforce each other over time (Schemer, 2012; Feldman et al., 2014). Slater (2007) point out that one should not be misled by the term reciprocal and thinking of it as a process where relationships go back and forth. Instead, it is important to note that these relationship "move forward in time, influencing one another, with the likelihood of reinforcing or cumulative effects" (Slater, 2007, p. 284). Another important point to make which becomes apparent when looking at the model's illustration in figure 1 is that both media use and effects can be used as the "starting point" of the relationship. Slater (2007) suggest that "one can usefully conceptualize and analyze these relationships as two paired and complementary spirals. One spiral begins with the outcome predicting media use and the other spiral begins with media use predicting the outcome" (p.285).

Figure 1. The reinforcement spirals model as proposed by Slater (2007; 2015)
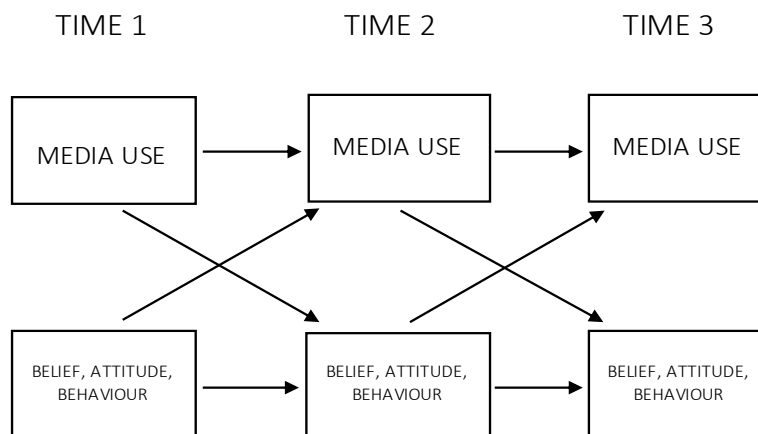
Taken together, the RSM suggest that selective exposure to attitude-consistent news contributes to attitude reinforcement and that these attitudes, in turn, will further influence selective exposure to attitude-consistent news. Over time, this will lead to reinforced social identities which include aspects such as attitudes, values and ideologies (Slater, 2009).

2.4.3 Positive feedback loops

If the RSM presumes an ongoing process that will reinforce attitudes and behaviour over time, one might ask why extreme attitudes are not more widespread in society than they are. An ever-lasting reinforcement spiral of social identities and associated attitudes would create a society consisting of only extremes and that is certainly not the case. Slater (2015) criticises research that has predicted a linear, ever-lasting reinforcement and clarifies that the RSM applies a

system theory perspective which has several implications for how the process should be understood.

System theorists are concerned with to what extent a dynamic system self-regulates over time. A system that self-regulates adapts to changes outside of the system and, thus, often reach a level of homeostasis. Homeostasis in the context of RSM can be described as a "balance in which identity-relevant attitudes … are adequately maintained in the face of competing worldviews" (Slater, 2015, p. 373). A self-regulating system can also be referred to as a negative feedback loop. The contrary state, where the system does not self-regulate and therefore might spiral into extreme values, is called a positive feedback loop (Slater, 2007). These states can within the RSM be understood as the model's possibilities to either continuously reinforce attitudes or to have reached a satisfying level of reinforcement. Slater (2015) suggests that the most common state is homeostasis since attitudes and media use are rather stable but there are certain contexts where positive feedback loops indeed are likely.

Slater (2015) elaborates on the circumstances under which feedback loops can have extreme outcomes and suggest that one of those are when "perceived threat to identity is very strong" (Slater, 2015, p. 376). An example of an event where a social identity may be threatened is during a campaign period since it is a time where competing worldviews becomes salient. During such periods, the need for content that is aligned with the social identity consequently increases (Beam et al., 2018; Slater, 2015).

2.4.5 Understanding the reinforcement spirals model in relation to alternative media

Alternative media sites - closed communication systems?
Another concept which the RSM has lent from system theory is to what degree a system is open or closed. A closed system is not under the influence of external social or environmental factors which implies that within that sort of system, social identities and associated attitudes can spiral to extremes through positive feedback loops. An open system can be understood as an open social environment where reinforcement spirals are constrained by several external factors - environmental, social and psychological (Slater, 2007; 2009). Slater (2007) suggests that in a perfectly closed system, positive feedback loops are expected to spiral into extreme

values, but since most systems are not fully closed and include competing influences, these types of spirals are often constrained, to varying degrees.

The risk of a closed communication system resulting in positive feedback loops increases when there is a strong group identification which is "relatively unaffected by competing social identifications with rival claims" as well as when "social group norms carefully minimize exposure to countervailing perspectives" (Slater, 2015, p. 376). Such communication system often leads to suspicion and hostility towards individuals outside of the system (Slater, 2007; 2015).

Slater (2007) suggests that exposure to media content that is inconsistent with beliefs and discussions with people who has an alternative point of view may decrease the likelihood of positive feedback loops. However, a closed communication subculture has the contrary effect:

> [T]he effects of spirals of communication selectivity and effects are likely to be particularly strong in groups that seek to motivate closure to outside influences. Such closure can be encouraged through (a) a culture of suspicion of outside influences such as mainstream media; (b) use of group-specific media such as Web sites, books, and magazines that consistently reiterate a consistent and distinctive worldview; and (c) maximizing engagement in interpersonal and group networks that largely or completely exclude nonparticipants (Slater, 2007, p. 292).

Alternative media can be understood, to varying degrees, as a closed communication subculture since many of alternative media sites share several characteristics with those that Slater describes above. Dahlgren et al. (2019) similarly suggest that people who "habitually use attitude-consistent blogs, attitude-consistent news sources or follow like-minded individuals who share attitude-consistent information on social networking sites" (Dahlgren et al., 2019, p. 163) have increased likelihood of creating positive feedback loops that may spiral into extreme attitudes. It would, therefore, be reasonable to assume that alternative media exposure has particular potential to encourage positive feedback loops on crime perceptions.

Internet's potential to either dampen or increase positive feedback loops

Another aspect that has been discussed which relates to alternative media is the role of the Internet and its potential to either dampen or increase positive feedback loops. It has been suggested that the Internet's increased diversity and availability of media content have created a more open communication system (Slater, 2007) where people are likely to incidentally

encounter cross-partisan information too. But as we have seen with the surge of alternative media, the "range of choice also may increase the ability to identify and access sources closely reflecting one's own views and values" (p. 294) which, in turn, "can become an exclusive or near-exclusive source of information and conversation, facilitating the development of relatively closed information systems" (Slater, 2007, p. 294). This suggests that if alternative media replaces people's consumption of other media types and becomes the exclusive or near-exclusive source of information, there is a greater risk that positive feedback loops occur as a result of a relatively closed communication system.

2.5 Cultivation theory synthesised with the reinforcement spirals model

When comparing the cultivation theory with the RSM, it becomes clear that they are similar in some regards while they differ in other aspects. Let us begin with the similarities. Both cultivation theory and the RSM are concerned with the effect's media exposure have on beliefs, attitudes, perceptions and behaviour. Theoretically, both theories share an interest in long-term effects, although most cultivation research has, as we shall see in the next chapter, failed to integrate this into empirical research. Moreover, both theories consider frequent media consumers as the ones that are most likely to be affected by the media.

Turning to the differences, although both theories are concerned with media effects, they have different focus areas. A significant difference, which Slater (2007; 2015) also highlights concerns media consumption. The RSM was developed in a media landscape with much more opportunity for choice which evidently has affected the independent variable - media exposure. The RSM examines the effect of selective exposure to specific media outlets and content while cultivation theory is interested in the broad patterns of information that is disseminated through the leading broadcasters. This also implies that cultivation theory does not suggest that media effects have an impact on media choice but rather that content is "given" to us and that our choices are limited. RSM has the contrary view, where these two components are in a mutually reinforcing relationship.

Another main difference concern how the two theories view the outcome of the process. A central concept within cultivation theory is mainstreaming which suggest that frequent media consumption will bring opinions closer together and towards a mainstream position. Another

way to understand this concept is that frequent media consumption has a de-polarising effect. The RSM predict the contrary outcome: increased (selective) media use will lead to reinforced opinions which, in turn, will create an increasingly polarised society.

2.6 The role of interpersonal communication for media effects

Interpersonal communication has long been acknowledged to condition the relationship between media exposure and media effects (Song & Boomgarden, 2017). Many of the assumptions on interpersonal communication in relation to media messages date back to studies within the Columbia school (Schmitt-Beck, 2003). In Lazarsfeld, Berelson and Gaudet's (1944) classic study on voting behaviour, they found that messages from the mass media were often retold and put in personal context through a process called the "two-step flow of communication" (Sommer, 2013; Neubaum & Krämer, 2017). In Katz and Lazarsfeld's (1955) study on personal influence, they found that "personal communication mediates the influence of mass communication on individual voters, reinforcing or blocking the impact of media information, depending on the evaluative implications of that information and on the political composition of voters' discussant networks" (Schmitt-Beck, 2003, p. 233). In other words, interpersonal communication is not just an alternative source of information, it also has an important function to tell people "whether or not media messages are valid, and whether or not they should therefore be accepted" (Schmitt-Beck, 2003, p. 235).

Indeed, media messages are never encountered without a social context but instead "embedded within a rich array of social networks, channels through which such information can be gleaned and interpreted" (Song & Boomgarden, 2017, p. 259). Discussions among peers are, thus, a "major source of political learning" and play a "significant role in shaping individuals' opinions, political attitudes, and voting behavior" (Cho, 2005, p. 300). It is therefore important to consider both interpersonal communication and media exposure when analysing media's effect on attitudes and behaviour (Song & Boomgarden, 2017).

Slater (2015) also notes that it is not only mediated communication activities that matter in the reinforcement spirals process. The selection of non-mediated, interpersonal communication is equally relevant, not least in the era of social media where the line between mediated and interpersonal media use is becoming increasingly blurred. Although Slater (2007; 2015) suggests that interpersonal communication activities are equally as important as mediated

communication, he does not elaborate further on this. Only two studies within the RSM context have included interpersonal communication in its model and how this has been operationalised will be discussed in the following chapter (3.2).

Although many scholars acknowledge the fact that interpersonal communication plays a significant role in attitude formation and reinforcement, few empirical studies have studied interpersonal communication and mass media exposure simultaneously (De Vreese & Boomgarden, 2006; Schmitt-Beck, 2003). Glynn, Herbst, O'Keefe and Shapiro (1999) note "oddly, most of the recent studies of communication influences on public opinion have left out the role of interpersonal conversation and discussion, the most common grounding for opinion development and change" (p. 409). However, those studies that have examined the role of interpersonal discussion on attitude formation and reinforcement have several important findings. Studies have found that individuals often discuss topics that they have been exposed to in the media with others (Greenberg, 1975) and these discussions are often with family and friends (Wyatt, Katz & Kim, 2000; De Boer & Vetlhusjsen, 2001). Moreover, interpersonal discussions are an important source of political information. Beam, Haridakis, Hutchens and Hmielowski (2017) found that interpersonal communication was the second most important source of information during the American presidential election in 2016 and other studies (Keppler, 1994; Holly, Püschel & Bergmann, 2001) have found that interpersonal discussions in relation to media exposure are important for individual's meaning making process (Sommer, 2013; Hutchens et al., 2019).

When it comes to the impact these discussions have on attitudes, studies have found that interpersonal political discussion has a significant impact on people's opinions and attitudes (Eveland, 2001) and that "in the absence of other sources of information, interpersonal communication is the most influential source of attitude change" (De Vreese & Boomgarden, 2006, p. 21). Moreover, Scheufele (2002) found that mass media effects were moderated by interpersonal communication since individuals' make use of media messages in different ways (De Vreese & Boomgarden, 2006). Schmitt-Beck (2003) found that interpersonal discussion "mediate the influence of mass communication so that mass media information is either reinforced or rejected depending on the structure of citizens' discussant networks" (De Vreese & Boomgarden, 2006, p. 21).

As mentioned earlier, the composition of people's discussion network plays a significant role in moderating the impact of media messages (Song & Boomgarden, 2017). Early studies conducted within the Columbia school (e.g. Lazarsfeld et al. 1944; Berelson et al., 1954; Katz & Lazarsfeld, 1955) found that interpersonal communication may either strengthen or weaken the effect of media messages depending on the agreement or disagreement in the discussion network. The "filter hypothesis" (Schmitt-Beck, 2003) suggests that individuals in homogenous discussion networks who receive media messages that are aligned with predispositions are likely to strengthen their initial beliefs whereas dissonant media messages are more likely ignored. In a heterogenous discussion network, on the other hand, individuals are more likely to be influenced by such dissonant messages (Song & Boomgarden, 2017; Schmitt-Beck, 2003). Thus, "the composition of individuals' discussion networks may either inhibit or reinforce the effect of mass media conditional on the congruent or dissonant nature of the message" (Song & Boomgarden, 2017, p. 260). This reasoning is aligned with the concept of resonance in cultivation theory. Resonance is described as the potential of people's personal experiences to either amplify or dampen cultivation effects and interpersonal communication can be regarded as a part of people's personal experiences. That is, interpersonal communication which resonates with a person's own understanding could amplify cultivation effects while interpersonal communication that counters a person's own understanding could minimise cultivation effects.

More recent empirical studies have also found individuals' discussion networks to be an important moderating factor for media effects. Levitan and Visser (2009) found that people in heterogenous social networks were less resistant to change their attitudes, and there was also less attitude stability in those networks. Polarisation of attitudes in relation to interpersonal political discussions was examined by Binder, Dalrymple, Brossard and Scheufele (2009) and they found that "political talk plays a substantial role in shaping and polarizing attitudes …. with discussion in networks composed of like-minded others leading directly to the development of extreme attitudes" (Binder et al., 2009, p. 316).

Taken together, it seems reasonable to assume that interpersonal communication moderates the relationship between media use and crime perceptions. The impact of congruent media messages which is discussed in homogenous discussion networks will most likely be amplified whereas the impact of congruent media messages that are discussed in heterogenous discussion networks will most likely be dampened.

3. Previous research

After the previous chapter has laid the theoretical background, this chapter will provide an overview of previous empirical research on the cultivation theory as well as the RSM. The purpose of the chapter is to provide a broad overview on what empirical studies within cultivation and RSM research have focused on up until today as well as describe the methods and data that have been employed in these studies. To be able to state hypotheses which relate to the research questions, the purpose of the chapter is also to provide an idea of what the empirical support for the two theories is. The chapter will also show the gaps in previous empirical research which will make it clear why there is a need to study crime perceptions reinforcement processes in relation to selective media use.

In terms of structure, the chapter will begin with a presentation of previous research conducted on the cultivation theory in relation to crime perceptions. It will be categorised in accordance with the independent variable (type of media exposure), research design (cross-sectional or longitudinal) as well as the outcome variable (first-order or second-order). This will be followed by a review of the previous research on the RSM. To get an idea of the empirical support as well as the most common approaches to study the RSM, this section will begin with a table that presents an overview of the studies which have been identified applying the model. Thereafter, studies that focus on polarisation in general or polarisation on specific issues will be described more thoroughly. The chapter will be concluded by proposing a causal model and stating nine hypotheses which relates to the study's research questions and which are based on the presented theoretical framework and the previous empirical research. It should be noted that the section which describes the RSM studies will be more focused on methodological choices compared to the section describing cultivation studies. This is because the study's research approach and methodology will be heavily influenced by previous research on the RSM and not so much on previous cultivation research.

3.1 Empirical research on the cultivation theory

As mentioned previously, the media environment has changed a lot since Gerbner and colleagues introduced the cultivation theory in the late '60s. Television has gone from being the dominant medium in people's homes towards being one of many media sources that people

consume (Weibull & Wadbring, 2014). Despite this, the cultivation theory has remained one of the most researched areas within media and communication science. Morgan and Shanahan (2010) point out that more than 500 studies directly related to cultivation theory had been published as of 2010, where 125 of them had been published since the turn of the millennium. A possible explanation for this is that researchers have developed the theory and applied it to other contexts for it to stay relevant in the new media environment.

This review of empirical studies on the cultivation theory will present a sample of studies which have examined cultivation effects on perceptions of crime. The review will put a large focus on studies that examine genre-specific media effects, cultivation theory applied on digital media and cultivation studies that have applied a longitudinal design since these are the most relevant areas for the purpose of this study.

3.1.1 Gerbner's original study

In 1976, Gerbner and Gross published an article called *Living With Television: The Violence Profile* which was the first study on cultivation effects. Gerbner and Gross (1976) showed that the major networks aired a high proportion of violence and that individuals who were heavy viewers were more likely to overestimate crime rates, more likely to have mistrust in others and more likely to be fearful of becoming a victim of a violent crime. Eventually, these findings "led to the notion of the *mean world syndrome*, in which heavy viewers are more likely to see the world as a scary, mean, violent, and dangerous place" (Shanahan, 2009, p. 254).

Since Gerbner and Gross's (1976) original work, the cultivation hypothesis has been tested in several domains. To get an estimate of the overall "true" cultivation effect, Morgan and Shanahan (1997) analysed the past 20 years of cultivation research through a meta-analysis. 52 independent articles were analysed, and the researchers found that the overall cultivation effect was, on average, .09 (Pearson's r). With that as a background, they argue that television viewing has a small, but still significant, effect on people's perceptions of reality. Since Morgan and Shanahan's (1997) meta-analysis, the body of research on cultivation effects has continued to grow but the focus has shifted somewhat. Morgan and Shanahan (2010) point out that the field has developed in a number of ways since their meta-analysis in 1997 and one of the most prominent development is that research has moved away from Gerbner's idea of examining the effect of overall TV viewing towards more genre-specific and outlet-specific effects.

3.1.2 Cross-sectional studies on genre-specific cultivation effects

Although the original hypothesis describes cultivation as an effect being caused by overall television consumption, many researchers have, as mentioned above, moved towards applying the cultivation theory on genre-specific media exposure measures instead. The effect of overall TV news exposure on fear of crime has, for example, been examined and there seem to be a positive relationship (Chiricos, Padgett & Gertz, 2000; Chiricos, Eschholz & Gertz, 1997), although there are studies that cannot provide support for such relationship (Chadee & Ditton, 2005). Researchers have also differentiated between exposure to local TV news and national TV news and found that exposure to local news produces more fear than exposure to national news (Romer, Jamieson & Aday, 2003; Callanan, 2012; Chiricos et al., 2000, Eschholz, Chiricos & Gertz, 2003; Weitzer & Kubrin, 2004). The effect of watching crime-related entertainment programs have also been examined and the results are mixed. Dowler (2003), Escholtz et al. (2003) and Jamieson & Romer (2014) found a positive relationship between exposure to crime drama and fear of crime whereas Callanan (2012), Kort-Butler and Hartshorn (2011) and Grabe and Drew (2007) could not find a relationship between crime drama and fear of crime. Research on the relationship between exposure to non-fictional crime-based reality programs and fear of crime have more coherent results, where several studies have found a positive relationship (Callanan, 2012; Eschholtz et al., 2003; Kort-Butler & Hartshorn, 2011; Grabe & Drew, 2007).

The theory has also been applied to other news media types than television. The empirical support for the cultivation hypothesis on exposure to radio and newspapers is mixed. Chiricos et al. (1997) found support for radio listening being related to higher levels of crime fearfulness, whereas Chadee and Ditton (2005) could not provide evidence for such relationship. Similarly, some studies have found that reading newspapers is positively related to fear of crime (Williams & Dickinson, 1993; Jaehnig, Weaver & Fico; 1981) while other studies have found no effect (Chiricos et al., 2000; Chadee & Ditton, 2005; Sacco, 1982)

3.1.3 Cross-sectional studies on cultivation effects from online media

Even though most empirical analyses of the cultivation hypothesis have focused on effects from traditional media some later studies have, in an effort to make the theory relevant for today's media landscape, expanded the scope to include online news consumption as well. Examples of such studies are Chadee, Smith and Ferguson (2017), Intravia, Wolff, Paez and

Gibbs (2017), Kohm et al. (2012), Roche, Picket and Gertz (2015) and Wu, Li, Triplett and Sun (2019).

Chadee et al. (2017) conducted a survey in Trinidad (N=3003) and found none or very weak support for the cultivation hypothesis on social media and Internet consumption. Wu et al. (2019) conducted face-to-face interviews on Shanghai residents (N=1200) to examine the relationship between fear of seven different types of crime and Internet and WeChat (a social media platform allowed in China) use. They found that news consumption on the Internet had an effect on fear of crime, but there was no indication that consuming news on social media was related to being increasingly fearful of crimes.

Two studies that have investigated the relationship between digital news media use and fear of crime on university students are Kohm et al. (2012) and Intravia et al. (2017). Kohm et al. (2017) used survey data on both American and Canadian university students and found contrasting results between the two nationalities. Canadian students were found to have higher levels of fear but also being less affected by social media exposure. American students' fear of crime was, on the other hand, significantly related to frequent Internet blogging. The authors do, however, note that the Canadian student sample was drawn from campuses in an inner-city area with higher crime rates whereas the American sample was drawn from campuses in suburban areas. This could possibly suggest that the Canadian students were reacting to their own reality rather than the to the images being disseminated online, whereas the American students relied more on the mediated messages about crime. The second study examining the relationship between digital media consumption and fear of crime among university students (Intravia et al., 2017) used survey data from three American colleges (N=918). Their social media consumption variable consisted of four measures: overall consumption of social media, general news consumption on social media as well as consumption of crime news on Facebook and Twitter, respectively. The study found that overall social media consumption "appears to be related to fear of crime above and beyond the other media-related measures" (Intravia et al., 2017, p. 163) whereas the other three measures of social media news consumption were not related to increased fear of crime.

Roche et al. (2015) did not find an association between Internet news consumption and anxiety about crime when analysing data from four American national surveys. The authors suggest that a potential explanation for this is that "the Internet, unlike traditional media sources, can

simultaneously provide news reports as well as easy access to an array of other websites, which may include more in-depth accounts, or even conflicting perspectives" (p. 232) and that "in contrast to television, Internet consumption involves higher levels of user agency and choice, as well as more active engagement" (p. 232). However, as described in section 2.4.5, the Internet also provides greater possibilities to selectively expose yourself to news and stories that confirm your own beliefs or anxieties which implies that selective Internet consumption may have the contrary effect on certain groups of people.

Taken together, there seems to be little support for Internet and social media consumption being related to increased fear of crime. Only a few studies found cultivation effects from frequent use of the Internet and social media. All the studies presented above did, however, measure rather general Internet media use variables and did not account for selective exposure. Although only a few studies could confirm the cultivation hypothesis here, it is still possible that cultivation occurs on smaller groups of people who actively seek out news that confirm their own perceptions.

3.1.4 Longitudinal studies on cultivation effects

As can be seen in the overview above, almost all existing empirical studies on the cultivation theory are based on cross-sectional samples and there is only a very limited number of studies that have used longitudinal data. This is problematic since perceptions about crime are likely to constantly change as a result of previous perceptions. A person who fears crime at an earlier timepoint is likely to seek out more crime news in the next period and thereby perceiving crime as a more significant risk at the third timepoint (Shi, Roche & McKenna, 2019). Shi et al. (2019) suggest "treating crime perceptions as time stable may lead to concerns of reverse causation and omitted variables bias, rendering conclusions from prior cross-sectional cultivation studies spurious" (p.1481).

Two studies within cultivation research on crime perceptions that have employed a longitudinal design were identified, O'Keefe and Reid-Nash (1987) and Shi et al. (2019). O'Keefe and Reid-Nash (1987) examined the impact of watching television and reading newspapers on people's perceptions, attitudes and behaviour related to crime through a two-wave panel interview study on Americans (N=461). Their study had several important findings. First, people who were more attentive to televised news about crime were found to have increased

fear of crime, but there was no indication that watching crime dramas or overall television consumption had an effect on any of the crime measures. Second, being attentive to crime news in newspapers was not related to being more fearful of crime. In relation to this thesis's aim to investigate the RSM on crime perceptions, O'Keefe and Reid-Nash's (1987) results have another important implication. The authors found that it was more likely that being exposed to televised crime news led to increased fear and concern about crime compared to fear and concern of crime leading to increased consumption of televised crime news. The contrary result was found when examining crime news readership in relation to fear and concern for crime.

A second, more recent study that has applied a longitudinal design when empirically analysing the cultivation theory is Shi et al. (2019). Shi et al. (2019) used panel interview data from three of the waves in the American Election Survey 2008-2009 (N=3143). Individuals were asked to rate their crime perceptions (whether the nation's crime rates were better or worse compared to 2001) as well answered questions regarding their news media consumption (news on the television, newspapers, Internet and radio). They used a variety of modelling techniques including pooled OLS model without lagged crime trend perceptions, dynamic OLS model including lagged crime trend perceptions, fixed effects model as well as dynamic panel model. When employing the pooled OLS model without lagged crime trend perceptions, the authors found support for the cultivation theory as watching TV news was associated with individuals' negative perceptions of crime whereas reading the newspapers had the opposite effect. There was no association found between perceiving crime worsening and Internet use or radio listening. Shi et al. (2019) point out that this is in accordance with previous research on cross-sectional data. However, in the other more sophisticated models, there was no support for the cultivation hypothesis which suggest that the evidence from the initial OLS model might be spurious as a result of omitted variable bias.

There are two important implications to take away from Shi et al.'s (2019) study. Firstly, the study found that crime perceptions are dynamic in nature which suggest that future studies should not draw on cross-sectional samples when examining the relationship between individuals' media use and crime perceptions. Secondly, Shi et al. (2019) note "[i]f the amount of media consumption does not simply cultivate changes in crime perceptions, it might be the quality of media" (p. 1489) and implies that selective exposure to partisan media is likely to result in differential cultivation effects. The authors suggest that future studies should include "more nuanced measures of media consumption in accordance with the changing media

landscape" (p. 1490) as well as contextual factors that may influence crime perceptions such as individuals' social networks.

In sum, there seem to be a need to apply a longitudinal design when analysing cultivation effects since crime perception reinforcement processes are dynamic in nature and findings from cross-sectional analyses might be spurious. It also seems like there is a need to include media selectivity in the model as different cultivation effects might occur when consuming attitude-consistent media. The findings also imply that fear of crime is a stronger predictor of reading crime news than the opposite relationship.

3.1.5 First-order effects rather than second-order effects

Most studies on cultivation effects have focused on the relationship between media exposure and second-order effects. There are, however, a few studies that have examined the impact media exposure have on first-order effects and more specifically individuals' crime trend perceptions (Jamieson & Romer, 2014; Shi et al., 2019; Davis & Dossetor, 2000; O'Connell & Whelan, 1996; Grabe & Drew, 2007; Pfeiffer, Windzio, & Kleimann, 2005).

Davis and Dossetor (2000), O'Connell and Whelan (1996), Pfeiffer et al. (2005) compared actual crime rates with individuals' crime trend perceptions (in Australia, Germany and Ireland, respectively) and found that the crime trend perceptions were independent of real trends and strongly predicted by media exposure. More specifically, Davis and Dossetor (2000) and O'Connell and Whelan (1996) found that television exposure predicted crime trend perceptions while Pfeiffer et al. (2005) found that newspaper reading predicted crime trend perceptions. Grabe and Drew (2007) examined both first-order and second-order effects and found that attention to crime news stories on television had first-order effects whereas attention to crime news stories in newspapers predicted second-order effects.

In sum, the findings from studies which have examined first-order effects seem to have found rather strong support. However, in terms of which type of media exposure that predicts first-order effects the results are not as clear. Morgan and Shanahan (2010) do, as mentioned in the theoretical framework, point out that first-order effects are more common than second-order effects since people are more likely to learn "societal-level lessons about what 'the world' is like "which might not "necessarily impact our perceptions of our own personal reality" (p. 343).

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3.1.6 Summary of empirical research on the cultivation theory

To sum up the empirical findings from research conducted on the cultivation theory in relation to crime perceptions and attitudes. There seems to be mixed support for the cultivation theory and that might be an effect of a lack of coherence in the measures on both the predictor variable - media use - as well the outcome variable - crime perceptions and attitudes. Most studies draw on cross-sectional samples and the lack of longitudinal designs is evident. Second-order effects have been more common to analyse although it is suggested that first-order effects are stronger. In relation to polarisation, it is surprising that there are not more studies that have investigated to what extent people perceive crime trends in various ways depending on which media type that is consumed. In regard to that, the implications for the cultivation theory in the new media landscape has only briefly been considered and none of the studies has considered cultivation effects in relation to alternative media use.

3.2 Empirical research on the Reinforcing Spirals Model

The nature of research conducted on the RSM has developed over the years. When Slater (2007) introduced the model, it was primarily supposed to help explain the media's role in teenagers' socialisation process. Therefore, many of the initial studies on the model focused on that area. However, in Slater's (2007) original article, he also proposed that the model can be applied to other contexts where an explanation of the dynamic relationship between media use and effects are sought. With rising concerns for attitude polarisation during the last few years, scholars have started to apply the model on the political context and often with a particular focus on polarisation.

To get an idea of the empirical support for the RSM as well as the most common methods that have been used when analysing reciprocal relationships, table 1 outlines studies which have applied the RSM. This table, thus, include studies which not only focus on political polarisation but also the earlier studies which focus on the reinforcing relationship between adolescents' behaviour and specific media use.

Table 1. Overview of research applying the reinforcement spirals model

Study	N	Category	Relationship	Sample	Research design	Model	Result
von Salisch et al. (2011)	324	Violent behaviour	Violent video games use and aggressive behavior	Children	Two-wave panel survey	Cross-lagged panel model	*Partial support* - one direction (behaviour predicted media use)
Dvir-Gvirsman et al. (2014)	1207	Violent behaviour	Violent behavior and mediated exposure to political violence	Adolescents	Three-wave panel interview	Cross-lagged panel model	*Support in both directions* - but stronger relationship between behaviour predicting media use
Erreygers et al. (2018)	2168	Social behaviour	Performing and receiving cyber-bullying as well as between performing and receiving pro-social behaviour.	Adolescents	Three-wave panel survey	Cross-lagged panel model	*Partial support* - No support between cyberbullying perpetration and victimization but support for a mutually reinforcing spiral of prosocial behaviour
York (2019)	674	Social behaviour	News consumption and political discussion with parents and peers	Parent-child	Three-wave panel survey	Cross-lagged panel model	*Partial support*
Slater & Hayes (2010)	2259	Health behaviour	Exposure to music video channels, cigarette smoking and increased socialization with other smoking youths	Adolescents	Four-wave interview panel	Parallel latent growth curve models	*Partial support* - media use predicted behaviour but did not measure the opposite relationship
Slater & Henry (2014)	2710-2729	Health behaviour	Exposure to music-related media content and teen's substance uptake	Adolescents	Four-wave panel survey	Discrete-time survival analysis	*Partial support* - media use predicted behaviour but did not measure the opposite relationship
Bleakley et al. (2008)	501	Sexual behaviour	Exposure to sexual media content and sexual behavior	Adolescents	Two-wave survey panel	TSLS Regression	*Support in both directions*
Peter & Valkenburg (2009)	962	Sexual behaviour	Exposure to sexual content and perceiving females as sex objects.	Adolescents	Three-way panel survey	Cross-lagged panel model	*Partial support* – media use predicted attitudes but attitudes only predicted media use among males.
Wright & Tokunaga (2018)	714	Sexual behaviour	Pornography use, sexual liberalism and support for birth control	Adults	Three-wave interview panel	Cross-lagged panel model	*Support in both directions*
Strömbäck & Shehata (2019)	1413 1305 2281 2254	Political interest	TV news exposure and political interest	Adults	Four panel surveys (four-wave, two-wave, four-wave, three-wave)	Cross-lagged panel model	*Support in both directions* for public service news but not for commercial tv news
Moeller et al. (2018)	668	Political interest	Online media exposure and political interest	Adolescents	Six-wave survey panel	Dynamic Panel Model & (reduced) ALT Model	*Support* for political interest and certain forms of online media use being reciprocally related.

Table 1 continued. Overview of previous research applying the reinforcement spirals model

Stroud (2010)	533 537	Political polarization in general	Selective exposure to partisan media content and political ideology	Adults	Four two-wave panel surveys	Cross-lagged panel model	*Partial support* – media use predicts political polarization but only some evidence supporting the reverse relationship
Beam et al. (2018),	500	Political polarization in general	Facebook news consumption and political ideology	Adults	Three-wave panel survey	Cross-lagged panel model	*No support* - instead a modest de-polarization
Dahlgren et al. (2019)	2254	Political polarization in general	Selective exposure to ideology-consistent media content and political ideology	Adults	Three-wave panel survey	Cross-lagged panel model	*Support in both directions*
Hutchens et al. (2019).	401	Political polarization in general	Interpersonal partisan communication and political ideology	Adults	Three-wave panel survey	Cross-lagged panel model	*Partial support* - support when measurement started on polarization but not when measurement started at political discussion
Schemer (2012)	1094	Political polarization on specific issues	Exposure to campaign ads and attitudes towards asylum seekers.	Adults	Three-wave panel study	(reduced) ALT Model	*Support in both directions*
Theorin (2019)	2254	Political polarization on specific issues	Media use and anti-immigration attitudes	Adults	Three-wave panel survey	Cross-lagged panel model & fixed effects model	*Support in both directions* – only when consuming right-wing alternative media and not for other media types exposure.
Feldman et al. (2014)	1036	Political polarization on specific issues	Selective exposure to partisan media and climate change perceptions	Adults	Two-wave panel survey	Cross-lagged panel model	*Support in both directions*
Dvir-Gvirsman et al. (2016)	1207	Political polarization on specific issues	Media exposure to political violence and ideological beliefs on political conflict	Adolescents	Three-wave interview panel	Regression analysis	*Partial support* – media use predicted attitudes but the opposite relationship was not measured.

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There are a few important points to take away from this empirical overview. First, research seems to have increasingly moved away from examining behavioural outcomes among adolescents towards focusing on the political context. Although some recent studies have focused on political interest, the majority have examined the RSM in relation to attitude and ideology polarisation. The studies which focus on polarisation can be categorised into two main themes: political polarisation in general (ideological polarisation) and political polarisation on specific issues. Second, most studies do provide at least partial support for the RSM and there was, in fact, only one study (Beam et al. 2018) which could not find any support. However, many studies could only provide partial support for the model and not for the full dynamic reciprocal effects. Third, studies which examined different media types found that only certain forms of media exposure had reciprocal effects on behaviour and attitudes. Lastly, among the studies which only found support for the model in one direction, there was a stronger tendency that media use predicted effects than the other way around.

In terms of methodology and data material, most RSM studies are based on panel surveys with four exceptions which have used panel interviews. The number of waves that have been employed range from 2 to 6, but three-wave studies are the most common. The sample sizes range from 324 to 2729, and within behavioural studies, the examined population have most often been adolescents whereas in studies focusing on the political context the most common population to examine have been adults. To analyse the reciprocal relationships, most studies have employed a cross-lagged panel model utilising structural equation modelling. Other statistical techniques which have been used are growth models, dynamic panel model, (reduced) ALT model, discrete-time survival analysis and fixed effects model.

3.2.1 Studies focusing on polarisation

Although the table above gives us an idea of the current state of research as well as an overview of the research approaches that have been employed, this is not enough to fully understand the findings from research on the RSM within the political domain. This section will, thus, thoroughly describe RSM studies which have focused on polarisation as this will give us a better understanding of what we can expect from the relationship between selective media use and crime perceptions as well as the potential of a polarising outcome. The studies have been divided into three categories: political polarisation in general, political polarisation on specific issues and contextual factors.

3.2.1.1 Political polarisation in general

Studies which have been categorised as focusing on polarisation in general are studies which have examined the reinforcing relationship between selective media use and political ideology. Four studies were identified within this category (Stroud, 2010; Beam et al., 2018; Dahlgren et al., 2019; Hutchens et al., 2019) and although there is mixed support for the model, some similar patterns can be detected throughout the studies.

Stroud (2010) used data from four panel surveys gathered throughout the 2004 American presidential election (N=533/ 537) to analyse the relationship between selective exposure to partisan media content and ideology. Stroud found evidence for selective exposure to partisan media predicting increased political polarisation but only some evidence supporting the reverse relationship.

Two studies which examined political polarisation in relation to social media use found contradictive results (Beam et al., 2018; Dahlgren et al., 2019). Beam et al. (2018) investigated the mutually reinforcing relationship between Facebook news consumption and political polarisation on ideology through a three-wave panel survey gathered during the 2016 US presidential campaign (N=500). Beam et al. found that both news use on Facebook and political attitudes were relatively stable throughout the campaign and that news use on Facebook was, in fact, "related to a modest over-time spiral of depolarization" (Beam et al., 2018, p. 940) and that there was no evidence for Facebook users to be increasingly ideologically polarised. The authors explain this with their finding that Facebook news users were more likely to be exposed to both partisan and bipartisan news because of social media news recommendations which possibly could increase the likelihood to be more understanding of arguments from both sides.

Dahlgren et al. (2019) expanded the scope of media types to traditional and digital media outlets when examining the reciprocal relationship between selective exposure to ideology-consistent media content and political ideological attitudes. A Swedish longitudinal three-wave web panel survey gathered between 2014 and 2016 (N=2254) was used to analyse the relationship. The authors found support for selective exposure to ideology-consistent content on both traditional and online news media but there was, however, no support for selective avoidance of bipartisan news. In fact, they found that people who sought out partisan news also tended to be exposed to bipartisan news, particularly in the online environment. In terms of findings supporting the RSM, the authors conclude:

> [T]he findings also lend support to our hypotheses on reinforcing spirals: A relatively higher use of attitude-consistent newspaper reading … and attitude-consistent online news websites … had additional (reinforcing) effects on citizens' ideological leaning. That is, all else equal, people who seek-out left-wing news tend to develop a stronger left-wing ideological leaning over time, while the opposite occurs among those who seek-out right-wing news. The results also indicate that these effects were stronger and more pronounced in the online environment compared with print newspapers (Dahlgren et al., 2019, p. 170)

The authors do, however, note that potential polarisation effects might be dampened in a real-life situation since people who engaged in selective exposure to partisan news online were more likely to consume bipartisan news too.

The fourth study within this category of research (Hutchens et al., 2019) has another focus when it comes to media use. Instead of focusing on mediated partisan communication, this study focuses on interpersonal partisan communication. The authors point to Slater's (2007; 2015) suggestion that the RSM can be applied to both mediated and interpersonal communication and argues that since interpersonal communication is just as an important source of information as mediated information, research on the RSM with respect to interpersonal communication is essential to understand the wider picture. Hutchens et al. used data from a three-wave panel gathered during the 2012 and 2016 US presidential campaigns (N=401) to explore the association between discussing politics with like-minded and ideological polarisation and vice versa. Additionally, they tested if there was a dynamic reciprocal relationship between higher levels of discussing politics with like-minded and political ideological polarisation.

The findings suggest that, during both the 2012 and 2016 election campaign, "polarization at wave 1 was associated with an increase in the proportion of discussion with like-minded others at wave 2, which in turn was associated with higher levels of affective polarization at wave 3" (Hutchens et al., 2019, p.368). However, when the authors started the measurement on political discussion, a significant effect was not found and that is why this study only can provide partial support for the RSM.

Taken together, most studies which have focused on ideological polarisation as an effect of media exposure to partisan news have found evidence for such relationship. Only one of the analysed studies could not find evidence for reinforcing relationship between media use and ideological polarisation and that might be a result of the chosen media variable, Facebook use,

which as Beam et al. (2018) point out is likely to include bipartisan news too. The study which focused on partisan interpersonal discussions instead of partisan mediated communication also found some evidence for a reinforcing relationship. This indicates that partisan interpersonal communication also plays an important role in reinforcing relationships and it is, therefore, important to account for that factor when analysing the relationship between media use and crime perceptions.

3.2.1.2 Political polarisation on specific issues

Studies which have been categorised as focusing on polarisation on specific issues resemble the ones above, but they all differ in one aspect, namely their focus on the relationship between selective media use and perceptions and attitudes on specific issues. Schemer (2012) and Theorin (2019) focus on immigration attitudes and Feldman et al. (2014) focus on climate change attitudes. All studies within this category of research found support for a reinforcing relationship.

Let us begin with the studies which have focused on immigration attitudes. Schemer (2012) examined the reinforcing relationship between attention to political advertising in a campaign focusing on opposing asylum policies and negative feelings towards asylum seekers in Switzerland through a three-wave panel study (N=1094). Schemer hypothesised that people who pay attention to political advertising that oppose asylum policies would get increased negative affective reactions towards asylum seekers and that these negative emotions would further enhance their attention to such ads. Both of these hypotheses were supported across the two lags and at the end of the campaign, voters had greater negative feelings towards asylum seekers. The development of the effects was also examined to determine if the effects were relatively stable during the course of the campaigns or if they intensified during a certain period. The findings suggest that the effects were stable and did not intensify at a particular time during the campaign.

Another more recent study that focuses on the reinforcing relationship between anti-immigration attitudes and media use is Theorin (2019). The author used a three-wave panel survey collected between 2014 and 2016 (N=2254) and analysed the data through cross-lagged structural equation modelling. Theorin goes beyond much of the previous research conducted on the RSM by differentiating between different media types: commercial TV news, tabloids

and right-wing alternative media. She further differentiates between attitudes towards perceived remote immigration and close immigration. The results suggest that there were no reinforcing effects on anti-immigration attitudes when using traditional media but there were reinforcing effects between the use of alternative, right-wing news sites and immigration attitudes. More specifically, Theorin found that people who sought out alternative, right-wing news became increasingly negative towards remote immigration but also increasingly positive towards close immigration.

A study which focuses on the reinforcing relationship between partisan media exposure and climate change attitudes is Feldman et al. (2014). The authors used a longitudinal two-wave panel survey on a representative sample of Americans (N=1036). Since climate change is a highly politicised issue in the US, ideologically oriented media channels communicate vastly different information about climate change. Conservative media outlets are questioning the scientific evidence of climate change whereas non-conservative media communicate the scientific consensus in climate change being an issue. The authors were, thus, able to measure these different outlets' role in the reinforcement spiral in a convincing way. Feldman et al. (2014) found strong support of the RSM. First, the authors found an association between the use of conservative media and opposing climate regulations as well as lower belief certainty about global warming. The reverse association was found for non-conservative media users. Secondly, the authors' "over-time analyses demonstrate an ongoing, reinforcing cycle in which media use influences beliefs, and these beliefs then affect subsequent media use, which, in turn, reinforces beliefs" (Feldman et al., 2014, p. 603).

To sum up, all the studies which have examined the mutually reinforcing relationship between selective media use and increased polarisation on the specific issues of immigration and climate change found support for such relationship. The two studies which focused on immigration found that selective exposure to partisan media content eventually led to increased negative attitudes towards immigration. Theorin's (2019) study also showcased that exposure to alternative media in Sweden have particular potential to reinforce attitudes whereas traditional media exposure did not show such effect. The study which examined climate change showed that exposure to partisan media have the potential to increase polarisation on not only attitudes but also on how people perceive facts and the reality they live in.

3.2.1.3 Contextual factors

A study which examined potential factors that may condition such reinforcing spirals is Song and Boomgaarden (2017). They employed agent-based modelling simulations on an extensive time-period to get a better understanding of the moderating mechanisms that either function to strengthen or to reduce reinforcing spirals. The authors model attitudes as a function of "(1) prior attitudes, (2) the degree of exposure to pro- and counterattitudinal media, and (3) interpersonal influence from political discussion networks" (Song & Boomgaarden, 2017, p. 262) and aim, by doing so, to get a more "nuanced understanding of the cumulative effects and consequences of media choice behaviors" (Song & Boomgaarden, 2017, p. 257).

Song and Boomgaarden (2017) emphasise the role of interpersonal attitudinal consensus as one of the main explanatory factors to why spiral processes might lead to more extreme attitudes and argue that even though the role of interpersonal networks are often theoretically mentioned, there is lack of theoretical integration and empirical validation of such moderating effects. Song and Boomgaarden was indeed the first study that integrated interpersonal discussion effects with the RSM framework (now also Hutchens et al., 2019) and thereby expanded Slater's (2007) original framework. The authors further contribute to the field of research by examining the political contextual variations in which these mutually reinforcing spirals take place.

There are three important findings in Song and Boomgaarden's (2017) study. First, "attitudinally congruent media exposure is likely to be an important factor that contributes to the maintenance and reinforcement of one's political attitudes" (p. 273). More specifically, they found that political attitudes, on a macrolevel, were regressed to less extreme levels when media exposure decreased. The authors suggest that "this highlights the notion, albeit indirectly, that the most likely outcome of partisan news exposure is reinforcement, while the lack for such exposure does not preclude the opportunity for attitude conversion from counterattitudinal exposure" (p. 273-274). Second, their results "validate the notion that … attitudinal composition of one's network amplifies the effect of consonant media while diminishing the effect of counterattitudinal media, therefore serving as an important social "anchor" upon which partisan media exposure is evaluated" (p. 274). Song and Boomgarden point out that their study is the first to provide empirical support for reciprocal relationships between selective media exposure and its attitudinal effects being conditioned by interpersonal discussion networks and emphasise that the research field needs to improve their theoretical integration of interpersonal communication into media effects theories and frameworks. Third,

in relation to contextual variations, the study found that reinforcing effects as a result of increased interest and attention were not limited to election campaign periods. The authors suggest that contextual variation may be "triggered by external events more generally"(p. 274) since "it appears that societally issues or events that lend themselves for contrasting perspectives may be assumed to lead to more polarization"(p. 274). An example of such external events could, for example, be the 2015 European refugee crisis. Song and Boomgarden (2017) conclude by stating that "individual-level attitudinal compositions of interpersonal environments and various contextual factors also may critically moderate the spiral process between exposure and its attitudinal effect" (p. 276) and that these findings are generalisable to the degree that they easily can be extended to other attitudes of interest.

3.2.2 Summary of empirical research on the reinforcing spirals model

Altogether there seems to be strong support for the RSM in the context of political polarisation. Selective media use may, over time, reinforce attitudes and perceptions and attitudes and perceptions may, over time, reinforce selective media use. Research which has included various media exposure variables in their models have found that reinforcing spirals are more likely as a result of exposure to 1) digital media and 2) alternative media.

Previous research has also shown that interpersonal communication is an important factor to account for when analysing these types of relationships. The most convincing example of this is Song & Boomgarden's (2017) study in which they found that interpersonal communication moderates the relationship between media use and effects. If we turn to external events which may trigger reinforcing spiral processes, research suggests that external events other than campaigns, such as the 2015 refugee crisis, may also trigger reinforcement of attitudes and perceptions.

3.3 Hypotheses and causal model

The original cultivation hypothesis proposes that it is people's overall media consumption that cultivates people's perceptions of crime. The first hypotheses will, thus, establish a baseline by testing the relationship between overall media consumption and crime trend perceptions in various ways. The hypotheses state as follows:

H1a: Frequent exposure to news media correlates with perceiving the Swedish crime development as negative

H1b: Frequent exposure to news media will, over time, reinforce the perception that the Swedish crime development is negative (cultivation effect)

H1c: Perceiving the Swedish crime development as negative will, over time, reinforce the behaviour of seeking out news media (selection effect)

Genre-specific cultivation research builds on the assumption that there are content differences between different media genres but also between different news media types. Prior to analysing differences in cultivation effects for different types of news media outlets, it is essential to examine if there are differences and, in that case, how various types of news media differ. This motivates a research question which examines if there are outlet-specific differences in terms of content, style and tone in violent crimes news reporting. Thus, the fourth research question states:

Research question 4: Is violent crimes news reporting in Swedish media outlet-specific in terms of content, style and tone?

Previous research has found that different types of news media have various effects on the cultivation of crime perceptions. The following hypotheses will, therefore, test whether cultivation effects are outlet-specific.

H2a: Correlations between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific

H2b: Reinforcement processes between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific

The following hypotheses will examine whether cultivation effects are isolated to the broad patterns of traditional media use or if it is actually driven by alternative media use. The first of these hypotheses will test if the findings from previous cultivation research hold true when applying it on alternative media exposure. Thus, the hypothesis H3a states as follows:

H3a: Frequent exposure to alternative news correlates with perceiving the Swedish crime development as negative

Following the cultivation theory and research showing that selective exposure to attitude-consistent news and information have polarising effects on attitudes and perceptions of specific issues, I expect that alternative media exposure will reinforce perceptions of the Swedish crime development. Based on this, the hypothesis states:

H3b: Alternative media exposure will, over time, reinforce the perception that the Swedish crime development is negative (cultivation effect)

Based on the RSM framework and research showing that selective media use and perceptions are reciprocally related, I expect that a negative view of the Swedish crime development will, over time, reinforce alternative media use. Thus, the third hypothesis states as follows:

H3c: Perceiving the Swedish crime development as negative will, over time, reinforce the behaviour of seeking out alternative news (selection effect)

Against the background that research has found interpersonal communication to condition the relationship between media exposure and media effects, I expect that the potential reciprocal relationship between alternative media exposure and crime trend perception to be conditioned by interpersonal discussions about crimes. Based on this, it is hypothesised that:

H3d: The reciprocal relationship between crime trend perceptions and alternative media use is moderated by interpersonal discussions about crimes, where the reciprocal effect will be stronger for those that discuss crimes more frequently.

Based on the hypotheses concerning alternative media use, I propose the following causal model for the relationship between exposure to alternative news, crime perceptions and interpersonal communication (see figure 2). Exposure to alternative news at wave 1 is

associated with a more negative view of the crime development in wave 2, which in turn is associated with increased exposure to alternative news at wave 3. The model also suggests that the same effects will occur when the measurement starts at perceptions of crimes. This reinforcement process is also predicted to be moderated by interpersonal discussions.

Figure 2. Proposed causal model between alternative media use, crime perceptions and interpersonal com.
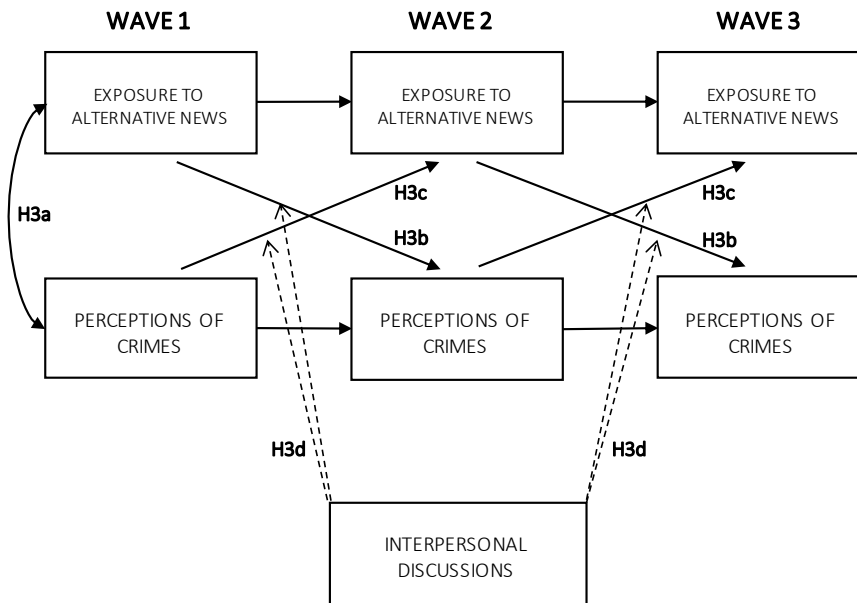
4. Methodology

4.1 Research approach

In social science research, different approaches can be applied to analyse and understand a social phenomenon. This study will apply a quantitative research approach since it aims to statistically provide evidence on whether perceptions of crime trends are reinforced through various types of media exposure. By adopting a quantitative research approach, it is possible to statistically determine whether various types of exposure to alternative media reinforce perceptions about Sweden's crime development over time and whether perceptions about the crime development reinforce various types of media exposure over time. Quantitative research is based on a *positivist* epistemological position which suggests that there is a truth out there to be discovered. Positivism is underpinned by an *objectivist* ontological perspective which basically suggests that empirical material is tangible and that facts are facts. Quantitative research is often, but not always, based on a deductive approach which means that the research process begins with generating hypotheses from theory and then testing them (Bryman, 2016). This study will follow a *deductive* approach since the idea is to test hypotheses which are generated from existing theory - the cultivation theory and the RSM. Moreover, it will apply a positivist epistemological position and an objectivist ontological perspective since these perspectives often go hand in hand with the above-mentioned approaches.

4.2 Choice of method

This study's aim is to examine whether the cultivation theory, as it is currently defined, is still relevant in today's fragmented media landscape or if it should be redefined to better capture selective reinforcing cultivation effects. This will be analysed in three steps. First, by examining if there is a mutually reinforcing relationship between overall news media exposure and crime perceptions. Second, by examining if mutually reinforcing relationships between traditional news media exposure and crime perceptions are outlet-specific. Third, by examining whether there is a mutually reinforcing spiral between alternative media exposure and crime perceptions and whether this potential effect is moderated by interpersonal communication. It

also aims to determine whether there are outlet-specific differences in terms of content, style and tone in Swedish violent crimes reporting.

To address these questions, this study relies on a combination of a quantitative media content analysis matched with longitudinal panel survey data. Thereby, I am able to link content differences in violent crimes reporting to public perceptions about the development of violent crimes in society. More specifically, the media content analysis allows me to examine how news media crime content differ in regard to style and tone between different types of media as well as between different time periods. Longitudinal panel survey data, on the other hand, allow me to analyse changes in the relationship between media use and crime perceptions on an individual level over time. By combining these two methods, it will be possible to provide explanations as to why we might see different cultivation effects depending on which media type that is consumed.

The quantitative media content analysis is based on primary data which includes analysed media content from various types of traditional online media outlets as well as alternative media sites. Content analysis can be defined as "the systematic, objective, quantitative analysis of message characteristics" (Neuendorf, 2017, p. 1) and aims to "produce counts of key categories, and measurements of the amounts of other variables" (Neuendorf, 2017, p. 21). The study's panel data analysis is based on secondary data from a Swedish longitudinal panel survey. Panel data gathers information from the same individuals (or units) on several occasions and, in contrast to cross-sectional data, individual (or unit) change is at the forefront of the design. Panel data differs from two other types of longitudinal data: trend data and time-series data. Trend data measures different individuals or units at several time points while time-series data measures one single unit over time. Panel data, on the other hand, measure the same variables on the same individuals (or units) repeatedly over time (Finkel, 1995). Since the research aim, as well as the RSM framework, demands a longitudinal design, it would not have been possible to conduct this research without using secondary data.

4.3 The Swedish Context

Sweden has a media landscape where alternative media is becoming an increasingly important media source for people. Additionally, the crime development is considered an important societal issue for many Swedes. This makes the Swedish case appropriate for testing the

hypotheses that concern the relationship between alternative media exposure and reinforcing effects on crime perceptions. In the following section, a brief introduction to the Swedish case will be given.

In Sweden, the state had a monopoly on radio and TV until the late '80s and since its dissolution, the number of TV and radio channels has increased significantly (Weibull & Wadbring, 2014). With the rise of the Internet and the advent of social media, the expansion of content choice has increased even more (Graber & Dunaway, 2018). As in most other Western countries, the growing amount of media content has resulted in increased opportunities to select media content that match people's preferences and political predispositions (Djerf-Pierre & Shehata, 2017). Still, traditional news media outlets are used for news consumption by a large proportion of the population. According to the 2018 national SOM survey, 44 % consume news on a tabloid online at least three days a week, 33 % consume news on a broadsheet online at least three days a week and 30% consume news in printed broadsheets at least five days a week.

When it comes to alternative media in Sweden, there has been a surge in recent years. Right-wing alternative sites like Nyheter Idag, Fria Tider and Samhällsnytt were all founded within the last 10 years and are today used by approximately 10% of the population every week (Newman, Fletcher, Kalogeropoulos & Kleis Nielsen, 2019). There are also a number of left-wing alternative sites such as ETC, Aktuellt Fokus and Dagens Arena, although many of them have existed for a longer period of time. Most previous research on alternative news in Sweden in recent years has focused on right-wing alternative news sites. Studies have found that a common trait among these sites is that they are critical towards immigration (Holt et al., 2019) and their key message is often that "the mainstream media conceal or distort information regarding the negative societal and cultural consequences of immigration and that mainstream journalists have teamed up with the political elites and engage in witch-hunts of critics, while ignoring abuses by those in power" (Nygaard, 2019, p. 1148).

In Sweden, the crime development is a politicised issue. A common discussion in the media and among political opinion-makers is whether Sweden has had a positive or negative crime development over time. The debate is often divided into two strands; one side is arguing that the crime rates have risen to extreme levels, whereas the other side argues that Sweden has never been safer. At the same time, people have become increasingly worried about crimes.

Brottsförebyggande rådet (2019a) report that the share of people with great concern about crime in society has increased since 2011 and in 2019, 43% of the population had great concern about crime in society and 49% are concerned about crime to some degree. Only 8 % were not concerned about crime in society. Moreover, according to the 2019 national SOM survey, law and order have become an increasingly important societal issue for Swedes. In 2014, only 4 percent considered law and order being one of the three most important issues whereas, in 2019, this number was 28 percent. In 2018, 16% considered law and order being one of the three most important issues which means that there was a 12% increase in one year (Martinsson, 2020) and more importantly, a high increase during the time the panel survey was carried out.

Figure 3. Law and order on the agenda 1990-2019
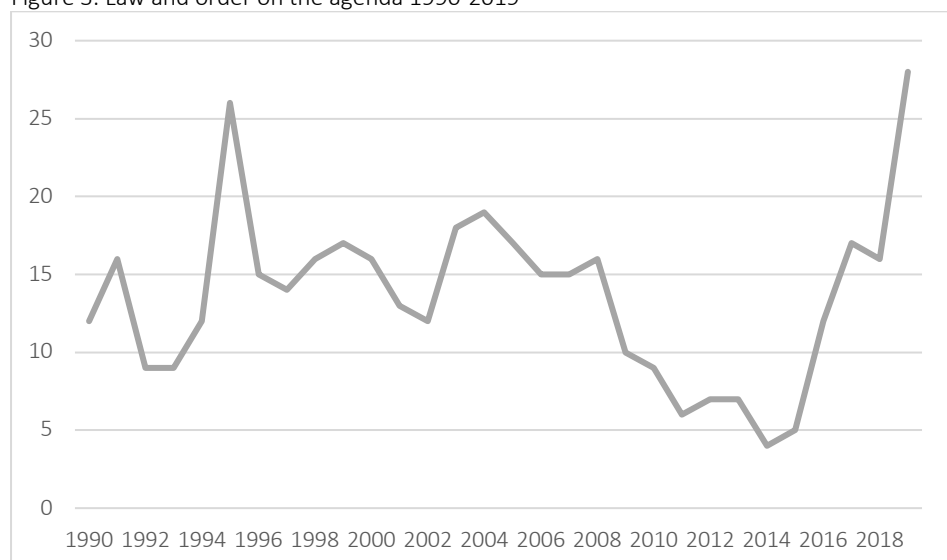
Comment: Share of mentions: Law and order as one of the three most important societal issues. The respondents were asked to provide a maximum of three issues/ societal problems on the following question: "Which issue(s) or societal problem(s) do you think is/are the most important in Sweden today?". The percentages are based on all respondents. Source: The national SOM-survey 1990-2019

The total amount of reported crimes has since 2010 increased (+13%). Moreover, the total amount of reported crimes against individuals has since 2010 also increased (+21%). However, the total amount of reported crimes against individuals was in 2019 almost the same as in 2018. When it comes to the development of specific crime categories, there are various trends. The number of reported assaults has decreased since 2010 (-4%), although there was a slight increase between 2018 and 2019 (+2%). The number of robberies increased until 2012, to then decrease in 2013 and it was thereafter relatively stable until 2016. Since 2017, the number of robberies has increased. Between 2018 and 2019, the number of muggings increased by 12 %. The total amount of reported rapes has since 2010, increased with 43% and between 2018 and

2019 there was a 6 % increase (Brottsförebyggande rådet, 2019b). The number of confirmed cases of lethal violence have between 2002 and 2019 varied between 68 to 113 cases a year. In the last five years measured (2015-2019), the number of confirmed cases of lethal violence is on a higher level (106-113 cases a year) than earlier years (2002-2014: 68-111 cases a year) (Brottsförebyggande rådet, 2019c).

Figure 4. Reported crimes against individuals 2009-2018
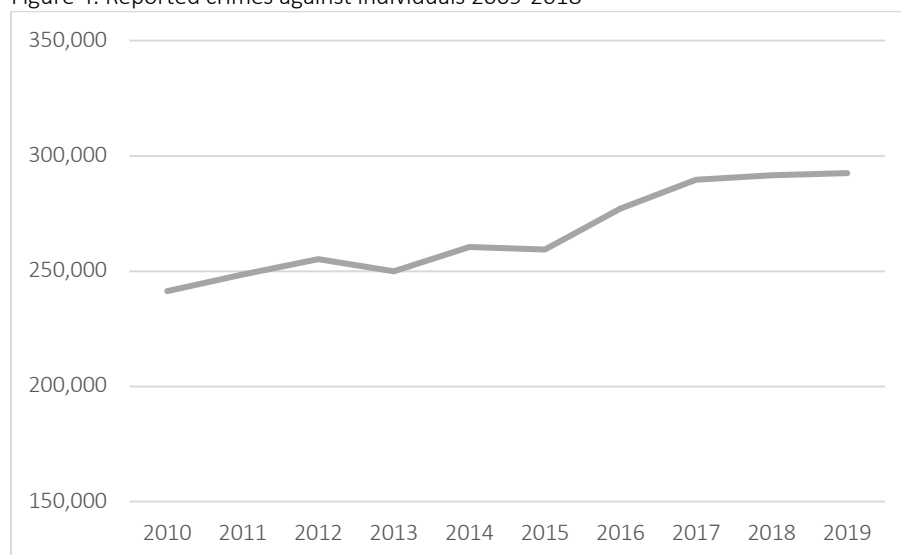
Source: Brottsförebyggande rådet

Concerning how crime content differs between different media types in Sweden, Strömbäck (2008) found that TV news, as well as tabloids, are more likely to focus on crime compared to broadsheets in Sweden. Similarly, content analysis data from the Institute of Media Studies (2018) shows that the share of crime content in various types of media varies in Sweden. The share of crime content is higher in TV news and tabloids (SVT: 12.3%, TV4: 10.1%, Tabloids: 9.1%) compared to in broadsheets (7.1%). The degree of emotional language in crime content also varies between different media types in Sweden. For crime news in tabloids, the share of emotional language is 24.2% while it for public service TV news is 6%.

4.4 Quantitative content analysis

This study relies, as mentioned previously, on a combination of a quantitative media content analysis matched with longitudinal panel survey data. In that way, content differences in violent crimes reporting can be linked to public perceptions about the development of violent crimes in society. This section will present the method of the content analysis in more detail

and focus on the sampling method, coding scheme and procedure, measures as well as include a discussion on the quality criteria.

4.4.1 Material

4.4.1.1 Sampling of newspapers

The quantitative content analysis is based on digital newspaper articles about violent crimes in five different traditional media outlet and six different alternative media outlets. The news media outlets were chosen with a purposive sampling method (Neuendorf, 2017) in order to get different categories of news media which would make it possible to compare the results with the findings from the panel survey analyses. The sampling of news media outlets was based on the following criteria: 1) available in the media archive Retriever 2) provide printed articles and not only TV programs 3) be national and not aim at a specific region 4) to the degree that it is possible, be aligned with the news media outlets which were measured in the panel survey. Since TV4 do not provide printed articles, commercial TV news was not included in the content analysis (see table 2 for details).

Table 2. News media outlets included in the content analysis

Traditional media	Alternative media
Swedish Television (Public service news)	Fria Tider (Right-wing alternative media)
Expressen (Tabloid)	Nyheter Idag (Right-wing alternative media)
Aftonbladet (Tabloid)	Samhällsnytt (Right-wing alternative media)
Dagens Nyheter (Left-wing broadsheet)	ETC (Left-wing alternative media)
Svenska Dagbladet (Right-wing broadsheet)	Aktuellt Fokus (Left-wing alternative media)
	Dagens Arena (Left-wing alternative media)

4.4.1.2 Sampling of news articles

Since the panel analysis examined reinforcing relationships over the course of two time periods (March '18 - November '18 and December '18 - October '19), the same timeframe needed to be used in the content analysis for it to be comparable. Thus, the timeframe that was selected for the content analysis was between March 2018 and October 2019. The process of sampling news articles from the chosen news media outlets begun by examining the full longitudinal

population of news articles that was related to violent crimes during this period. A search string that would capture all articles that dealt with violent crime was constructed:

våld OR våldet* OR våldsbrott* OR våldsdåd* OR "dödligt våld" OR gängvåld* OR skjutning* OR sprängning* OR misshand* OR sexualbrott* OR våldtäkt* OR ungdomsrån* OR mord* OR dråp OR fridskränk* OR kvinnofridskränk*

The full population of articles when using this search string in the media archive Retriever was N=66 311 (Traditional media: N= 60 117, Alternative media: N=6194). Since the population was quite large, a sample needed to be drawn. The sample size that was chosen was n=904 (traditional media: n=682, alternative media n=222) and multistage sampling was employed. First, a proportionate stratified sampling method was used (Neuendorf, 2017). A stratified sampling method is beneficial since it, according to Neuendorf (2017) "ensures appropriate representation for the various groupings when the subsamples are based on the size of the groupings in the population" (p. 86) as well as "reduces the sampling error for the stratifying variable to zero" (p. 86). The full population of traditional media articles was divided into groups in accordance with its publishing month and its news media source. Thereafter, the sample from each news media outlet in each month was divided proportionally, which means that the size of each stratum is proportionate to its relative size in the full population. To exemplify, in April 2018, 2685 articles related to violent crimes were published in the five traditional media outlets which is 4.9 % of the total population of articles (2685/ 54646= 0.049). This proportion was multiplied with the sample size to see how many articles from April 2018 that should be drawn (0.049* 682 = 33). The next step was to divide the 33 articles proportionally for each news media outlet. For example, Dagens Nyheter published 626 articles in April 2018 which is 23 % of the total population of this month (626/ 2685= 0.23). Therefore, 8 articles from Dagens Nyheter in April '18 were to be drawn (0.23*33=8). This calculation was done for each news outlet on each month. For alternative media, the sample size was set to 222 and the same procedure as above was conducted. However, the sampling of alternative media articles differed in one regard. Instead of calculating samples from each news media outlet, these outlets were divided into two categories - right-wing and left-wing alternative media - and the proportions were calculated for these two groups instead of for each news media outlet.

Secondly, a systematic random sampling method was employed to achieve a random sample within each month. Systematic random sampling means that every xth article is chosen by

calculating a skip interval (Neuendorf, 2017) for each news outlet in each month. The skip interval was calculated using the following formula:

$$\frac{Population\ (N)}{Sample\ (n)} = \frac{Population\ of\ articles\ for\ this\ news\ outlet\ in\ this\ month}{Sample\ of\ articles\ for\ this\ news\ outlet\ in\ this\ month} = Skip\ interval$$

To exemplify, for Dagens Nyheter in April 2018 this means that every 78th article is drawn (626/ 8= 78). This calculation was done for each news outlet on each month which means that the skip interval varied depending on which strata the sample was drawn from. For a systematic random sample to be considered a probability-based sample, there are two considerations to make. First, the sampling must start randomly, between 1 and x. In the case of this content analysis, this was set to 1. Secondly, the risk of periodicity in the sampling frame needs to be considered. Neuendorf (2017) notes "if there is periodicity in the frame or in the flow of occurrence of units that matches up with the skip interval, then the representativeness of the sample is threatened" (p. 86). However, the risk of periodicity in this sampling frame was considered low as the media archive lists its articles in accordance with publishing date and time, and not based on any other factors.

Table 3. Media content analysis: sample (new table)

	Total population	Sample	Between wave 1 and wave 2	Between wave 2 and 3
Traditional media outlets				
Dagens Nyheter	12296	142	77	65
Svenska Dagbladet	13972	159	75	84
Expressen	10823	122	53	69
Aftonbladet	18122	203	94	109
SVT News	4904	56	28	28
Total	60117	682	327	355
Alternative media outlet				
Right-wing alternative media	4695	167	75	92
Left-wing alternative media	1499	55	22	33
Total	6194	222	97	105
Traditional + alternative media	66311	904	424	480

The last step of the sampling procedure was to remove articles that did not fit the criteria of articles of interest. Articles removed were the following 1) foreign news 2) cultural news that was related to fictional crimes 3) videos without printed text 4) news about threats (which included words such as murder) 5) historical reportages 6) news in sports, travel, gardening sections if they did not concern violent crimes in Sweden 7) news that was not still available 8) news in which none of the search terms could be identified. If an article was removed the next article was chosen. See table in appendix 1 for details.

4.4.2 Coding scheme and procedure

Coding scheme

The coding scheme included six variables (see appendix 2 for detailed coding scheme). The first three items concerned formalities such as the ID number, date of publishing and which specific media outlet the article was published in. The second part of the coding scheme considered what type of violent crimes that appeared in the news article and each article could include up to 4 criminal activities. The remaining two variables in the coding scheme concerned the style and tone of the content. The first of these concerned the overall tone of the societal development in the news story, whether there was a predominantly positive, negative, balanced or neutral impression of the societal development. To illustrate what type of news stories that were coded as negative versus positive impressions, two examples follow:

Example of a negative impression of the societal development:

"Det eskalerande gängvåldet är ett av Sveriges allvarligaste problem just nu. Gängkriminaliteten har gripit tag om flera utsatta områden. Många unga människor dras in i kriminalitet och drogmissbruk. Den senaste tidens händelser visar att de kriminella gängen är beredda att ta till våldshandlingar av en art och frekvens som vi inte har sett i Sverige förut." [The escalating gang violence is one of the most serious issues in Sweden right now. The gang criminality has seized several vulnerable areas. Many young people are drawn into criminality and drug abuse. The recent events show that the criminal gangs are prepared to use violent acts of a sort and frequency that we have never witnessed in Sweden before] (Expressen, July 1, 2018)

Example of a positive impression of the societal development:

"Antalet skjutningar i Sverige har nära på halverats jämfört med fjolåret. Under årets första månader skedde 59 skjutningar i hela landet vilket kan jämföras med 100 under motsvarande period i fjol." [The number of shootings in Sweden has almost halved compared to last year. During the first months of the year, 59 shootings occurred throughout the country, which can be compared with 100 during the corresponding period last year] (Expressen, May 10, 2018)

The second of these concerned the wording in the article, whether it was predominantly alarmistic or predominantly neutral. To illustrate what type of news stories that were coded as using alarmistic wording, two examples follow:

Examples of alarmistic wording:

"Socialdemokraternas misslyckande i Malmö är totalt." [The Social Democrats' failure in Malmö is absolute] (Aftonbladet, June 26, 2018)

"Larmen om kriminalitet, bilbränder och dödsskjutningar duggar tätt. Tryggheten i de socialt utsatta områdena är mer hotad än någonsin". [The alarms of criminality, car fires and deadly shootings are coming thick and fast. The safety in the socially vulnerable areas is more threatened than ever]. (SVT News, January 9, 2019).

Coding procedure

The coding process followed Neuendorf's (2017) suggestions on code training and codebook revision. The codebook gives the coder instructions in the smallest detail and it was revised continuously throughout the code training period to ensure that the instructions were straightforward for all types of coding situations. Thereafter, a pilot coding was carried out where I coded the same units twice. This was done to make sure that the instructions were detailed enough to eliminate discrepancies and, in that way, be sure that the codebook was reliable and repeatable. The final coding was conducted in SPSS. See appendix 3 for the detailed codebook.

4.4.3 Measures

The content analysis aims to examine how media crime content differs in regard to style and tone between different media outlets as well as between the three waves. The measures can, thus, be divided into three categories: media measures, content measures and time measures.

Media measures

To make the results of the content analysis comparable with the findings from the panel survey, the same media measures were used with a few exceptions. Public service TV news was operationalised by using the data on online printed news from Swedish Television and tabloids were operationalised by combining the data from Expressen and Aftonbladet. Right-wing broadsheets were operationalised using the data from Svenska Dagbladet while left-wing broadsheets were operationalised using the data from Dagens Nyheter. Dagens Nyheter's stated position is independently liberal but since the issue of crime can be considered belonging to

the GAL-TAN scale, it can still be considered left-wing as liberal values are more towards the GAL end of the dimension. The measure on right-wing alternative media was operationalised by combining data from Fria Tider, Nyheter Idag and Samhällsnytt whereas left-wing alternative media was operationalised by combining data from ETC, Aktuellt Fokus and Dagens Arena. There was no measure on commercial TV news since TV4 do not provide a printed version of their news.

Content measures

Three main variables were of interest when comparing the media content, tone and style. The first concerned what types of criminal activities that each news media outlets focused particularly on, and this was operationalised by using the data that measured up to four different criminal activities per article. The second variable that was of interest concerned to what degree various news media outlets conveyed a positive, negative, balanced or neutral impression of the societal development when publishing articles on violent crimes. This was operationalised by using the data on the overall impression of the societal development in each crime news story. The third measure concerned to what degree different news media outlet used alarmistic words when writing news articles on violent crimes which was operationalised using the data which measured if alarmistic words were used in the news article.

Time measure

Time was operationalised by dividing the data into two groups based on their publishing date. The first group includes articles published between March 2018 and November 2018 (between wave 1 and wave 2) and the second group includes articles published between December 2018 and October 2019 (between wave 2 and wave 3).

4.4.5 Reliability and external validity

Reliability

In quantitative content analyses carried out manually, reliability can be translated into intercoder reliability. Intercoder reliability concerns the consistency of the coding and is measured by examining the "level of agreement among two or more coders" (Neuendorf, 2017, p. 19). To examine the intercoder reliability, an external individual was employed to code 56

randomly chosen articles. The simple agreement was then calculated in percent agreement (or "crude agreement") in which the following formula is used:

$$\frac{A \; (number \; of \; agreements)}{n \; (total \; number \; of \; cases)} = PAo \; (Proportion \; Agreements \; observed)$$

The reliability test resulted in rather high levels of intercoder reliability for the key variables. The measure on criminality types had a percent agreement of .94, the measure on societal development had a percent agreement of .93, and the measure on alarmistic wording had a percent agreement of .88. According to Mao (2017), a percent agreement higher than .9 is considered a high level of intercoder reliability whereas a percent agreement lower than .8 is not considered as a reliable measure. The measures used in this study can, thus, be considered reliable. See appendix 4 for details on the intercoder reliability test.

The objectivity in the measures is another way of examining the reliability in a quantitative content analysis. One can differentiate between manifest and latent content, where manifest content is self-evident and not interpretable whereas latent content is more ambiguous and "cannot be measured directly but can be represented or measured by one or more … indicators" (Hair, Black, Babin & Andersson, 2010, p.614). For manifest content, objectivity is easy to achieve whereas latent content can become an issue for the reliability if certain indicators cannot identify the measure. If a coding scheme includes latent content, there is a greater need for extensive coder training (Neuendorf, 2017). In the case of this study, the coding scheme did include latent measures (measures that concerned the style and tone), but since the codebook included several indicators, the measure becomes less latent. Additionally, extensive code training was carried out. Taken together, the reliability of the content analysis can be considered high.

External validity

External validity refers to whether the findings can be generalised to other contexts. This is also called generalisability and can be assessed by considering the representativeness of the sample (Neuendorf, 2017). I argue that the sample is representative for the full population of articles during the analysed time period since a non-probability sampling method was used as well as a rather large sample size. The results can, thus, be generalised for all articles published by these news media outlets during this period but it cannot be generalised beyond.

Neuendorf (2017) suggest that with a 95% level of confidence, the necessary sample size is 384 to get a sampling error of +/- 5 %. If the sample size increase to 1087, the sampling error decrease to +/- 3%. The sample size in this study is 904 which means that it is somewhere in between +/- 3 and 5 % in sampling error. In other words, we can be 95% confident that the findings from this content analysis can be generalised the full population, plus or minus 3 to 5 %.

4.5 Panel survey

This section will present the method of the panel survey in more detail by focusing on the material, models, measures, data analysis techniques, the goodness of fit as well as a discussion of the validity.

4.5.1 Material

To test the hypotheses, this study relies on a three-wave panel survey carried out in Sweden between 2018 and 2019. The panel survey was performed by the Laboratory of Opinion Research (LORE) on behalf of a research group at the University of Gothenburg. The panel survey focuses on the long-term cultivation of sociotropic beliefs. More specifically, it examines how people's selective exposure influence their anxiety, concern and perceptions about four different societal issues over time: antibiotic resistance, climate change, immigration and violent crimes. The panel survey was collected using a probability-based sampling procedure which means that the sample is not based on self-selected web survey participants. Instead, web survey participants were randomly recruited using both email and telephone. The pool of participants was stratified based on gender, age, education and political interest, and a sample of 3397 respondents was, thereafter, drawn (Shehata, Johansson, Johansson & Andersen, 2020). The questionnaires were sent out by email, and two reminders were sent for each wave (Martinsson, Andreasson & Markstedt, 2018; Martinsson, Andreasson, Lindgren, Johansson & Holgersson, 2019; Martinsson, Andreasson, Andersson & Carlsten Rosberg, 2019).

As illustrated in table 4, the first wave was collected between March and April 2018; the second wave was collected between December 2018 and January 2019; and the third wave was collected in October 2019. In wave 1, 2291 respondents participated (AAPOR RR5: 67%); in

wave 2, 1880 respondents participated (AAPOR RR5: 59%); and in wave 3, 1819 respondents participated (AAPOR RR5: 63%). In total, 1508 respondents participated in all three waves, which gives a total response rate of 44,4% (Martinsson et al., 2018; Martinsson et al., 2019; Martinsson et al., 2019).

Table 4. Panel survey: sample

	Wave 1	Wave 2	Wave 3
Time period	Between 2018-03-22 and 2018-04-16	Between 2018-12-10 and 2018-01-08	Between 2019-10-07 and 2019-10-28
Sample size	3,397	3,183	2,823
Number of respondents	2,291	1,880	1,819
AAPOR Participation rate (RR5)	67%	59%	63%

Source: LORE - The Cultivation Panel (Martinsson et al., 2018; Martinsson et al., 2019; Martinsson et al., 2019)

The advantages of using this data are many. First and foremost, the panel was created for the purpose to examine the type of relationships which the research questions are concerned about. Secondly, the panel survey was sent out to the same respondents and contained the same questions on all three measurements which makes it possible to analyse changes in media use and changes in crime perceptions over time. Thirdly, the data makes it possible to analyse current public opinion and media use trends as it was collected during the last two years of the 2010s. However, as with all data material that derives from surveys there are disadvantages. Relying on self-reported behaviour is always a risk: what persons think they do does not always correspond with their actual behaviour. Another disadvantage has to do with causality. Attitudes and media may be reinforced for other reasons than what the model predicts and when research is conducted without a laboratory setting, as in survey research, these cannot be controlled for.

4.5.2 Models

To test the hypotheses which examine the mutually reinforcing spiral between media use and perceptions of crimes, the following models were used (see figure 5, 6 and 7). The models are an adaption from Slater's (2007) original theoretical model on the RSM and they illustrate the need to estimate *reciprocal* focal relationships on *more than one dependent variable.* The models suggest that increased media use is positively related to being increasingly concerned about the crime development in Sweden over time. The models also suggest the reverse

relationship: being increasingly concerned about the Swedish crime development will, over time, increase people's media use.

Figure 5. Hypothesised reciprocal focal relationship between traditional media exposure and crime perceptions
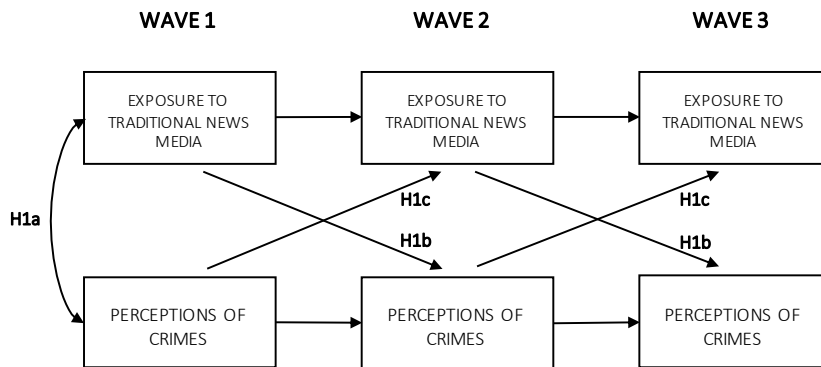
Figure 6. Hypothesised reciprocal focal relationship between outlet-specific media exposure and crime perceptions
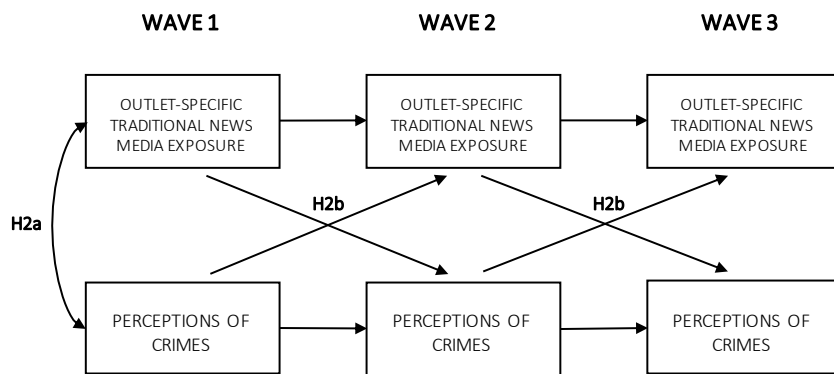
The lower part of the model in figure 7 is not a part of Slater's (2007) original theoretical model but has been added to integrate interpersonal discussions into the model. As mentioned previously, Slater (2007; 2015) do suggest that interpersonal communication activities are equally as important as mediated communication, but he does not suggest how this can be operationalised in research. Song and Boomgarden (2017) found that interpersonal communication moderates the relationship between selective exposure and attitudes, and I have therefore incorporated interpersonal communication as a moderating variable in the model. Model 7 suggests that the extent to which a reinforcing spiral between exposure to alternative news and crime trend perceptions occur will differ depending on how often an individual discusses crimes with friends and family. In other words, people who frequently discuss crimes with family and friends will be more likely to be increasingly concerned about the crime development in Sweden as well as be increasingly likely to seek out alternative news.

Figure 7. Hypothesised reciprocal focal relationship between alternative news exposure and crime perceptions
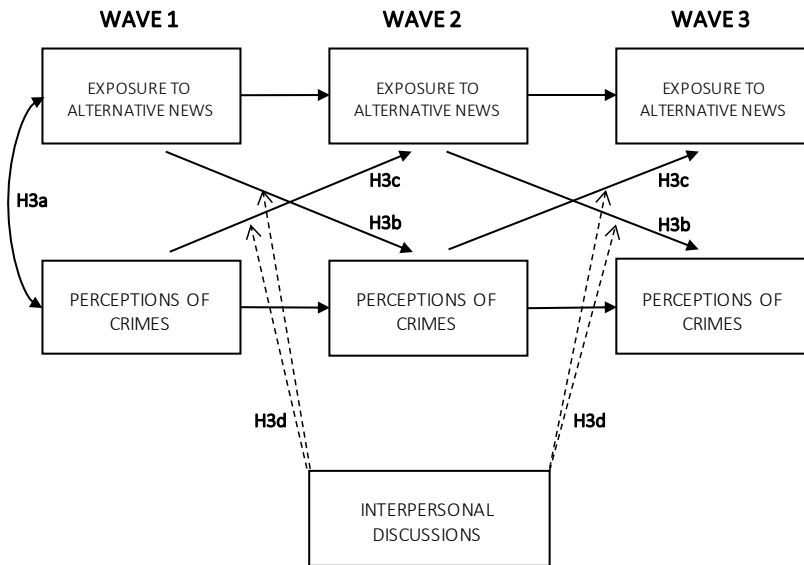
4.5.3 Measures

The key concepts - crime trend perceptions and various forms of media use - were operationalised by using survey items which reoccurred in the exact same way on all three waves.

4.5.3.1 Crime trend perceptions

Although most previous research on the cultivation theory is occupied with examining fear and anxiety of crime, this study will follow the example of the few cultivation studies which have measured people's crime trend perceptions (e.g. Jamieson & Romer, 2014; Shi et al., 2019; Davis & Dossetor, 2000; O'Connell & Whelan, 1996; Grabe & Drew, 2007; Pfeiffer, Windzio, & Kleimann, 2005). The reasons for measuring crime perceptions rather than fear of crime are two. First, crime trends perception is a more definite measure compared to fear of crime. The concepts of fear and anxiety are vague and by using crime trend perceptions the measure becomes more distinct. Secondly, when synthesising cultivation theory with the RSM, the polarisation effect becomes central. Crime trend perceptions are better suited to capture polarising effects since fear of crime might not necessarily be connected to polarisation.

The measures on perceptions about the Swedish crime development is based on four items which measure people's attitudes towards claims which all concern the Swedish crime development. The respondents were given 6 response alternatives where 1-5 ranged between

highly inaccurate (=1) and highly accurate (=5) and the sixth alternative was "no opinion" (=6). The items were the following: *Different claims are sometimes heard in the public discourse on crimes of violence and criminality. To what extent do the following claims correspond with your own understanding? 1). Violent crimes have increased in Sweden during the past year 2) Since the 1950s, violent crimes have decreased in Sweden. 3). More violent crimes are committed in Sweden than in our neighbouring countries. 4). Violent crimes is an issue that is often exaggerated in the societal debate.* Based on these items, an index was constructed. In order to make all items in line with each other when constructing the index, item 2 and 4 were reversed (5 becoming and 1 and vice versa) and the "no opinion" response alternative was transformed into a missing value. The index which originally ranged from 1 to 20 was rescaled to range from 1 to 6, where higher values indicate a more negative perception of the Swedish crime development.

A principal component analysis (PCA) was conducted to see whether this index could be justified by examining if there were one or more underlying factors that explain the correlation between items. The PCA showed that only one factor had an "eigenvalue" over 1 which, according to Kaiser's criterion, indicates that only one factor seems to explain most of the correlations between items (Kaiser, 1960). Thus, the items within this index correlate to the degree where there is reason to assume that they all measure the same underlying dimension - crime trend perceptions (Acock, 2013). Prior to using an index in an analysis, the reliability of the index should be examined as the final step. A frequently used test to assess the reliability of an index is called Cronbach's alpha. Cronbach's alpha ranges from 0 to 1 and coefficients <0.7 are considered acceptable (Mehmetoglu & Jakobsen, 2017). A Cronbach's alpha test was employed on the index from wave 1 which gave the coefficient .85 which means that 85% of the index is reliable and 15 % of the variance is because of error.

4.5.3.2 Media use

Since this study aims to determine if there is a mutually reinforcing effect between crime trend perceptions and various forms of news media exposure, measures for overall traditional media use, outlet-specific traditional media use as well as alternative media use must be considered.

Traditional media exposure

This study bases its overall traditional news media exposure measure on a set of items that measure the frequency of both online and offline use of a number of news media outlets. All items had 6 response alternatives ranging from daily (=6) to never (=1) and the items were the following: *"How often do you consume news from the following news media outlets (in traditional channels or via the Internet)?" 1) Swedish Radio 2) Swedish Television 3) TV4 4) Dagens Nyheter 5) Svenska Dagbladet 6) Expressen 7) Aftonbladet 8) Göteborgs-Posten 9) Other local morning paper.* An index was constructed based on these items, where a higher value indicates a higher frequency of traditional news media exposure.

Outlet-specific traditional media exposure

One of the most prominent developments within cultivation research is that focus has shifted from examining the effects of overall media consumption towards more genre-specific and outlet-specific effects. Indeed, research shows that different types of media use have various effects. Similarly, RSM studies which have examined different types of news media exposure have also found that only certain types of news media exposure have reciprocal effects. In this study, outlet-specific traditional news media use will be divided into five different categories: public service news, commercial TV news, tabloids, left-wing broadsheets and right-wing broadsheets. The rationale for this categorisation is that research shows that TV News (both public service and commercial), as well as tabloids, are more likely to focus on crime than broadsheets (Strömbäck, 2008). Broadsheet exposure was divided into right-wing and left-wing broadsheet exposure since the reliability score of such index showed a high variance due to error (Cronbach's alpha: .54) which means that a broadsheet index may not measure the same underlying concept.

The measures for outlet-specific traditional news media use are based on items that measure the frequency of both online and offline news use of specific media outlets. All items had 6 response alternatives ranging from daily (=6) to never (=1) and the items were the following: *"How often do you consume news from the following news media outlets (in traditional channels or via the Internet)?" 1) Swedish Television 2) TV4 3) Dagens Nyheter 4) Svenska Dagbladet 5) Expressen 6) Aftonbladet.* The items were divided into the following five categories: public service TV news (SVT), commercial TV news (TV4), tabloids (Expressen and Aftonbladet), left-wing broadsheets (DN) and right-wing broadsheet (SvD). The measure

that consisted of two items (tabloids) was transformed into an index which was rescaled to range from 6 to 1 (Cronbach's alpha: .71, M=2.79, SD=1.65).

Exposure to alternative news

One of the most important reasons as to why a synthesising of the cultivation theory and the RSM is needed is because the RSM makes the cultivation theory relevant in today's media landscape by theoretically allowing selective exposure to be part of the model. In the Swedish media system, distinct partisan news outlets which are common in the American broadcasting system are virtually non-existent (Skovsgaard, Shehata & Strömbäck, 2016) but there has been, as mentioned earlier, a surge in alternative media sources in recent years. This study will base its alternative news exposure measure on a set of items which covers people's general inclination to seek out news which provides an alternative perspective. All items had 6 response alternatives ranging from daily (=6) to never (=1) and the items were the following: *"How often do you use online news sites or social media to access…" 1) news about societal issues not reported by the traditional news media outlets? 2) news that provide an alternative viewpoint on societal issues than traditional news media outlets? 3) news that highlights societal issues in the way you see them? 4) news that highlights issues that concern you? 5) news that gives an alternative viewpoint than the traditional news media outlets on news that concern crimes and criminality?.* An index was constructed based on these items. The index which originally ranged from 1 to 30 was rescaled to range from 6 to 1, where higher values indicate a higher frequency of seeking out alternative news. A PCA was conducted on the index which showed that only one factor had an "eigenvalue" over 1 which, according to Kaiser's criterion, indicates that only one factor seems to explain most of the correlations between items (Kaiser, 1960). This means that the items within the alternative media index correlate to the degree where there is reason to assume that they all measure the same underlying dimension - alternative media use (Acock, 2013). Additionally, a Cronbach's alpha test was employed to examine the reliability of the index and it gave the coefficient .89 which implies that 89% of the index is reliable and 11 % of the variance is because of error (Mehmetoglu & Jakobsen, 2017)

Although one could argue that the results might become skewed when letting the respondents subjectively decide which news media outlets that are traditional and which are alternative, there are good reasons for it. The alternative would be to list all alternative news sources and let the respondents select all those that they use. That sort of list would have been too extensive

for the survey format and it would likely still have missed several relevant sites. Instead, this type of measures will capture the broader inclination of seeking out alternative news. In addition to that, one can correlate alternative media use with traditional media trust to get an estimate of how well the measure capture alternative media use. An index measuring people's trust in traditional media was correlated with the index measuring alternative news media use and these were negatively correlated (r=-.385, p<.001). If one assumes that alternative media consumption is driven by mistrust in traditional media outlets, this negative correlation between media trust and alternative media use can be regarded as an indication that the measure is actually capturing alternative media use.

Interpersonal communication with friends and family

The measure on interpersonal communication is based on an item which measures individuals' frequency of discussing crimes and criminality with friends and family. The response alternatives ranged from never (=1) to daily (=6) and when constructing the variable, all three measures (wave 1-3) on the item were included in order to capture individuals' overall likelihood to discuss crimes with friends and family. After having merged all three measures on the item (now ranging from 1 to 18), it was divided into three categories: 1) Frequently discuss crimes with friends and family (include values 14 to 18), 2) Sometimes discuss crimes with friends and family (include values 8 to 13), 3) Never or seldom discuss crimes with friends and family (include values 1 to 7).

Previous research suggests that the composition of people's discussion networks plays a significant role in determining to what extent interpersonal discussions moderate the impact of mass media messages. In homogenous discussion networks, messages that are aligned with people's political predisposition are more likely to have an impact whereas messages which are not aligned with people's political predisposition are more likely to be ignored. Although this study's measure on interpersonal communication does not account for network homogeneity per se, it is reasonable to assume that the measure will still capture homogenous discussions about crime. The Columbia studies found that most people's social environment was homogenous, and heterogenous discussion networks were rare (Schmitt-Beck, 2003). Mutz and Martin (2001) suggest that people's discussion networks are formed based on two factors: "the availability of discussion partners in one's immediate environment and the amount of selectivity exercised in the choice of partners" (Mutz & Martin, 2001, p. 98) and that both of these factors "now operate primarily to produce greater homogeneity in interpersonal

interactions" (Mutz & Martin, 2001, p. 98). The reason for the first factor to move towards homogeneity is because people's lifestyle choices often correspond with political positions. In other words, people might choose to live in a particular neighbourhood because they want their children to attend a school there or because they want to live close to a particular park. Although the initial aim might not have been to live in an area with politically like-minded people, this is often the outcome since politically like-minded often share lifestyle choices. The second factor moves towards homogeneity since people tend to select politically like-minded people to discuss with (Mutz & Martin, 2001).

Taken together, this provides an argument for assuming opinion homogeneity among people's friends and family. Although this cannot be taken for granted, many arguments speak in favour of this operationalisation actually capturing homogenous discussions about violent crimes.

4.5.3.4 Control variables

In addition to the key variables, several control variables were used in the model's first wave. Gender, age and education are all factors that have an impact in predicting crime perceptions as well as media use (Callanan, 2012; Bondad-Brown, Rice & Pearce, 2012; Eveland & Scheufele, 2000), and these factors were, thus, controlled for.

One of the great advantages of using a cross-lagged model with lagged dependent variables (see 4.5.4.2) is that a strong set of controls is achieved. The lagged dependent variables function as proxy controls for unmeasured omitted variables at each panel wave by taking the prior value of the dependent variable into account. In other words, the lagged dependent variables "automatically control" for variables that are not included in the model since the prior value on the same variable is considered (Finkel, 1995; Dahlgren et al., 2019). However, although this is a great advantage compared to cross-sectional designs, it does not eliminate the problem of causal inferences. The lagged dependent variables only function as a proxy control for omitted variables up until the previous panel wave which might be problematic when the lags are relatively long (Dahlgren et al., 2019). However, age, education and gender are factors that are not likely to change much between the lags and these will, thus, only be controlled for in the first wave.

Another argument to not control for more factors is a theoretical one. Slater (2015) argues that "traditional media effects analyses, by trying to control for variables that are part of the causal process and are not really third variables providing competing causal explanations, in fact are likely to reduce the actual effects that should be attributed to the role of media use" (p. 376). Thus, instead of controlling for variables, one should consider "the total effect of media use as summed across all the direct and indirect effects" (Slater, 2015, p. 376). In that way, further insight can be achieved.

4.5.4 Data analysis

The statistical analysis of the data was performed with STATA version 16.0, and this section will describe the statistical techniques used to analyse the descriptive data as well as for the hypotheses testing.

4.5.4.1 Descriptive statistics

The descriptive overview of the data focuses on describing the main variables in the model. The differences over time are described using frequencies as well as means. The differences in perceptions and behaviour dependent on sociodemographic groups were described by comparing the means and standard deviation between different groups within each sociodemographic fact. A skewness and a kurtosis test were employed to see whether the three main variables were normally distributed or not. The tests found that crime perceptions, as well as alternative media use, were not normally distributed while interpersonal discussion was normally distributed. This means that different analytical strategies had to be employed on the different variables. For interpersonal communication, a t-test was employed to compare the difference in means between different genders while one-way ANOVA was employed on the other sociodemographic variables (since they include more than 2 groups). For crime trend perceptions and alternative media use, the non-parametric equivalents of t-test and one-way ANOVA had to be used. In the case of t-test, which in this case was used to compare differences between males and females, the non-parametric equivalent that was employed was Mann Whitney U test. To see whether there was a significant difference between the other sociodemographic groups, the Kruskal-Wallis test (a non-parametric alternative for one-way ANOVA) was employed.

4.5.4.2 Structural equation modelling

To test the hypotheses, bivariate correlation analysis, as well as a series of cross-lagged models using structural equation modelling (SEM), was employed. The advantage of structural equation modelling is that "it allows one to estimate the relationship between a number of independent and more than one dependent variable at the same time" as well as allowing the inclusion of "latent independent and dependent variables" (Mehmetoglu & Jakobsen, 2017, p. 294). In a structural equation model, interrelationships across the waves between the exogenous variables (those that have a given value outside of the model) and the endogenous variables (those that have their values determined by the exogenous and other endogenous variables in the model) are estimated. SEM also calculates each endogenous variable's error variance term (Finkel, 2008).

Cross-lagged panel model is an analytical strategy developed to analyse reciprocal relationships on panel data where a person is observed at multiple points in time. The model is "crossed" because they "estimate relationships from one variable to another and vice verse" (Allen, 2017, p. 312) and "lagged" because they "estimate relationships between variables across different time points" (Allen, 2017, p. 312). In sum, the cross-lagged panel model estimates variables' directional, over time, influence on each other. To illustrate (see figure 8), the relationship between variable Y_1 and variable Z_2 is compared with the relationship between variable Z_1 and Y_2 (Allen, 2017).

Figure 8. The cross-lagged panel model
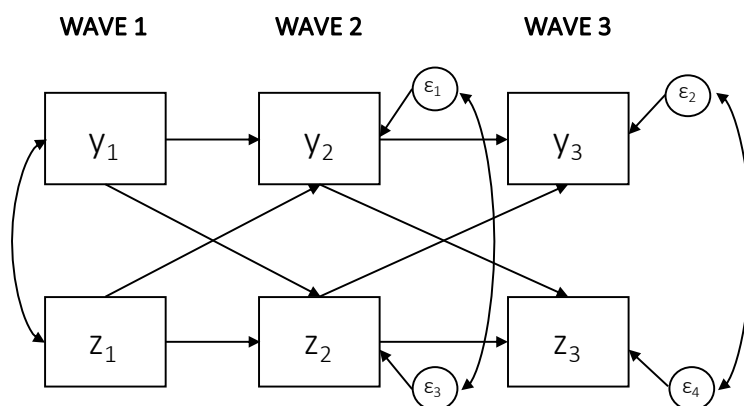
By employing cross-lagged panel models, the reciprocal relationship between media use and crime perceptions as well as the relative strength of such effects can be explored. Since this type of modelling control for lagged values of each variable, it enables analyses of how each

predictor is related to overtime changes is the outcome variables (Dahlgren et al., 2019; Strömbäck & Shehata, 2019).

To include interpersonal communication a moderating variable in the model, multiple group comparisons were used. Multiple group comparison is a sophisticated statistical test in Stata which enables one to fit the same model for different groups. This makes it possible to determine whether interpersonal communication moderates the reciprocal relationship between media use and crime perceptions.

4.5.5 Model fit

When using a SEM analysis, it is important to assess the overall "fit" of the model. Model fit is the degree "to which the model predicts the sample variance-covariance matrix" (Mehmetoglu & Jakobsen, 2017, p. 305). The smaller the difference between the model-predicted variance-covariance matrix and the sample variance-covariance matrix, the better fit (Mehmetoglu & Jakobsen, 2017). There are many different ways of measuring the differences between the two matrices mentioned above but the three most common methods mentioned by both Mehmetoglu & Jakobsen (2017) and Acock (2013) was applied: chi-squared (X^2) test, root means squared error of approximation (RMSEA) and comparative fit index (CFI). In Stata, these tests are run by using the command "estat gof, stats(all)". The first test, X^2 test, measures the differences between the loglikelihood of the saturated model (i.e. fitting the data perfectly) and the loglikelihood of the hypothesised model as well as gives the probability of falsely rejecting the null hypothesis. For this test to show a good fit, the p-value should be above 0.05. However, there is a wide agreement among scholars that the X^2 test is very sensitive towards large sample sizes which makes other tests more appropriate. The second test, RMSEA, considers sample size and model complexity when assessing the fit as it favours simple models with few parameters to estimate. The standard criterium for this test is that values below .05 are considered a good fit and values below .08 are considered a reasonably good fit. The third test, CFI, does in contrast of the X^2 test compare the hypothesised model with the baseline fit that assumes there are no relationships among the variables (i.e. the poorest fit instead of a perfect fit). CFI values >.90 are considered as acceptable although CFI values >.95 are increasingly being demanded (Mehmetoglu & Jakobsen, 2017; Acock, 2013).

Running the tests resulted in the following values for the different models (see table 5). The X^2 test is highly significant in all models which is not ideal. However, this test is as mentioned above very sensitive to large sample sizes which means that the other tests might be more relevant. All the RMSEA tests (except for tabloids) give values above .08 which is also not ideal. The CFI tests, on the other hand, give the values above .90 which is considered acceptable. Taken together, the models were not a good fit and needed to be improved.

Table 5. Goodness of fit before adjusting the model (incl. controls)

	Overall media consumption	Alternative media	PS TV News	Commercial TV News	Tabloids	Left-wing broadsheet	Right-wing broadsheet
X^2 (df)	377.4	513.3	374.5	461.1	269.5	365.9	317.5
P-value	.000	.000	.000	.000	.000	.000	.000
RMSEA	.092	.108	.092	.102	.077	.091	.084
CFI	.944	.910	.956	.944	.964	.951	.950

To improve the model fit, the "estat mindices" command in Stata was run. This provides an overview of which paths the software recommend adding to improve the fit, so-called modification indices. These modification indices estimate the predicted decrease in "model X^2 if a fixed or constrained parameter is freely estimated" (Mehmetoglu & Jakobsen, 2017, p. 309). It is therefore suggested that one should look for high numbers and those that are theoretically justifiable. When assessing the modification indices, two reasonable path additions were identified in all models: a path between media exposure in wave 1 to media exposure in wave 3 as well as a path between crime perceptions in wave 1 to crime perceptions in wave 3. By adding these paths, the model fit is substantially improved in all models (see table 6). All models now fit well by all standard criteria except for the X^2 test.

Table 6. Goodness of fit after adjusting the model (incl. controls)

	Overall media consumption	Alternative media	PS TV News	Commercial TV News	Tabloids	Left-wing Broadsheet	Right-wing broadsheet
X^2 (df)	124.3	203.2	185.5	214.0	79.8	106.3	69.3
P-value	.000	.000	.000	.000	.000	.000	.000
RMSEA	.054	.071	.068	.073	.042	.049	.038
CFI	.983	.966	.979	.975	.991	.987	.991

4.5.6 Validity

External validity refers to the extent to which the findings of a study can be generalised beyond the specific research context to other people, situations and times (Bryman, 2016). This study was based on a probability sample and the web survey participants were thereby not self-recruited which is the case in many other surveys. Furthermore, the sample size was rather large (1508) and the full response rate was relatively high (44,4%). Therefore, I argue that the findings of this study can be generalised to the total population of Swedes. However, since both Sweden's media system and societal debate about crime differ from many other countries, it is not certain that the findings can be generalised beyond the context of Sweden.

Internal validity refers to the extent to which the chosen method measures what it was supposed to measure (Bryman, 2016). In the case of this study, this is largely determined by the operationalisation and how well the measures capture the conceptual definitions. In general, the concepts are operationalised in a satisfactory way which means that the study has high internal validity. There are, however, some weaknesses that should be noted. First, since the index that is supposed to measure exposure to alternative news only captures people's proneness to seek out alternative news, it does not give information about what type of alternative media that is consumed. It is possible that people who seek out left-wing alternative news will be reinforced in beliefs about an increasingly safe society where crime rates are going down. In that case, the potential reinforcement effect between right-wing alternative media and increasing concern for the crime development could be cancelled out. In other words, since the model assumes reinforcement effects between seeking out alternative news and increased concern for the crime development it also assumes that the alternative media sites give their visitors a negative view of the crime development. However, the results from the content analysis conducted in this study suggest that both left-wing and right-wing alternative media convey a negative impression of the societal crime development (see section 5.1.2) which means that the risk of effects cancelling each other out becomes less apparent.

Another reflection with regards to the internal validity has to do with the number of waves. To fully capture reinforcement effects over time, more waves should be added to better operationalise the time construct. A greater time span may be needed to fully understand the relationships. However, most studies that have tested the RSM have only included three waves which suggest that three waves could be considered enough to capture the concept of time.

5. Results

5.1 Content analysis

The content analysis aims to examine whether different types of media outlets differ in their reporting of violent crimes in terms of content, tone and style. It also aims to examine whether the reporting on violent crimes differ between the waves. To analyse this, frequency tables were used.

5.1.1 The number of articles over time

To begin with, the number of articles about violent crimes in both traditional media and alternative media were relatively stable throughout the period. The number peaked in some months, but it does not seem like there has been a noteworthy upward trend.

Figure 9. Number of articles about violent crimes in traditional media
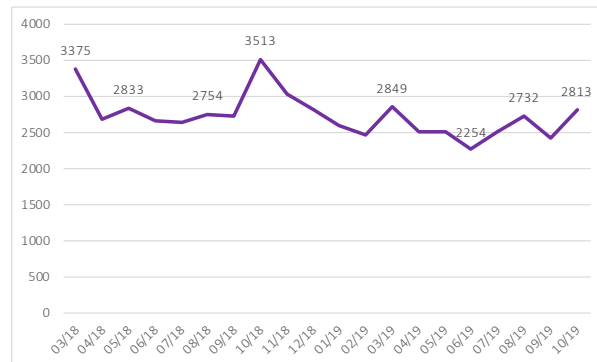
Figure 10. Number of articles about violent crimes in alternative media
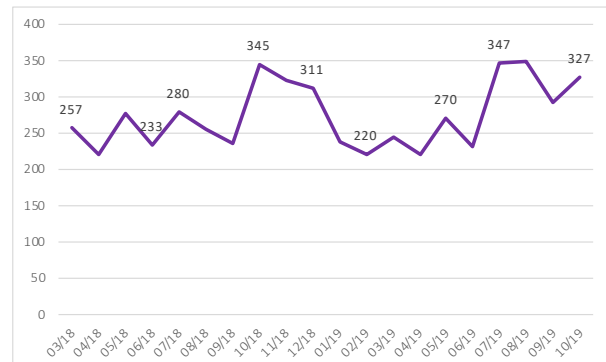
Comment: Traditional media includes public service news, Expressen, Aftonbladet, Dagens Nyheter and Svenska Dagbladet. Alternative media includes Fria Tider, Nyheter Idag, Samhällsnytt, ETC, Dagens Arena and Aktuellt Fokus. Source: Retriever Media Archive.

When comparing the means of published articles in between the waves, there were more articles about violent crimes published per month in traditional media between wave 1 and wave 2 (M=2910) compared to between wave 2 and 3 (M=2587). For alternative media, the trend was opposite; there were more articles about violent crimes published per month between wave 2 and 3 (M=277) compared with between wave 1 and 2 (M=259).

5.1.2 Overall patterns of content, style and tone

The overall pattern is that Swedish media conveys a relatively neutral tone of the societal development (73.1%) with some elements of a negative tone (22.1%). Although one could argue that the subject by itself has an inherent negativity which makes a positive tone hard to achieve, articles pointing towards a positive societal development were virtually non-existent (1.1%). There were, however, differences between different types of media. Public service, as well as alternative media, conveyed a much more negative tone of the societal development (PS: 30.4%, AM: 43.7%) compared with the other media sources (13.7%). Left-wing alternative media published few articles with a neutral tone (16.4%), and although the negative tone was the most common, this media type had a higher frequency of balanced (12.7%) and positive (5.5%) articles too. Alarmistic wording was also relatively rare (12.1%), but there were considerable differences between the different types of media. Right-wing alternative media, as well as left-wing alternative media, had a much higher frequency of alarmistic wording (32.4%) when compared to the traditional news media outlets (5.4%). See tables in appendix 5 and 6.

Figure 11. Alarmistic style in traditional media vs alternative media (%)
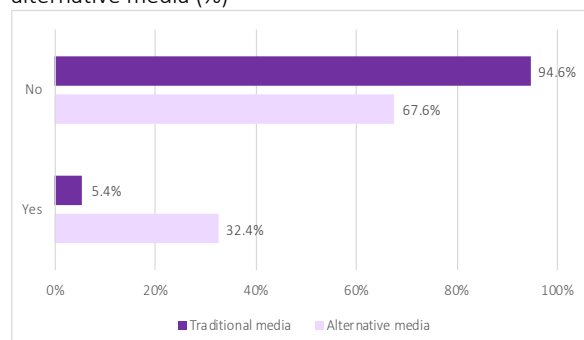
Figure 12. Tone of societal development in traditional media vs alternative media (%)
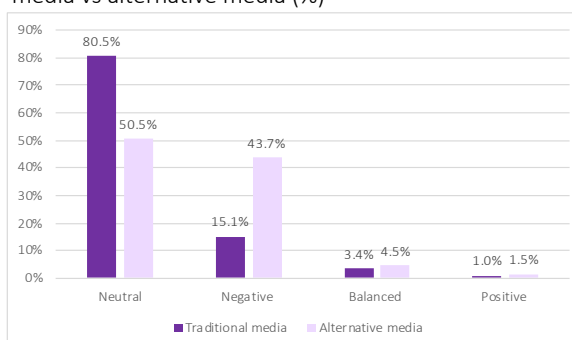
Comment: Traditional media includes public service news, Expressen, Aftonbladet, Dagens Nyheter and Svenska Dagbladet. Alternative media includes Fria Tider, Nyheter Idag, Samhällsnytt, ETC, Dagens Arena and Aktuellt Fokus. Alarmistic style measures if alarmistic words were apparent in the article. Tone of societal development measures if the article conveys a predominantly positive, negative, balanced or neutral impression of the societal development

The four most common types of violent crimes that appeared in the articles were murder (29.6%), sexual offences (16.5%), assault (16.0%) and shootings (10.7%). Various types of traditional media had a relatively uniform focus whereas there were some differences between traditional media and alternative media. Alternative media focused less on murder (16.5%) than traditional media (34.0%) while articles related to gang violence (AM: 6.3%, TM: 3.2%), sexual offences (AM: 25.1%, TM: 13.5%) and extremism/ terrorism (AM: 7.1%, TM: 2.8%) were more common in alternative media compared to traditional media. See tables in appendix 7 and 8.

Both the tone and style of the articles differed depending on criminality type. The most negative tone of the societal development was conveyed in articles about gang violence (76.4%), explosions (56.8%), honour violence (50%), extremism/ terrorism (46.3%) and shootings (41.9%) while the most neutral impression of the societal development was conveyed in articles about abductions (95%), murders (82.2%) and fire-related offences (78.7%). Alarmistic wording was most common in articles about gang violence (45.5%), explosions (32.4%) and honour violence (31.8%). See table in appendix 9.

5.1.3 Differences between the different time periods

Comparing the style and tone of the articles between the two time periods, there were rather large differences. For traditional media, articles having an alarmistic style increased between the two waves (3.7% → 5.4%) whereas the development was the opposite for alternative media (40.2% → 32.4%). See table 7.

Table 7. Alarmistic style over time

	Between wave 1 and 2		Between wave 2 and 3	
	Yes	No	Yes	No
Public service	0.0	100.0	3.6	96.4
Tabloids	6.8	93.2	9.0	91.0
Right-wing broadsheet	1.3	98.7	6.0	94.1
Left-wing broadsheet	1.3	98.7	4.6	95.4
Right-wing alternative media	37.3	62.7	22.8	77.2
Left-wing alternative media	50.0	50.0	36.4	63.6
Total	12.0	88.0	12.1	87.9

Comment: The results are shown in percentage of the total sample for each news media. Alarmistic style measures if alarmistic words were apparent in the article. Between wave 1 and 2: Mar '18 - Nov '18. Between wave 2 and 3: Dec '18 - Oct '19. Public service includes SVT news. Tabloids include Expressen and Aftonbladet. Right-wing broadsheet includes Svenska Dagbladet. Left-wing broadsheet includes Dagens Nyheter. Right-wing alternative media include Fria Tider, Samhällsnytt and Nyheter Idag. Left-wing alternative media include ETC, Aktuellt Fokus and Dagens Arena.

When it comes to the tone of the societal development between the two time periods, the patterns are similar. For traditional media, the share of articles with a negative impression increased (10.7% → 15.1%) whereas the share of articles with a neutral impression decreased (85% →80.5%). For alternative media, the trend is the opposite. The share of articles with a negative impression decreased (49.5% → 43.7%) while the share of articles with a neutral impression increased (42.3% → 50.5%). See table 8.

Table 8. Tone of societal development over time

	Between wave 1 and 2				Between wave 2 and 3			
	Neutral	Negative	Balanced	Positive	Neutral	Negative	Balanced	Positive
SVT	78.6	21.4	0.0	0.0	60.7	39.3	0.0	0.0
Tabloids	84.4	12.2	2.7	0.7	78.7	18.5	2.3	0.6
Right-wing broadsheet	89.3	5.3	4.0	1.3	78.6	15.5	3.6	2.4
Left-wing broadsheet	84.4	9.1	5.2	1.3	73.9	16.9	7.7	1.5
Right-wing alternative media	53.3	44.0	2.7	0.0	68.5	30.4	1.1	0.0
Left-wing alternative media	4.6	68.2	13.6	13.6	24.2	63.6	12.1	0.0
Total	75.2	19.6	3.8	1.4	71.3	24.4	3.5	0.8

Comment: The results are shown in percentage of the total sample for each news media. Tone of societal development measures if the article conveys a predominantly positive, negative, balanced or neutral impression of the societal development. Between wave 1 and 2: Mar '18 - Nov '18. Between wave 2 and 3: Dec '18 - Oct '19. Public service includes SVT news. Tabloids include Expressen and Aftonbladet. Right-wing broadsheets includes Svenska Dagbladet. Left-wing broadsheet include Dagens Nyheter. Right-wing alternative media include Fria Tider, Samhällsnytt and Nyheter Idag. Left-wing alternative media include ETC, Aktuellt Fokus and Dagens Arena.

5.1.4 Summary of the findings

To sum up and answer research question 4: *Is violent crimes reporting in Swedish media outlet-specific in terms of content, style and tone?*. The findings indicate that there are outlet-specific differences, most notably between alternative media and traditional media. Alternative media differ in their reporting on violent crimes compared to traditional media in a number of ways. First, while traditional media published fewer articles about violent crimes between wave 2 and 3, alternative media increased their reporting on violent crimes. Second, alternative media conveyed a much more negative impression of the societal development compared to traditional media. Alarmistic wording was also used more frequently in alternative media compared to traditional media. Third, criminality types that appeared more often in alternative media compared to traditional media were gang violence, sexual offences and extremism/ terrorism while alternative media focused less on murders. Finally, there were opposite trends between the two time periods for alternative media and traditional media. While traditional media became more alarmistic in their wording and had a more negative impression of the societal development between wave 2 and 3 compared to between wave 1 and 2, alternative media decreased their share of alarmistic wording and negative impression of societal development between wave 2 and 3 compared to between wave 1 and 2 (although it was still rather high). This implies that the style and tone of articles about violent crimes became more similar across alternative media and traditional media between wave 2 and 3 compared to the time period before.

5.2 Panel survey

5.2.1 Descriptive overview of data

Before presenting and analysing the findings of the cross-lagged models, it is important to have an understanding of the main variables in the model. This section will, therefore, focus on describing the differences between waves as well as on how perceptions and behaviour differ between different sociodemographic groups.

5.2.1.1 Crime trend perceptions

Generally, Swedes seem to have a negative perception of the Swedish crime development. In wave 1, 24,1 % of the respondents had a very negative view of the Swedish crime development while only 7,2 % had a very positive view. The mean was, in wave 1, 4.04 (SD= 1.59) on the scale 1 to 6. Over time (wave 1 to 3), Swede's perception of the Swedish crime development has become more negative. The mean was, in wave 2, 4.09 (SD= 1.57) and in wave 3, 4.20 (SD=1.54). The share of respondents with a very negative view of the development increased to 25.6% while the share of respondents with a very positive view of the Swedish crime development decreased to 5,3% (see figure 13).

Figure 13. Crime trend perceptions over time (%)
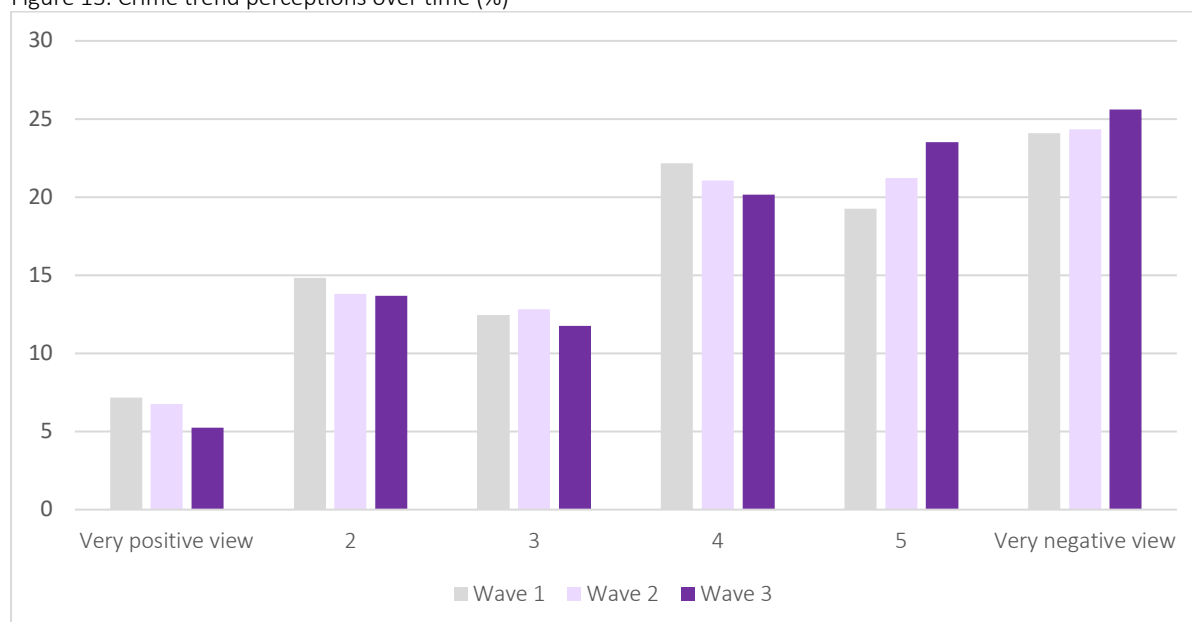
Comment: Bars represents the share (%) of respondents on their crime trend perceptions (scale 1-6). Wave 1, N:1407, Wave 2, N:1216, Wave 3, N:1046. Source: LORE – Cultivation Panel

Turning to how perceptions of the crime development differ between different sociodemographic groups, we can see that factors such as being male, having a low level of education, being old, being ideologically right-wing, being uninterested in politics and having low trust in politicians increase the likelihood of having a negative perception of the Swedish crime development. The differences between these groups are all statistically significant. See table 9.

Table 9. Sociodemographic factors within crime trend perceptions (wave 1)

	N	Mean	SD	Mann-Whitney U/ Kruskal Wallis P-value
Gender				.0024
Female	657	3.91	1.56	
Male	750	4.15	1.60	
Education				.0001
Elementary school or less	69	4.68	1.49	
Secondary education	502	4.39	1.48	
Post-secondary education, not university	229	4.33	1.60	
University, less than 3 years	246	3.88	1.63	
University, more than 3 years	361	3.42	1.52	
Age				.0001
Below 30	197	3.65	1.50	
30-39	207	3.50	1.67	
40-49	148	4.19	1.55	
50-59	256	4.12	1.58	
60-69	342	4.23	1.58	
Over 70	257	4.29	1.46	
Work situation				.0001
Full-time	669	4.06	1.58	
Part-time	72	3.97	1.59	
Self-employed	86	4.21	1.59	
Unemployed	19	3.95	1.54	
Retired	368	4.26	1.49	
Sick pay	26	3.5	1.90	
Student	109	3.27	1.51	
Other	41	3.71	1.72	
Political ideology				.0001
Left-wing	373	2.90	1.47	
Middle	604	4.13	1.44	
Right-wing	420	4.93	1.21	
Political interest				.0097
Very interested	287	3.78	1.82	
Somewhat interested	852	4.05	1.56	
Not very interested	248	4.24	1.36	
Not interested at all	20	4.85	0.93	
Political trust				.0001
Very high trust	19	3.05	1.58	
Relatively high trust	572	3.35	1.49	
Relatively low trust	612	4.34	1.52	
Very low trust	196	5.194	1.13	

***p<0.001. **p<0.01. *p<0.05. Comment: The table presents the observed number, mean and standard deviation of the index measuring crime trend perceptions for all groups within each sociodemographic factor. Mann Whitney U test was performed for gender while Kruskal Wallis was used on the other factors. Source: LORE – Cultivation Panel

5.2.1.2 Alternative media use

Alternative media use seems to be rather common in Sweden, given that it is a relatively new phenomenon. In wave 1, 21 % of the respondents used alternative media often or very often, although there is a large proportion of the people who are not using alternative media at all or at least very seldom. Over time (wave 1 to 3), there was a small decrease in alternative media use. The mean in, wave 1, was 3.13 (SD=1.54), while it in wave 2 was 3.07 (SD=1.55), and in wave 3 was 3.08 (SD=1.53) (see figure 14). This does not, however, mean that there is no reason to believe that there are reinforcing spirals between alternative media use and crime perceptions taking place. Instead, these reinforcing spirals might occur on smaller groups of people which cannot be seen with this type of measure.

Figure 14. Alternative media use over time (%)
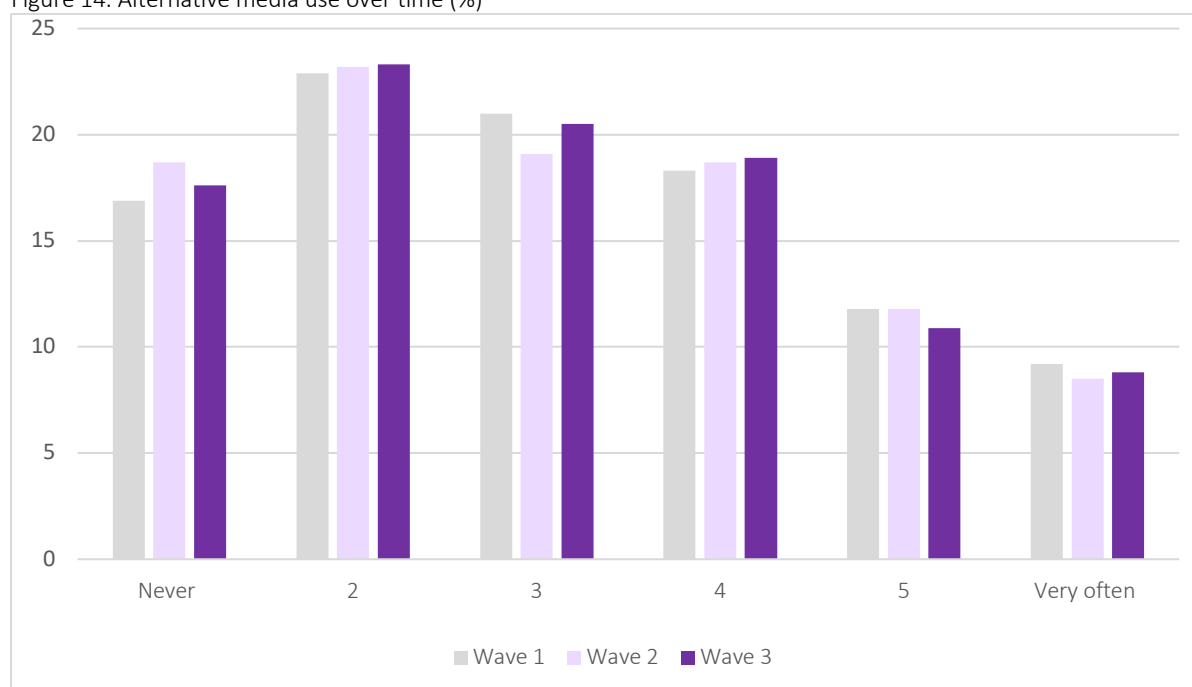
Comment: Bars represents the share (%) of respondents on alternative media use (scale 1-6). Wave 1, N:2188, Wave 2, N:1783, Wave 3, N:1724. Source: LORE – Cultivation Panel

When it comes to how the behaviour to seek out alternative news differ between different sociodemographic groups, we can see similar patterns as for crime perceptions. Being male, having a low level of education, being right-wing and having low trust in politicians are all factors that, just like for crime perceptions, increase the likelihood of seeking out alternative news. However, two factors differ: being young as opposed to old and being interested in politics as opposed to uninterested increase the likelihood of seeking out alternative news. The differences between these groups are all statistically significant. See table 10. For descriptive statistics of the moderating variable – interpersonal communication – see appendix 10 and 11.

Table 10. Sociodemographic factors within alternative media use (wave 1)

	N	Mean	SD	Mann-Whitney U/ Kruskal Wallis P-value
Gender				.0000
Female	1117	2.88	1.430	
Male	1071	3.39	1.605	
Education				.0149
Elementary school or less	118	3.25	1.61	
Secondary education	778	3.20	1.58	
Post-secondary education, not university	362	3.23	1.55	
University, less than 3 years	390	3.13	1.48	
University, more than 3 years	540	2.93	1.50	
Age				.0002
Below 30	352	3.44	1.49	
30-39	311	3.13	1.47	
40-49	226	3.22	1.54	
50-59	389	3.06	1.48	
60-69	512	3.06	1.61	
Over 70	398	2.95	1.60	
Work situation				.0090
Full-time	991	3.10	1.49	
Part-time	119	3.03	1.54	
Self-employed	120	3.32	1.62	
Unemployed	32	3.75	1.59	
Retired	593	3.01	1.60	
Sick pay	36	3.42	1.61	
Student	205	3.39	1.50	
Other	24	3.25	1.36	
Political ideology				.0001
Left-wing	587	2.95	1.44	
Middle	975	3.02	1.54	
Right-wing	611	3.50	1.58	
Political interest				.0001
Very interested	369	3.76	1.65	
Somewhat interested	1299	3.11	1.53	
Not very interested	473	2.73	1.33	
Not interested at all	47	2.70	1.44	
Political trust				.0001
Very high trust	29	2.52	1.55	
Relatively high trust	932	2.79	1.38	
Relatively low trust	948	3.24	1.53	
Very low trust	269	4.00	1.70	

***p<0.001. **p<0.01. *p<0.05. Comment: The table presents the observed number, mean and standard deviation of the index measuring alternative media use for all groups within each sociodemographic factor. Mann Whitney U test was performed for gender while Kruskal Wallis was used on the other factors. Source: LORE – Cultivation Panel

5.2.2 Results & hypotheses testing

This section will present the findings from the bivariate correlation analysis as well as the cross-lagged models analysing the reciprocal relationship between various types of media exposure and crime trend perceptions over time. Throughout this section, the 9 hypotheses will be tested.

5.2.2.1 Testing hypothesis 1a-1c

The original cultivation hypothesis proposes that it is people's overall media consumption that cultivates people's perception of crime. Hypotheses 1a-1c test whether this holds true in the new media landscape. When examining the relationship using bivariate correlation analysis, the findings suggest that frequent overall media consumption correlates positively with having a negative view of the Swedish crime development (r=.121, p<.001) which supports hypothesis H1a.

Hypothesis 1b and 1c test whether there is a mutually reinforcing relationship between overall media consumption and crime trend perceptions. The results are shown in figure 15 and table 11. The findings from the cross-lagged panel analysis show that there are no statistically significant cultivation effects between overall news media exposure and crime trend perceptions, and that there are no statistically significant selection effects between news media exposure and crime trend perceptions. This suggests that 1) frequent exposure to news media do not reinforce a negative perception of the Swedish crime development and 2) a negative perception of the Swedish crime development do not reinforce news media exposure. This means that the findings cannot lend support for a mutually reinforcing relationship between news media exposure and crime trend perceptions and hypothesis 1b and 1c can, thus, be rejected.

Figure 15. Cross-lagged effects between crime trend perceptions and traditional news media exposure
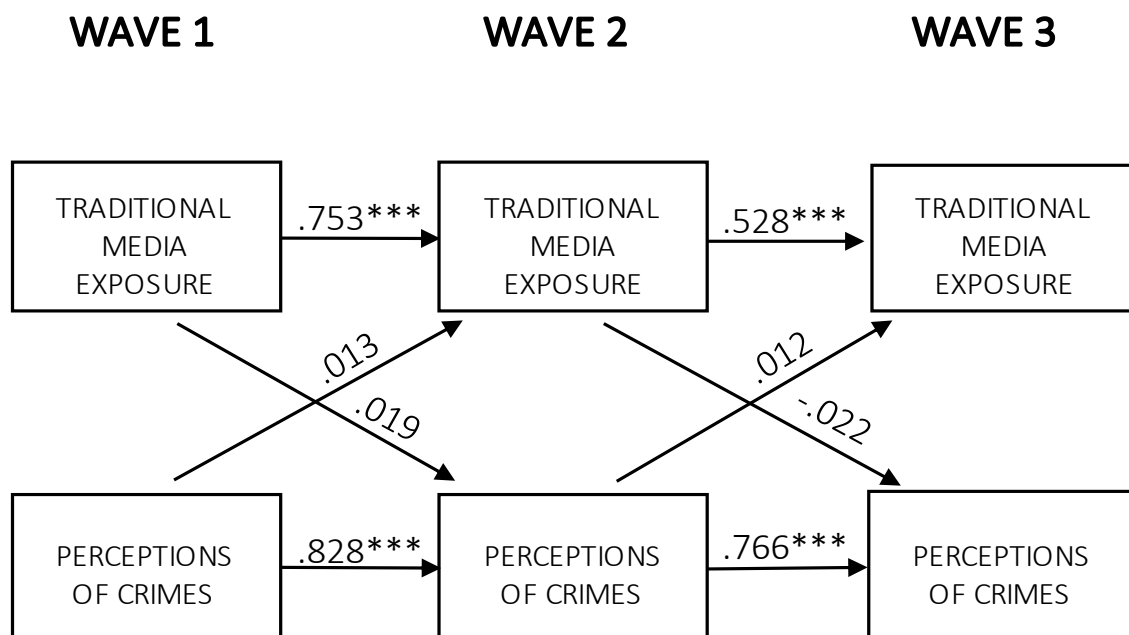
***p<0.001. **p<0.01. *p<0.05. Comment: Estimates are standardized path coefficients. Correlations between all exogenous variables and residuals were allowed at each panel wave (not shown in the figure, see table 11). After assessment of the model fit, a path between wave 1 and wave 3 was added on both variables. Variables at wave 1 control for gender, education and age. N=2486. X^2 = 124.3, RMSEA: .054, CFI: .983.

Table 11. Cross-lagged models of crime perceptions and news media use (full models incl. control variables)

	Traditional Media	Alternative Media	Public Service TV News	Commercial TV News	Tabloids	Left-wing broadsheet	Right-wing broadsheet
Media exposure in w1							
Gender	.082***	.158***	-.002	-.057**	.038	.034	.129***
	(.020)	(.021)	(.017)	(.020)	(.021)	(.021)	(.021)
Education	.067***	-.062**	.026	-.091***	.017	-.063**	.193***
	(.020)	(.021)	(.017)	(.020)	(.021)	(.021)	(.021)
Age	.370***	-.085***	.587***	.305***	-.053*	.235***	.055*
	(.019)	(.021)	(.014)	(.019)	(.021)	(.020)	(.021)
Media exposure w2							
Crime perceptions w1	.013	.095***	-.030*	.070***	.029	-.078***	-.012
	(.018)	(.021)	(.015)	(.015)	(.016)	(.016)	(.019)
Media exposure w1	.753***	.648***	.850***	.833***	.796***	.797***	.727***
	(.011)	(.014)	(.007)	(.007)	(.008)	(.009)	(.011)
Media exposure w 3							
Crime perceptions w2	.012	.083***	.030*	.026	.016	-.037*	.000
	(.016)	(.020)	(.015)	(.014)	(.014)	(.015)	(.018)
Media exposure w2	.528***	.381***	.569***	.543***	.635***	.515***	.479***
	(.022)	(.023)	(.024)	(.023)	(.020)	(.023)	(.023)
Media exposure w1	.350***	.404***	.311***	.351***	.268***	.364***	.354***
	(.024)	(.023)	(.026)	(.025)	(.023)	(.024)	(.024)
Crime perceptions in w1							
Gender	.023	.024	.022	.023	.024	.020	.023
	(.024)	(.024)	(.024)	(.024)	(.024)	(.024)	(.024)
Education	-.247***	-.248***	-.248***	-.248***	.194***	.195***	-.246***
	(.023)	(.023)	(.023)	(.023)	(.024)	(.023)	(.023)
Age	.195***	.194***	.188***	.198***	-.248***	-.249***	.193***
	(.024)	(.023)	(.024)	(.023)	(.023)	(.023)	(.024)
Crime perception in w 2							
Media exposure w1	.019	.062**	.028	.019	-.004	-.019	-.038*
	(.018)	(.018)	(.018)	(.018)	(.017)	(.017)	(.017)
Crime perception w1	.828***	.824***	.827***	.827***	.830***	.827***	.829***
	(.010)	(.010)	(.010)	(.010)	(.009)	(.010)	(.009)
Crime perception in w 3							
Media exposure w2	-.022	.011	.000	-.009	-.002	-.009	-.001
	(.013)	(.013)	(.014)	(.013)	(.012)	(.013)	(.012)
Crime perceptions w2	.766***	.762***	.766***	.763***	.765***	.766***	.766***
	(.023)	(.023)	(.023)	(.023)	(.023)	(.023)	(.023)
Crime perceptions w1	.184***	.184***	.181***	.187***	.182***	.180***	.182***
	(.029)	(.029)	(.029)	(.029)	(.029)	(.029)	(.029)
N	2484	2483	2487	2487	2486	2487	2487
Var							
ε_1	.859	.961	.656	.892	.995	.940	.948
ε_2	.431	.570	.283	.292	.364	.349	.470
ε_3	.318	.473	.274	.256	.252	.293	.398
ε_4	.894	.894	.896	.892	.894	.893	.895
ε_5	.312	.316	.310	.313	.310	.313	.308
ε_6	.148	.152	.149	.149	.149	.150	.149
Cov							
$\varepsilon_2 . \varepsilon_3$	.004	.037	-.064	.009	.031	.000	.028
$\varepsilon_5 . \varepsilon_6$	-.056	-.036	-.015	-.046	-.005	-.031	-.077
X^2							
Chi^2	127.9	203.2	185.5	214.0	79.75	106.25	69.3
P-value	.000	.000	.000	.000	.000	.000	.000
RMSEA	.054	.071	.068	.073	.042	.049	.038
CFI	.983	.966	.979	.975	.991	.987	.991
R^2	.229	.141	.405	.198	.110	.156	.149

***p<0.001. **p<0.01. *p<0.05. Comment: Results from cross-lagged structural equation model using maximum likelihood with missing values estimation. Estimates are standardized path coefficients and standard errors are in parentheses. Correlations between all exogenous variables and residuals were allowed at each panel wave. ε_1- ε_3: Media exposure W1-3, ε_4-ε_6: Crime perceptions W1-3. RMSEA: root mean square error approximation, CFI: comparative fit index. Source: LORE – Cultivation Panel

5.2.2.1 Testing hypothesis 2a & 2b

Genre-specific cultivation research has found that different types of media genres and news media types have various effects on the cultivation of crime perceptions. Hypotheses 2a and 2b, therefore, test whether cultivation effects are outlet-specific. H2a test if the correlation between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific and the results lend support for this hypothesis. Various types of TV exposure, as well as tabloid exposure, is positively related to a negative view of the Swedish crime development while it does not apply to broadsheet exposure. The strongest positive correlation is found between negative crime trend perceptions and commercial TV news exposure (r=.286, p<.001), while left-wing broadsheet exposure had the strongest negative correlation with a negative view of the crime development (r=-.233, p<.001). See table 12 for details. This is in line with what we already know from the cultivation research which has applied similar methods, but the following hypothesis will test this longitudinally in a more sophisticated way.

Table 12. Correlations between various types of media use and crime trend perceptions

	Commercial TV News	Public service TV News	Tabloids	Left-wing broadsheet	Right-wing broadsheet
Crime perceptions	0.2859***	0.0707**	.1301***	-.2330***	-.0181

***p<0.001. **p<0.01. *p<0.05. Comment: Bivariate correlations (Pearson's R). Source: Lore- Cultivation Panel

Hypothesis 2b test whether reinforcement processes between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific using cross-lagged panel models. The results are shown in figure 16, 17, 18, 19 and 20 as well as in table 11. The findings suggest that there are no statistically significant cultivation effects between various types of TV exposure and crime trend perceptions while there are some reinforcing selection effects between TV exposure and crime trend perceptions. More specifically, for commercial TV news, a positive effect was found between wave 1 and wave 2 (b=.070, p<.001) which means that people who had a more negative view of the Swedish crime development at wave 1 were more likely to consume commercial TV news at wave 2. For public service TV news, a negative effect was found between wave 1 and 2 (b=-.030, p<.001) while a positive effect was found between wave 2 and wave 3 (b=.030, p<.001). This implies that people who had a negative view of the Swedish crime development at wave 1 were less likely to consume public service TV news at wave 2 while the effect was opposite between wave 2 and 3.

For broadsheet exposure, some statistically significant negative reinforcing cultivation and selection effects were found. More specifically, for left-wing broadsheet exposure, a negative effect was found between both waves (b=-.078, p<.001 and b=-.037, p<.001). This means that people who had a negative perception of the Swedish crime development at the lagged time-point were less likely to read the left-wing newspaper at the following time-point. For right-wing broadsheet exposure, a negative effect between exposure at wave 1 and perceptions at wave 2 was found (b=-.038, p<.05). That is, people who read right-wing broadsheets at wave 1 were more likely to be positive towards the Swedish crime development at wave 2. This effect was, however, not found between wave 2 and 3.

Figure 16. Cross-lagged effects between crime trend perceptions and public service TV news exposure

Figure 17. Cross-lagged effects between crime trend perceptions and commercial TV news exposure

***p<0.001. **p<0.01. *p<0.05. Comment: Estimates are standardized path coefficients. Correlations between all exogenous variables and residuals were allowed at each panel wave (not shown in the figure, see table 11). After assessment of the model fit, a path between wave 1 and wave 3 was added on both variables. Variables at wave 1 control for gender, education and age. N=2487. X^2 = 185.5, RMSEA: .068, CFI: .979; N=2487. X^2 = 214, RMSEA: .073, CFI: .975.

Figure 18. Cross-lagged effects between crime trend perceptions and tabloids exposure

***p<0.001. **p<0.01. *p<0.05. Comment: Estimates are standardized path coefficients. Correlations between all exogenous variables and residuals were allowed at each panel wave (not shown in the figure, see table 11). After assessment of the model fit, a path between wave 1 and wave 3 was added on both variables. Variables at wave 1 control for gender, education and age. N=2486. X^2= 79.75, RMSEA: .042, CFI: .991.

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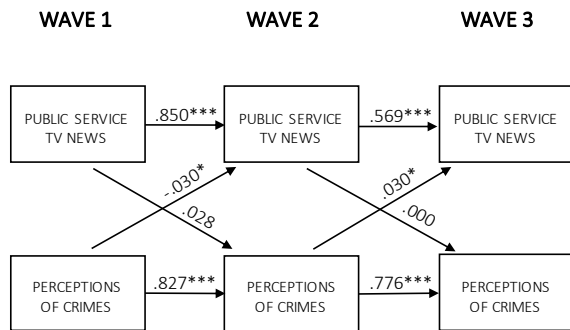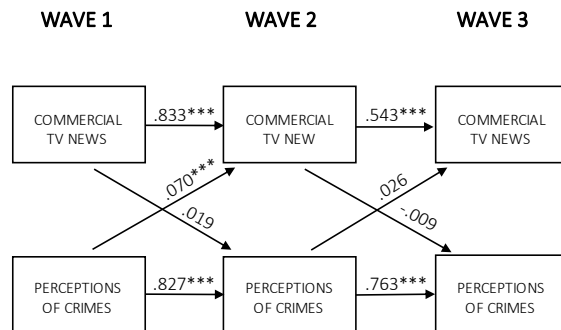Figure 19. Cross-lagged effects between crime trend perceptions and left-wing broadsheet exposure

Figure 20. Cross-lagged effects between crime trend perceptions and right-wing broadsheet exposure
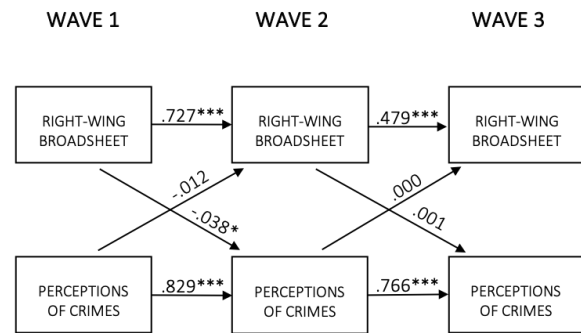
***p<0.001. **p<0.01. *p<0.05. Comment: Estimates are standardized path coefficients. Correlations between all exogenous variables and residuals were allowed at each panel wave (not shown in the figure, see table 11). After assessment of the model fit, a path between wave 1 and wave 3 was added on both variables. Variables at wave 1 control for gender, education and age. N=2487. X^2 = 106.3, RMSEA: .049, CFI: .991; N=2487. X^2 = 69.3, RMSEA: .038, CFI: .991

Taken together, hypothesis 2b can only party be supported. No actual cultivation effect was found for any of the traditional media measures. However, since there were negative cultivation and selection effects for broadsheet exposure as well as positive and negative selection effects for TV exposure, one could argue that the reinforcement processes are outlet-specific.

5.2.2.3 Testing hypothesis 3a-3d

The following hypotheses examine whether cultivation effects are isolated to the broad patterns of traditional media use or if it is actually driven by alternative media use. The first of these hypotheses tests if the findings from previous cultivation research hold when applying it on alternative media exposure by examining the correlation. The findings suggest that alternative media exposure correlates positively with having a negative view of the Swedish crime development (r=.293, p<.001), which lend support for hypothesis 3a.

The findings from the cross-lagged panel analysis on the model not including control variables (gender, education and age) show that a negative view of the Swedish crime development is associated with an increased behaviour to seek out alternative news between both of the two waves (wave 1 and 2: b=.091, p<.001 and wave 2 and 3: .078, p<.001). There is, however, no significant effect between alternative news media exposure and perceiving the crime development as negative (see table in appendix 12).

The full model's (including control variables: gender, education and age) results are illustrated in figure 21 and table 11. Adding the control variables does not have a negative impact on the

path coefficients between the waves but rather increase the effect. This indicates the presence of suppression which means that without adding the control variables, the association is masked (Aneshensel, 2013).

Overall, there seems to be a mutually reinforcing relationship between alternative media exposure and crime trend perceptions. The findings show that alternative media exposure at wave 1 is associated with an increased negative view of the crime development at wave 2 (b=.062, p<.01), which in turn is associated with increased exposure to alternative news at wave 3 (b=.083, p<.001). However, when the measurement begins at crime trend perceptions, the results are not as straightforward. Negative crime trend perception at wave 1 is associated with increased exposure to alternative news at wave 2 (b=.095, p<.001), but there is no association between alternative news exposure at wave 2 with an increased negative view of crime development at wave 3.
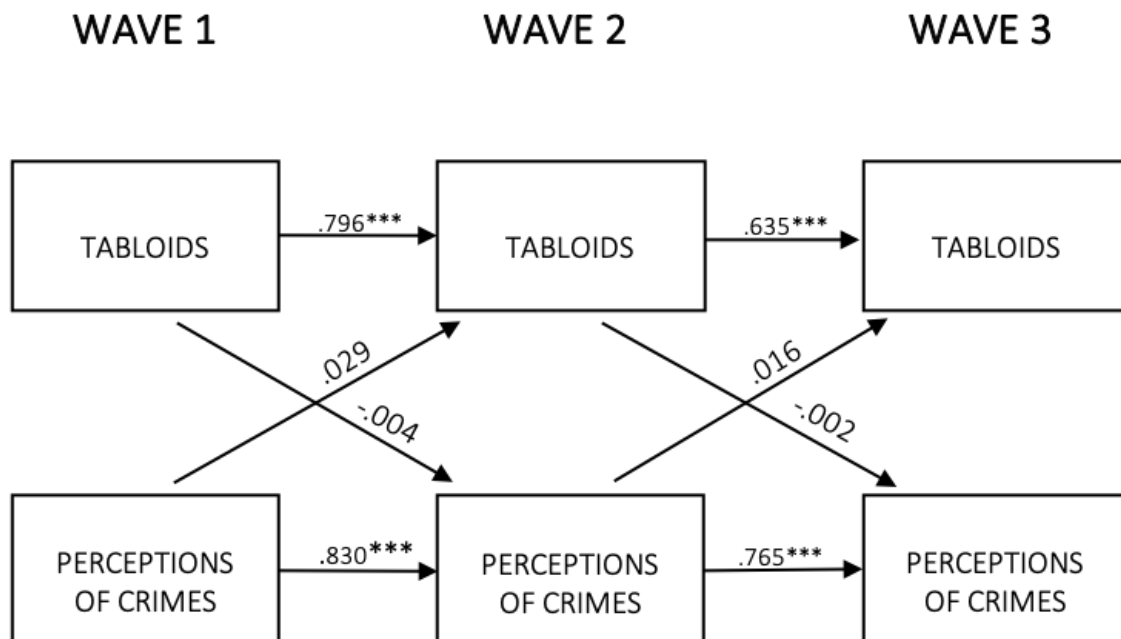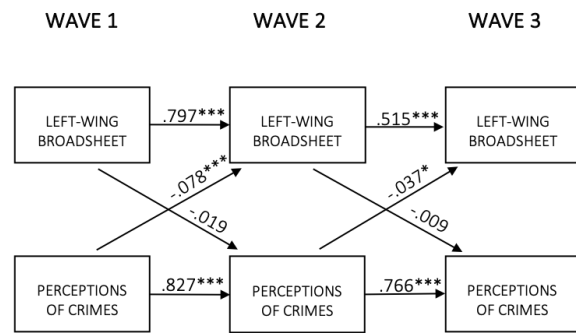
Figure 21. Cross-lagged effects between crime trend perceptions and alternative media use
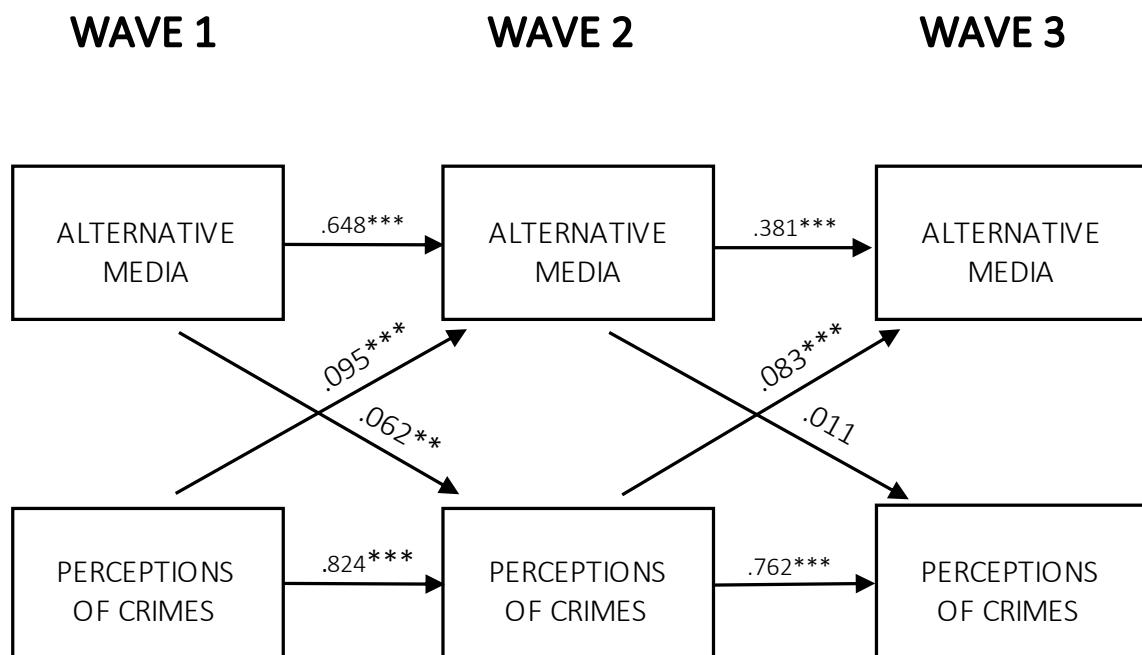
***p<0.001. **p<0.01. *p<0.05. Comment: Estimates are standardized path coefficients. Correlations between all exogenous variables and residuals were allowed at each panel wave (not shown in the figure, see table 12). After assessment of the model fit, a path between wave 1 and wave 3 was added on both variables. Variables at wave 1 control for gender, education and age. N=2483. X^2 = 203.18, RMSEA: .071, CFI: .966.

Given the significant effects that were found between having a negative view of the crime development and seeking out alternative news between both wave 1 and 2 as well as between wave 2 and 3, the findings provide support for hypothesis 3c. Hypothesis 3b, on the other hand, can only be given partial support since effects were only found between wave 1 and 2 and not between wave 2 and 3.

The result from the multiple group comparison of the cross-lagged model between crime trend perceptions and alternative media exposure is shown in figure 22 (also see tables in appendix 13 and 14). The same model was fitted for each of the group of interpersonal discussions frequency: never or seldom, sometimes and frequently discuss crimes with friend and family. The findings suggest that interpersonal communication does not moderate the reciprocal relationship between alternative media use and crime trend perceptions since no statistically significant effects were found when the group variable was added. Although the lack of significance might be a result of small samples within the groups, the coefficients do not indicate that frequent interpersonal discussion would be related to an increased negative view of the crime development. To be sure that there are not any differences between the groups, a post-estimation command "estat ginvariant" was run, and it showed that none of the parameters was significantly different (Acock, 2013). This suggests that the reinforcing relationship between crime trend perceptions and alternative media use is not moderated by interpersonal communication and the findings can, thus, not support hypothesis H3d.

Figure 22. Cross-lagged effects between crime perceptions and alternative media use with interpersonal communication as moderating variable (incl. control variables)
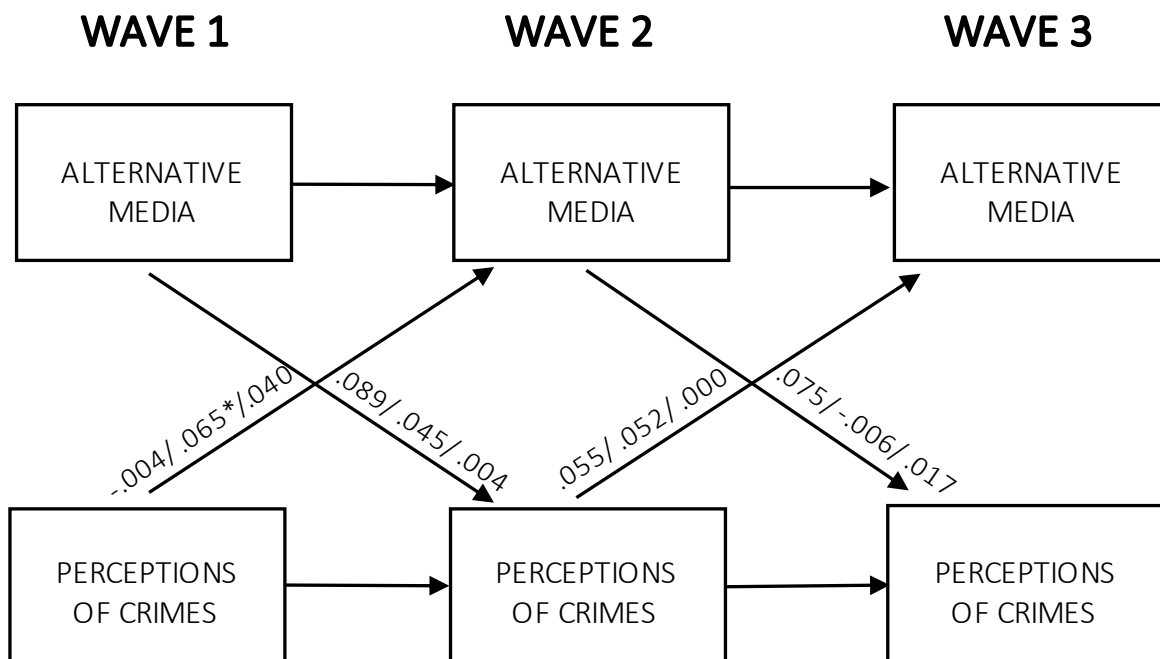
***p<0.001. **p<0.01. *p<0.05. Comment: (Never or seldom discuss/ Sometimes discuss/ Frequently discuss). Results from cross-lagged structural equation model using maximum likelihood with missing values estimation. Estimates are standardized path coefficients and standard errors are in parentheses. Interpersonal communication about crimes with friends and family is used as group variable. Correlations between all exogenous variables and residuals were allowed at each panel wave. N=1463. X^2 = 128.5, RMSEA: .062, CFI: .980.

5.2.3 Summary of hypothesis testing

To sum up the hypothesis testing, the study found support for some of the hypotheses while others were rejected. All hypotheses which examined cultivation effects using bivariate correlations were supported. However, when analysing mutually reinforcing relationships between media use and crime trend perceptions using cross-lagged models, some of the hypotheses were rejected. To begin with, the study could not find support for the original cultivation hypothesis when longitudinal data was used. Second, the study found partial support for reinforcement processes between news media exposure and crime trend perceptions being outlet-specific. Thirdly, the findings lend support for most parts of my proposed causal model (figure 2) with the exception of the moderating variable – interpersonal communication.

Table 13. Summary of hypotheses testing

H1a: Frequent exposure to news media correlates with perceiving the Swedish crime development as negative	Support
H1b: Frequent exposure to news media will, over time, reinforce the perception that the Swedish crime development is negative (cultivation effect)	No support
H1c: Perceiving the Swedish crime development as negative will, over time, reinforce the behaviour of seeking out news media (selection effect)	No support
H2a: Correlations between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific	Support
H2b: Reinforcement processes between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific	Partial support
H3a: Frequent exposure to alternative news correlates with perceiving the Swedish crime development as negative	Support
H3b: Alternative media exposure will, over time, reinforce the perception that the Swedish crime development is negative (cultivation effect)	Partial support
H3c: Perceiving the Swedish crime development as negative will, over time, reinforce the behaviour of seeking out alternative news (selection effect)	Support
H3d: The reciprocal relationship between crime trend perceptions and alternative media use is moderated by interpersonal discussions about crimes, where the reciprocal effect will be stronger for those that discuss crimes more frequently.	No support

6. Discussion and conclusion

The aim of this study was to examine whether the cultivation theory, as it is currently defined, is still relevant in today's fragmented media landscape or if it should be redefined to better capture selective reinforcing cultivation effects. In more detail, this study examined mutually reinforcing relationships between crime trend perceptions and various types of media exposure, including alternative media use. Moreover, it explored how violent crime content differs between various types of media outlets as well as between different time periods. This chapter will present the key findings and discuss them in light of the theoretical framework and previous research but also by relating the findings from the content analysis to the findings of the panel survey analysis. Thereafter, the conclusion as well as the research contributions, limitations and directions for future research will be presented and discussed.

6.1 Discussion

6.1.1 Crime content in alternative media vs traditional media (RQ4)

The findings from the quantitative content analysis suggest that there are outlet-specific differences in Swedish violent crimes news reporting, most notably between alternative media and traditional media. Alternative media convey a more negative impression of the societal development as well as use alarmistic wording more frequently compared to traditional media. Moreover, alternative media focus less on murders but more on gang violence, sexual offences and extremism/ terrorism compared to traditional media.

In terms of how the number of articles, style and tone changed over time, there were also great differences between alternative media and traditional media. Alternative media increased their reporting on violent crimes while traditional media decreased their reporting on violent crimes. Traditional media became more alarmistic in their wording and conveyed a more negative impression of the societal development over time, while alternative media decreased their share of alarmistic wording and negative impression of the societal development over time (although the share was still much higher than for traditional media). This suggests that the style and tone

in articles about violent crimes in alternative media and traditional media became more similar over time.

In previous research, there have been few efforts to examine whether alternative media differs from traditional media in violent crimes news reporting. This media content analysis, therefore, contributes with unique insight in how the news reporting differs but also gives one possible explanation as to why reinforcing cultivation processes occur for alternative media users but not for traditional media users.

6.1.2 No first-order cultivation effects from traditional media exposure (RQ1)

The first research question concerned whether overall news media consumption was related to a negative view of the Swedish crime development as well as if there is a mutually reinforcing relationship between overall news media consumption and crime trend perceptions. The findings suggest that frequent news media consumption is positively related to a negative crime trend perception. However, when longitudinal data was used, there were no signs of a mutually reinforcing relationship between news media consumption and crime trend perceptions over time.

This result is in line with previous research that has applied a longitudinal design. Shi et al. (2019) found that cultivation effects disappeared when applying a more sophisticated statistical model including lagged crime trend perceptions which suggest that studies that have found cultivation effects using cross-sectional data might be spurious due to omitted variable bias. Adding the results from this study, the argument to analyse cultivation effects using longitudinal data becomes even stronger. However, it should be noted that there are also advantages of using cross-sectional data instead of longitudinal data. Gerbner proposed that television consumption would have a gradual, dynamic and ongoing effect on people's perception of crimes (Morgan et al., 2009) and it could be the case that longitudinal data simply cannot capture cultivation effects because they are occurring in such a slow pace.

This finding could also be understood in relation to how media consumption habits have changed since Gerbner and Gross (1976) proposed the cultivation hypothesis. The media environment has gone from low-choice to high-choice, and this has evidently had an impact on

the effect overall media consumption has on people's perception of crime. The data suggest that the idea of a reinforcing cultivation effect from frequent overall news media exposure does not hold in today's media environment. As the media content analysis shows, various types of media sources convey different impressions of the societal development, focus on various types of violent crimes and use alarmistic wording to various degrees. With selective exposure becoming an increasingly important phenomenon for media consumption habits (Dahlgren et al., 2019; Feldman et al., 2014), one could assume that depending on which media type that is consumed, different cultivation effects will be recorded.

6.1.3 Outlet-specific reinforcement processes (RQ2)

The second research question concerned if correlations between frequent news media exposure and perceiving the Swedish crime development as negative is outlet-specific as well as if mutually reinforcing relationships between news media exposure and crime trend perceptions are outlet-specific. The findings suggest that correlations between frequent news media exposure and a negative view of the Swedish crime development are outlet-specific. TV and tabloid exposure were positively correlated with a negative perception of the Swedish crime development while broadsheet exposure was not related to a negative perception of the crime development. The findings which relate to the second part of the research question, where longitudinal data was used, are not as straightforward. No actual cultivation effects were found for any of the media measures but outlet-specific differences in the selection effect, as well as a negative cultivation effect, was found. If positive cultivation effects are disregarded, one could argue, that reinforcement processes between media use and crime trend perceptions are outlet-specific.

Previous research on genre-specific cultivation effects has shown that various types of media exposure have various effects although there is no conclusive evidence of which types that have stronger effects. This study could not find positive first-order cultivation effects for any of the media measures included in the analysis when longitudinal data was used. This suggests that it is unlikely that increased news media exposure can explain an increasingly negative perception of the crime development over time. Previous research has, as noted above, almost exclusively based their research on cross-sectional data which might be the explanation as to why previous research has found cultivation effects while this study could not find such effects.

Selection effects were, on the other hand, found for most of the examined media measures. This suggests that people may selectively expose themselves to information that is aligned with their own perception of reality. For example, people who had a negative perception of the crime development were less likely to consume left-wing broadsheets over time. This might be because left-wing broadsheets conveyed a less negative impression of the societal development as well as used alarmistic wording less frequently compared to other media types. If individuals do not feel like the media that they are consuming portray the reality as they are perceiving it, they may start seeking out media sources where their own perceptions are better represented.

6.1.4 A mutually reinforcing relationship between alternative media use and crime perceptions (RQ3)

The third research question concerned if frequent alternative news media exposure is related to a negative view of the Swedish crime development and if there is a mutually reinforcing relationship between alternative news media exposure and crime trend perceptions. The findings suggest that alternative news media exposure correlates positively with having a negative view of the Swedish crime development and that there seems to be a mutually reinforcing relationship between alternative news media exposure and crime trend perceptions. That is, alternative news media exposure will, over time, increase a negative perception of the Swedish crime development and a negative perception of the Swedish crime development will, over time, reinforce alternative news media exposure. This association was, however, not found between all waves. Between alternative news media exposure in wave 2 and crime trend perceptions in wave 3, no effect was found, which means that the study cannot provide support for the full, dynamic effects of the RSM.

These findings suggest that cultivation effects may be driven by alternative news media exposure and points to the importance of including selectivity when analysing cultivation effects. The content analysis showed that alternative media conveyed a more negative impression of the societal development as well as used alarmistic wording more frequently and this might be why a cultivation effect occurs for alternative news media users but not for other types of media use. The negative impression of society within alternative media crime content might also affect the selection effect. People who have a negative perception of the crime development may want to use alternative media because it will confirm their perception of reality.

No cultivation effect was found between wave 2 and 3, despite people becoming more negative towards the crime development during the same period. This indicates that it is unlikely that increased alternative news media use explains an increased negative perception of the crime development during this period. There could be several explanations for this, it could be that the style and tone of the violent crimes content shifted slightly between the two waves. While traditional media conveyed a more negative impression of the societal development between wave 2 and 3, alternative media decreased their share of negative impressions and alarmistic wording in the second time period. This means that the differences in style and tone of crime content between alternative media and traditional media were not as pronounced between wave 2 and 3 as in between wave 1 and 2.

These findings take us back to an important distinction between the cultivation theory and the RSM, namely if the reinforcement processes will either result in mainstreaming or polarization. Mainstreaming is the idea that people's opinions, over time, will become more similar (Shanahan, 2009) whereas the RSM instead presumes that the process will result in increased polarization (Slater, 2007). The findings in this study suggest that reinforcement processes are stronger among people who seek out news that confirm their own beliefs which indicates that the idea of mainstreaming has played out its role. Mainstreaming builds on the assumption that the information that is distributed by the media convey a relatively uniform picture of reality, and in today's media landscape, that is no longer the case. Thus, a more reasonable outcome of reinforcement processes is that an increased polarization of crime perceptions will be noted.

These findings can also be understood in relation to the discussion of homeostasis and positive feedback loops within the RSM framework (Slater, 2007; 2015). Slater (2007) suggested that positive feedback loops in reinforcing effects may be particularly pronounced in groups with a closed communication system where there is a "culture of suspicion of outside influences such as the mainstream media" (p. 292) and where the group use media that "consistently reiterate a consistent and distinctive worldview" (p. 292). Alternative media users can, to varying degrees, be considered as such group (see for example Nygaard, 2019) and this might be the reason why cultivation effects occurred for alternative media users while traditional media users might have reached a level of homeostasis (Slater, 2007) instead.

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6.1.5 Interpersonal communications as moderating variable (RQ3)

The third research question also concerned whether the mutually reinforcing relationship between alternative news media use and crime trend perceptions was moderated by interpersonal discussions about violent crimes. The idea was, in line with findings from Song and Boomgarden (2017), that reciprocal effects would be stronger for people who discussed violent crimes more frequently whereas it would be weaker for those that never discussed violent crimes. The data could not provide evidence for such moderating effect.

Although many scholars acknowledge that interpersonal communication plays a significant role in attitude formation, few empirical studies have studied interpersonal communication and mass media exposure simultaneously (De Vreese & Boomgarden, 2006; Schmitt-Beck, 2003). Even though this study did not find any indication of a moderating interpersonal communications effect between alternative media use and crime trend perceptions, it is still possible that interpersonal communication plays a significant role in reinforcement processes. The measure that was used in this study may not capture attitude-consistent discussions to the degree that it will show an effect. Another explanation could be that interpersonal communication is hard for a survey respondent to estimate, and there could potentially be a lot of variation in what people regard as discussing violent crimes. A third possible explanation could be that interpersonal communication moderates the relationship between traditional media use and crime trend perceptions but not for alternative media use.

6.2 Conclusion

The question remains, should the cultivation theory be redefined to better capture selective reinforcement processes in the contemporary fragmented media environment? As this study has shown, cultivation effects only occurred for alternative news media users, and there were considerable differences between violent crimes news content in alternative media and in traditional media. The study, thus, suggests that it is no longer reasonable to assume that great cultivation effects will occur on the large mass but rather that these processes occur on smaller segments of the population where media selectivity is the driving force. Already in 1986, Bryant suggested that cultivation theory need to accommodate to audience selectivity to remain current. Rightfully so, in a media environment that is filled with content choice, cultivation theory must be redefined to include the selectivity aspect of media consumption. To synthesise cultivation theory with the RSM is, as shown in this study, one way of doing this but an even

better way would be to develop the original theory to include the aspect of selectivity and exclude the idea of mainstreaming.

6.3 Contributions, limitations and directions for future research

Contributions

This study has gone beyond previous research in several ways. First, it has shed new light on the cultivation theory by examining if changes in the media landscape where people have increased possibilities to get their perception of the world confirmed could potentially amplify cultivation processes among certain groups of people. This was done by synthesising the cultivation theory with the RSM to account for selectivity in the cultivation process. Additionally, alternative media was included as a media measure to fully capture the dynamics of the contemporary media environment. This has, to the best of the author's knowledge, never been done in cultivation or RSM research before. Second, by applying a longitudinal design, the study has gone beyond much of the previous research that has tested the cultivation hypothesis. It found that when longitudinal data was used, many of the initial relationships disappeared which raises questions of the validity of previous assumptions of the reinforcing relationship between media exposure and crime perceptions. Third, it has examined interpersonal communication as a moderating variable of the reinforcing relationship between alternative media use and crime trend perceptions. Although interpersonal communication has long been acknowledged as an important factor in perception formation processes, there have been few efforts to include this in empirical research. This study could not find evidence for such moderating effect, but it, nevertheless, provides the research field with a suggestion on how interpersonal communication can be operationalised and measured in empirical media effects research. Finally, the study has also gone beyond previous research by quantitively analysing differences between alternative media and traditional media in how violent crimes is portrayed. This enables one to discuss why we might see different effects from different types of media exposure and not just rely these assumptions on preconceived notions.

Limitations

Despite the many contributions to the research field this study presents, there are several limitations that should be addressed. First, a problem with applying a cross-lagged panel model is that it does not differ between intra-individual effects and inter-individual effects. Intra-

individual effects (within-person) are person-specific developments over time whereas inter-individual (between-person) are differences between individuals in their intra-individual developments. Since the RSM describes an intra-individual reinforcement process and the cross-lagged panel model being unable to differentiate between intra-individual and inter-individual, it becomes hard to interpret the actual reinforcement effects. The effects that are recorded may actually be caused by effects between persons rather than within them (Allen, 2017). Second, the lack of reinforcement effects might be a consequence of the panel study design. The length of lags between each wave in the panel study was rather long (8 to 10 months). It is possible that an individual who consumed news frequently in a month where violent crimes received a lot of media attention became more negative towards the Swedish crime development instantly, but that this effect disappeared until the next wave. External events can, as pointed out by Song and Boomgarden (2017), trigger reinforcement spirals and with long lags between each panel wave the risk of not capturing short-term media effects increases. However, as cultivation research is concerned with long-term reinforcing effects, longer lags are still preferable. Third, the analyses in this study do not measure the effects of mixed media consumption habits. In the hybrid media system, every individual's media habits differ. A person who consumes alternative media could also consume other media types, and the analyses cannot show how different mixed media habits affect crime trend perceptions. Fourth, since I chose to only examine reinforcing effects on crime perceptions in one country, the findings can only be considered generalisable to Sweden and potentially countries where the different media outlets portray violent crimes in similar ways as the Swedish media outlets do.

Directions for future research

This study has contributed with several important insights to the cultivation and RSM research fields which together with the existing literature provide directions for future research. First, cultivation analyses deriving from cross-sectional data may, as mentioned in the discussion, be spurious due to omitted variable bias. Future cultivation research should thus interpret findings from cross-sectional data cautiously and, if possible, employ longitudinal designs. Second, given the new conditions of the contemporary media environment and the findings from this study, future research needs to account for selectivity when analysing cultivation effects. Third, although this study could not find a moderating effect from interpersonal communication on the relationship between alternative media exposure and crime trend perceptions, this should be examined further. More specifically, this could be done by using an item measuring attitude

homogeneity in interpersonal discussions or by examining the moderating effect of interpersonal communication between traditional media use and crime trend perceptions. Fourth, this study focused on first-order cultivation effects, but it would also be valuable for the cultivation field to examine whether the same findings are found if second-order effects are measured or if they differ. Fifth, when using data from surveys, there is always the problem of causality. Attitudes and media use might be changing because of other reasons than what the model predicts, and these are, without a laboratory setting, impossible to control for. Additionally, relying on self-reported behaviour is a risk, knowing that people might exaggerate or falsely report their actual use of media (Dahlgren et al., 2019). For that reason, future research should seek to merge the longitudinal design with a more controlled environment. Sixth, this study was limited to the Swedish context. The cultivation and RSM literature would benefit from replicating this study to other countries to see whether the results are valid for other contexts too.

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Appendices

Appendix 1.

Table. Summary of articles removed

Reason for removing	AB	Exp	SVD	DN	SVT	RW AM	LW AM	Total
Foreign news	124	82	125	123	72	61	51	638
Culture	13	15	15	31	7	1	12	94
TV / Podcast	11	32	4	5			1	53
Threats	2			2		5		9
Historical reportages	1	4	8	1	2	1	3	20
Sports, travel, gardening & business section	9	6	2	3	2			22
Unavailable news				117		8	1	126
Search word not found in article	2	5		2	2	10	5	26
	162	144	154	284	85	86	73	988

Appendix 2.

Table. Coding scheme

Variable	Response alternative
Format	
1. News identification number	Serial number
2. Date	Format: YYMMDD
3. Specific media outlet	1. SVT Nyheter 2. Expressen 3. Aftonbladet 4. Svenska Dagbladet 5. Dagens Nyheter 6. Fria Tider 7. Nyheter Idag 8. Samhällsnytt 9. ETC 10. Dagens Arena 11. Aktuellt Fokus
Content	
4. Criminality type	1. Murder and manslaughter 2. Gang violence 3. Explosion 4. Shooting 5. Assault 6. Robbery 7. Sexual offences 8. Fire related offences 9. Kidnapping 10. Extremism/ terrorism 11. Honour violence 12. Other
Tonality	
5. Negative vs positive societal development	0. Neutral 1. Predominantly negative societal development 2. Balanced 3. Predominantly positive societal development
Style	
6. Alarmistic vs neutral wording	1. Yes (predominately alarmistic) 0. No (predominantly neutral)

Appendix 3.

Table. Codebook

Variable	Response alternative	Coding instructions
Format		
1. News identification number	Serial number	Every article is given a unique ID-number. The ID-number is coded as follows: • The first number describes which societal issue the article belongs to (4 = crimes of violence) • The second number is the same as the code for the specific media outlet (variable 3) • This is followed by a three-digit serial number • The first article within the crime category being published in SVT will, thus, have the number 41001
2. Date	Format: YYMMDD	Insert the publication date
3. Specific media outlet	1. SVT Nyheter 2. Expressen 3. Aftonbladet 4. Svenska Dagbladet 5. Dagens Nyheter 6. Fria Tider 7. Nyheter Idag 8. Samhällsnytt 9. ETC 10. Dagens Arena 11. Aktuellt Fokus	Name of the specific media outlet the news item appears in.
Content		
4. Criminality type	1. Murder & manslaughter 2. Gang violence 3. Explosion 4. Shooting 5. Assault 6. Robbery 7. Sexual offences 8. Fire related offences 9. Kidnapping 10. Extremism/ Terrorism 11. Honour violence 12. Other	*What types of criminal activities appear in the news article?* If there are several criminal activities in the news item, choose the first 4 activities that appear. Sexual offences include crimes like rape, sexual crimes, domestic violence, violation of women's integrity etc. Fire related offences include crimes like car fires, arson etc. Extremism/ Terrorism include crimes such as right-wing extremism violence, jihadism etc. If the article does not include any of the listed criminal activities or if it just refers to violence, the option "other" should be chosen.

Style		
5. Negative vs positive societal development	0. Neutral 1. Predominantly negative societal development 2. Balanced 3. Predominantly positive societal development	*What is the overall tone of the societal development in the news item? Does the article convey a predominantly positive, negative, balanced or neutral impression of the societal development?* Indications of *negative societal development* are references to increasing crime rates, political failure, police failure, toll failure, poor development, disaster, crisis, frustration, worsening, stagnation, collapse, flop, deterioration, resignation, defeatism or disappointment. Indications of *positive societal development* are references to decreasing crime rates, political success, toll success, police success, achievement, progress, improvement, advance, accomplishment, enthusiasm, hope, benefit, gratification or accomplishment. If a news article does not reflect any indications of a negative or positive societal development, it should be coded as "0 = neutral". If a news article reflects equal indications of positive and negative societal development, it should be coded as "2 = balanced".
6. Alarmistic vs neutral wording	2. Yes (predominately alarmistic) 1. No (predominantly neutral)	*Are alarmistic words used in the news item?* This includes emotionally charged words such as system collapse, alarming, catastrophe, crash, disaster, fiasco, emergency, out of control, failed beyond repair, epidemy. Option "No" should be chosen if the news article presents the information in a matter-of-fact style <u>not</u> using alarmistic words

Appendix 4.

Table. Intercoder reliability test

	ID number	Date	Media Outlet	Criminality types	Societal development	Alarmistic Wording
Number of cases	56	56	56	224	56	56
Number of agreements	56	54	56	211	52	49
Percent agreement	100%	96.4%	100%	94.2%	92.9%	87.5%

Appendix 5.

Table. Alarmistic wording and impression of societal development in alternative media and traditional media

	Alarmistic wording		Societal development			
	Yes	No	Neutral	Negative	Balanced	Positive
Traditional media	5.4	94.6	80.5	15.1	3.4	1.0
Alternative media	32.4	67.6	50.5	43.7	4.5	1.5
Total	12.1	87.9	73.1	22.1	3.7	1.1

Appendix 6.

Table. Alarmistic style and tone of societal development in different media outlets

	Alarmistic wording		Societal development			
	Yes	No	Neutral	Negative	Balanced	Positive
SVT	1.8	98.2	69.6	30.4	0.0	0.0
Tabloids	8.0	92	81.2	15.7	2.5	0.6
Right-wing broadsheet	3.8	96.2	83.7	10.7	3.8	1.9
Left-wing broadsheet	2.8	97.2	79.6	12.7	6.3	1.4
Right-wing alternative media	29.3	70.7	61.7	36.5	1.8	0.0
Left-wing alternative media	41.8	58.2	16.4	65.5	12.7	5.5
Total	12.1	87.9	73.1	22.1	3.7	1.1

Appendix 7.

Table. Criminality type compared between traditional media and alternative media

	Traditional media	Alternative media
Murder	34.0	16.5
Sexual offences	13.5	25.1
Assault	15.8	16.5
Shooting	10.6	10.8
Fire related offences	5.0	2.6
Robbery	4.0	5.1
Gang violence	3.2	6.3
Extremism & Terrorism	2.8	7.1
Explosions	2.8	2.3
Honour violence	1.6	1.4
Abduction/ kidnapping	1.6	0.9
Other	5.0	5.4

Appendix 8.

Table. Criminality type compared between different media types

	SVT	Tabloids	RW BS	LW BS	RW AM	LW AM	Total
Murder	32.6	32.8	34.8	36.8	18.3	11.7	29.6
Sexual offences	12.4	12.6	14.4	15.4	15.7	23.4	16.5
Assault	16.9	17.5	14.0	12.9	17.9	12.8	16.0
Shooting	12.4	10.2	8.5	13.4	10.5	11.7	10.7
Fire related offences	5.6	4.9	4.7	5.5	2.7	2.1	4.4
Robbery	3.4	4.7	3.8	2.5	6.6	1.1	4.3
Gang violence	4.5	3.1	4.2	1.5	5.5	8.5	4.0
Extremism & Terrorism	3.4	2.4	2.1	4.5	3.5	17.0	3.9
Explosions	4.5	3.0	3.0	1.5	2.7	1.1	2.7
Honour violence	3.4	1.6	1.7	1.0	1.2	2.1	1.6
Abduction/ kidnapping	1.1	1.4	3.0	1.0	0.8	1.1	1.4
Other	0.0	5.9	5.9	4.0	4.7	7.5	5.1

Appendix 9.

Table. Alarmistic style and tone of societal development depending on criminality type

	Yes	No	Neutral	Negative	Balanced	Positive
Murder	9.3	90.7	82.2	15.4	1.5	1.0
Sexual offences	15.4	84.7	70.6	21.5	6.6	1.3
Assault	10.0	90.1	77.4	19.5	2.7	0.5
Shooting	19.6	80.4	52.0	41.9	4.73	1.4
Fire related offences	13.1	86.9	78.7	19.7	1.6	0.0
Robbery	23.7	76.3	69.5	28.8	0.0	1.7
Gang violence	45.5	54.6	18.2	76.4	5.5	0.0
Extremism & Terrorism	25.9	74.1	35.2	46.3	16.7	1.9
Explosions	32.4	67.6	40.5	56.8	2.7	0.0
Honour violence	31.8	68.2	36.4	50.0	13.6	0.0
Abduction/ kidnapping	10.0	90.0	95.0	5.0	0.0	0.0
Other	18.3	81.7	49.3	40.9	7.0	2.8

Appendix 10.

Figure. Interpersonal crime discussions over time (%)
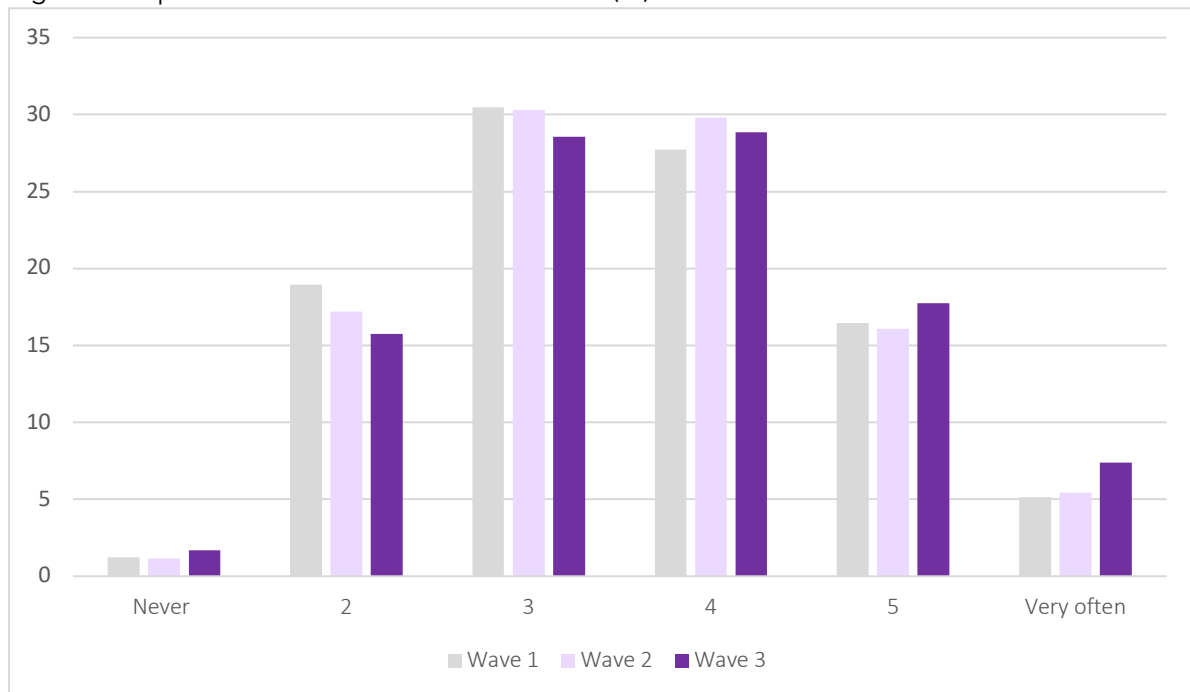
Comment: Bars represents the share (%) of respondents on alternative media use (scale 1-6). Wave 1, N:2260, Wave 2, N: 1841, Wave 3, N:1785.
Source: LORE – Cultivation Panel

Appendix 11.

Table. Sociodemographic factors for interpersonal crime discussions (wave 1)

	N	Mean	SD	T-test/ One-way ANOVA P-value
Gender				.0002
Female	732	2.01	.580	
Male	731	2.13	.611	
Education				.0000
Elementary school or less	78	2.19	.703	
Secondary education	448	2.13	.593	
Post-secondary education. not university	253	2.17	.603	
University. less than 3 years	258	2.04	.587	
University. more than 3 years	386	1.94	.562	
Age				.0013
Below 30	158	1.94	.567	
30-39	165	2.07	.562	
40-49	163	2.10	.560	
50-59	273	2.16	.591	
60-69	390	2.08	.620	
Over 70	314	2.16	.596	
Work situation				.0039
Full-time	649	2.06	.581	
Part-time	69	2.04	.605	
Self-employed	90	2.12	.668	
Unemployed	17	2.18	.636	
Retired	474	2.14	.591	
Sick pay	23	1.78	.600	
Student	90	1.88	.550	
Other	44	2.05	.746	
Political ideology				.0000
Left-wing	390	1.89	.557	
Middle	634	2.05	.592	
Right-wing	434	2.26	.592	
Political interest				.0000
Very interested	272	2.21	.634	
Somewhat interested	894	2.07	.580	
Not very interested	274	1.97	.595	
Not interested at all	23	1.83	.576	
Political trust				.0000
Very high trust	21	1.86	.793	
Relatively high trust	639	1.92	.549	
Relatively low trust	620	2.15	.582	
Very low trust	179	2.36	.642	

***p<0.001. **p<0.01. *p<0.05. Comment: The table presents the observed number, mean and standard deviation of the different levels of interpersonal discussions about crime for all groups within each sociodemographic factor. T-test was performed for gender while one-way ANOVA was used on the other factors. Source: LORE – Cultivation Panel

Appendix 12.

Table. Cross-lagged models of crime perceptions and news media use (without control variables)

	Traditional Media	Alternative Media	Public Service TV News	Commercial TV News	Tabloids	Left-wing broadsheet	Right-wing broadsheet
Media exposure w2							
Crime perceptions w1	.008 (.018)	.091*** (.021)	-.038* (.015)	.061*** (.016)	.028 (.017)	-.075*** (.016)	-.011 (.019)
Media exposure w1	.723*** (.011)	.635*** (.015)	.849*** (.007)	.824*** (.008)	.794*** (.009)	.790*** (.009)	.728*** (.011)
Media exposure w3							
Crime perceptions w2	.010 (.016)	.078*** (.020)	.029 (.015)	.023 (.014)	.018 (.014)	-.031* (.015)	.002 (.018)
Media exposure w2	.530*** (.022)	.381*** (.023)	.569*** (.024)	.545*** (.023)	.635*** (.020)	.516*** (.023)	.479*** (.023)
Media exposure w1	.348*** (.023)	.397*** (.022)	.312*** (.025)	.348*** (.024)	.267*** (.021)	.362*** (.023)	.355*** (.023)
Crime perception in w2							
Media exposure w1	.010 (.018)	.032 (.018)	.033 (.019)	.000 (.018)	-.014 (.017)	-.008 (.017)	-.042* (.017)
Crime perception w1	.828*** (.010)	.820*** (.011)	.826*** (.010)	.829*** (.011)	.831*** (.010)	.827*** (.017)	.829*** (.009)
Crime perception in w3							
Media exposure w2	-.023 (.013)	.007 (.013)	.001 (.014)	-.012 (.013)	-.004 (.012)	-.008 (.013)	-.001 (.012)
Crime perceptions w2	.771*** (.023)	.768*** (.023)	.770*** (.023)	.767*** (.023)	.769*** (.023)	.769*** (.023)	.770*** (.023)
Crime perceptions w1	.179*** (.026)	.178*** (.027)	.177*** (.026)	.185*** (.027)	.179*** (.026)	.177*** (.027)	.178*** (.026)
N	2449	2447	2459	2458	2457	2457	2459
Var							
ε_1	.432	.557	.283	.288	.363	.345	.470
ε_2	.319	.462	.275	.253	.251	.290	.398
ε_3	.312	.313	.311	.312	.312	.313	.309
ε_4	.149	.149	.149	.149	.149	.149	.149
Cov							
$\varepsilon_1. \varepsilon_3$	.008	.037	-.053	.015	.027	-.005	.023
$\varepsilon_2. \varepsilon_4$	-.056	-.035	-.014	-.044	-.005	-.032	-.077
X^2							
Df	.34	14.49	1.59	1.65	.06	1.30	0.20
P-value	.843	.001	.451	.437	.972	.522	.903
RMSEA	.000	.051	.000	.000	.000	.000	.000
CFI	1.00	.998	1.00	1.00	1.00	1.00	1.00
R2	.890	.853	.925	.921	.903	.908	.881

***p<0.001. **p<0.01. *p<0.05. Comment: Results from cross-lagged structural equation model using maximum likelihood with missing values estimation. Estimates are standardized path coefficients and standard errors are in parentheses. Correlations between all exogenous variables and residuals were allowed at each panel wave. ε_1- ε_2: Media exposure W2-3, ε_3- ε_4: Crime perceptions W2-3. RMSEA: root mean square error approximation, CFI: comparative fit index. Source: LORE – Cultivation Panel

Appendix 13.

Table. Cross-lagged models of crime perceptions and alternative news media use with interpersonal communication as moderating variable (without control variables)

	Never discuss crimes	Sometimes discuss crimes	Frequently discuss crimes
Media exposure w2			
Crime perceptions w1	-.027	.070*	.033
	(.067)	(.030)	(.049)
Media exposure w1	.618***	.601***	.660***
	(.045)	(.021)	(.033)
Media exposure w 3			
Crime perceptions w2	.058	.049	-.005
	(.057)	(.028)	(.042)
Media exposure w2	.379***	.405***	.302***
	(.064)	(.029)	(.051)
Media exposure w1	.344***	.356***	.502***
	(.066)	(.030)	(.048)
Crime perception in wave 2			
Media exposure w1	.038	.031	-.016
	(.063)	(.026)	(.042)
Crime perception w1	.740***	.794***	.802***
	(.044)	(.016)	(.025)
Crime perception in wave 3			
Media exposure w2	.067	-.008	.016
	(.039)	(.018)	(.029)
Crime perceptions w2	.772***	.791***	.680***
	(.056)	(.030)	(.045)
Crime perceptions w1	.165*	.144***	.016***
	(.066)	(.035)	.050
N	213	932	318
Var			
ε_1	.623	.624	.556
ε_2	.562	.522	.455
ε_3	.441	.362	.361
ε_4	.167	.174	.177
Cov			
$\varepsilon_2. \varepsilon_3$	.069	.000	.063
$\varepsilon_5. \varepsilon_6$	.012	-.056	-.013
X^2			
Df	14.151	14.151	14.151
P-value	.028	.028	.028
RMSEA	0.053	0.053	0.053
CFI	0.998	0.998	0.998
R2	.771	.809	.864

***$p<0.001$. **$p<0.01$. *$p<0.05$. Comment: Results from cross-lagged structural equation model using maximum likelihood with missing values estimation. Estimates are standardized path coefficients and standard errors are in parentheses. Interpersonal communication about crimes with friends and family used as group variable. Correlations between all exogenous variables and residuals were allowed at each panel wave. ε_1- ε_3: Media exposure W1-3, ε_4-ε_6: Crime perceptions W1-3. RMSEA: root mean square error approximation, CFI: comparative fit index. Source: LORE – Cultivation Panel

Appendix 14.

Table. Cross-lagged models of crime perceptions and alternative news media use with interpersonal communication as moderating variable (incl. control variables)

	Never discuss crimes	Sometimes discuss crimes	Frequently discuss crimes
Media exposure in wave 1			
Gender	.184**	.133***	.244***
	(.066)	(.032)	(.052)
Education	.088	-.015	.008
	(.067)	(.033)	(.054)
Age	-.201**	-.058	.244**
	(.065)	(.033)	(.053)
Media exposure in wave 2			
Crime perceptions w1	-.004	.065*	.040
	(.066)	(.030)	(.049)
Media exposure w1	.612***	.606***	.664***
	(.044)	(.021)	(.032)
Media exposure in wave 3			
Crime perceptions w2	.055	.052	.000
	(.057)	(.028)	(.042)
Media exposure w2	.379***	.404***	.301***
	(.064)	(.029)	(.051)
Media exposure w1	.350***	.358***	.503***
	(.067)	(.031)	(.049)
Crime perceptions in wave 1			
Gender	-.035	-.006	-.078
	(.080)	(.036)	(.060)
Education	-.175*	-.249***	-.195**
	(.077)	(.035)	(.057)
Age	.228**	.166***	.126*
	(.076)	(.036)	(.059)
Crime perception in wave 2			
Media exposure w1	.089	.045	.004
	(.062)	(.025)	(.041)
Crime perception w1	.749***	.799***	.800***
	(.042)	(.015)	(.024)
Crime perception in wave 3			
Media exposure w2	.075	-.006	.017
	(.040)	(.018)	(.029)
Crime perceptions w2	.776***	.784***	.677***
	(.057)	(.030)	(.045)
Crime perceptions w1	.163*	.151***	.269***
	(.080)	(.039)	(.056)
N	213	932	318
Var			
ε_1	.923	.978	.895
ε_2	.626	.629	.560
ε_3	.565	.525	.456
ε_4	.913	.897	.936
ε_5	.440	.360	.361
ε_6	.173	.174	.177
Cov			
$\varepsilon_2, \varepsilon_3$	.067	.001	.052
$\varepsilon_5, \varepsilon_6$	.016	-.060	-.014
X^2			
Df	128.5	128.5	128.5
P-value	.000	.000	.000
RMSEA	0.062	0.062	0.062
CFI	0.980	0.980	0.980
R2	.154	.123	.160

***$p<0.001$. **$p<0.01$. *$p<0.05$. Comment: Results from cross-lagged structural equation model using maximum likelihood with missing values estimation. Estimates are standardized path coefficients and standard errors are in parentheses. Interpersonal communication about crimes with friends and family used as group variable. Correlations between all exogenous variables and residuals were allowed at each panel wave. ε_1- ε_3: Media exposure W1-3, ε_4-ε_6: Crime perceptions W1-3. RMSEA: root mean square error approximation, CFI: comparative fit index. Source: LORE – Cultivation Panel