The Relationship between Incidental News Exposure on Social Media and Anxiety, and the Moderating Role of Optimism

Sarah Dittmar (s2262703)

Bachelor Thesis

Department of Positive Clinical Psychology and Technology

University of Twente

1st supervisor: Mieke van Bergen

2nd supervisor: Lonneke Lenferink

July 1, 2022

Table of Contents

Abstract

Background. There is great consensus in current research that exposure to negative news is directly related to an individual's well-being, and that fear, sad mood and anxiety increase with increasing news exposure. With social media as a growing news channel, being updated about current events is part of people's everyday lives. However, due to the pervasive nature of the news, being exposed to them may also happen unintentional. This type of news exposure is called incidental news exposure.

Objective. In this study the relationship between incidental news exposure on social media and anxiety was examined. In addition to that it was studied whether optimism is a protective moderating factor in this relationship.

Methods. For this study a cross-sectional survey design was employed, which measured a participant's incidental news exposure. Furthermore, the State Trait Anxiety Inventory (STAI) and the Life Orientation Test – Revised (LOT-R) were administered to measure anxiety and optimism.

Results. The moderation analysis revealed a non-significant relationship between incidental news exposure and anxiety. A significant negative relationship was found between optimism and anxiety and a moderating effect of optimism was present in the model.

Conclusion. Overall, the study results showed that incidental news exposure is not related to anxiety. However, the model revealed a significant moderation effect of optimism, meaning that the relationship between incidental news exposure and anxiety is influenced by optimism. This effect was however found to be positive, meaning that with increasing optimism anxiety also increases. This was contradictory to the expectation that optimism could protect people from anxiety. A further significant finding of this study was that higher levels of optimism are associated with lower levels of anxiety.

The Relationship between Incidental News Exposure on Social Media and Anxiety, and the Moderating Role of Optimism

With the rise of online news and social media as a growing news channel, news are all around us and we are exposed to news on the latest events even though we may not be actively seeking them (Strauß et al., 2020). Reports on terrorist attacks, war, natural disasters, and other traumatic events are ubiquitous parts of our daily lives (de Hoog & Verboon, 2020). In today's digitalized world, encountering these traumatizing images, without the direct intention to do so, happens regularly. Being exposed to news in this unintentional way is called incidental news exposure (Ahmadi & Wohn, 2018).

Constant exposure to negative and dramatic news has an impact on our well-being and is likely to evoke negative emotional states, such as worry, sadness, and fear (Bunn & Farmer, 2021; de Hoog & Verboon, 2020). The frequency and extent with which we consume these negative news, intentional or unintentional, intensifies this adverse effect even further (Bodas et al., 2015). Considering the growing amount of news exposure, this study aims at investigating the impact of negative news on people's mental well-being in more depth.

Taking into account the harmful effect that negative news exposure can have on an individual's well-being, studying protective factors that can buffer people from those adverse consequences induced by news exposure is a crucial step for the research in this field. One such factor that helps people to be less affected by adversity in general, is to adopt a positive thinking style, also known as optimism (Scheier et al., 2001). From previous research, optimism has been shown to predict psychological well-being and might thus also protect people from being adversely affected by negative news (Kardas et al., 2019). Being able to figure out if optimism can moderate the relationship between incidental news exposure and mental well-being would contribute to the understanding of how negative news affect us.

Incidental News Exposure and Anxiety

Over the last decade, the way we consume news has changed in many ways and there has been a major shift towards using social media to stay informed about the current news of the world (Strauß et al., 2020). In fact, social media is becoming one of the major news sources of the 21st century and especially young people use this as a platform to stay up to date. Even though there is a trend in using social media for newsgathering, it is still mainly focused on the socializing and connecting aspect, therefore encountering news via these platforms is often unintentional and inadvertent (Park & Kaye, 2020). Users often go onto a social media platform for entertainment or out of habit and not with the intention to get

updated about the most recent events, nevertheless, they get incidentally exposed to news. Reports have shown that 59% of Facebook users are being confronted with news they were not actively seeking (Ahmadi & Wohn, 2018). The same applies to YouTube and Instagram, where a majority of users encounters news when using the site for non-news-related purposes (Yamamoto & Morey, 2019).

With social media as a growing news channel, news are more prevalent in our everyday lives and we are more often incidentally exposed to news reports. Studies have shown that the majority of the news we are confronted with covers a range of negative topics, like climate change, crime, natural disasters, or war (de Hoog & Verboon, 2020). Next to that the negativity of the news becomes more noticeable since negative and dramatic news topics are more likely to catch our attention and they have a long-lasting impact on us even though we were not actively searching for them (Goyanes & Demeter, 2020). At this point, incidental news exposure plays a critical role because people are increasingly exposed to negative news content without even looking for it and it is unavoidable to be confronted with news of this kind.

Being constantly exposed to negative news like this is likely to affect our mental well-being and experimental studies have found that negative news exposure contributes to psychological distress (Bunn & Farmer, 2021). Unintentional encounters with negative news can be seen as a daily stressor which therefore influences an individual's mood and anxiety level. Next to that, dramatic news imagery has been shown to be directly related to anxiety and fear (Bodas et al., 2015). In support of this finding, an experimental study has shown that when being shown news on negative topics, anxiety, personal worries, and sad mood increase (McNaughton-Cassill, 2001). Although we are often not directly exposed to the dramatic event reported on the news, we perceive them as a threat, which can trigger fear and anxiety.

It was found that the more people are exposed to negative news, the higher their psychological distress, anxiety and fear were. Prior research has shown that higher dramatic news exposure, covering topics like the Boston Marathon Bombing or 9/11, leads to more psychological distress (Stainback et al., 2020). This effect was also found in the news coverage of the COVID-19 pandemic, where the amount of news exposure determined the negative consequences experienced as a response (Stainback et al., 2020). This shows that the frequency and extent with which we consume negative news is decisive in how it affects us (Bodas et al., 2015). Therefore, it can be the case that through incidental exposure, which is rapidly growing, anxiety and fear induced by the news is increasing as well.

Optimism as a Moderator

Knowing that exposure to negative and dramatic news is linked to anxiety, fear, and worry it is relevant to study possible protective factors that can buffer people from being affected by these kinds of negative mental states. This is specifically important, considering that people inadvertently come across news and it is almost impossible to avoid being exposed to news in one way or another (Strauß et al., 2020). In psychology, there are traits or qualities that emerged as having an adaptive function on the way people are affected by adversity in life in general.

One of these adaptive traits is optimism, which has been shown to buffer people in times of adversity. People who are more optimistic tend to have a positive outlook on the future and even in the face of adversity, they believe that positive outcomes will come (Arslan & Yıldırım, 2021). Optimism as a trait has for example been associated with an increase in psychological well-being and can be considered a protective factor against anxiety-inducing events (Vos et al., 2021). Studies have shown that, people who are low in optimism experience higher levels of anxiety in times of uncertainty and distress.

Support for the protective nature of optimism was shown in a study about fear of COVID-19, where it was revealed that optimism moderated the relationship between fear of COVID-19 and anxiety (Vos et al. 2021). In this case, optimism protected people from experiencing anxiety. For highly optimistic people, anxiety decreased even though fear of COVID-19 increased. Knowing that optimism has the potential to be a moderator between psychological distress and anxiety, it might as well be the case that optimism can moderate the relationship between incidental news exposure and anxiety. Thus, people who have a more optimistic attitude towards life are probably less affected by negative news and do not experience anxiety as a response to these news.

Present Research

Most of the currently available research on incidental news exposure has been about its effect on actual news consumption, political engagement, or knowledge, but not specifically about the effect incidental news exposure might have on an individual's psychological well-being (Goyanes & Demeter, 2020; Yamamoto & Morey, 2019). Therefore, it is one of the studies' aims to address this knowledge gap. It is also well established that negative and dramatic news evoke negative emotions, such as anxiety, but it is not known what the nature of this effect is when we are being exposed to news in an unintentional way (Bodas et al., 2015; Bunn & Farmer, 2021). Having established this

relationship it is relevant to study factors that buffer people from anxiety induced by the news. Considering the positive effect optimism has on mental well-being it is reasonable to assume that it might also have a buffering effect on the anxiety evoked by negative news (Vos et al., 2021). Therefore, this research will study the relationship between incidental news exposure and anxiety, while focusing on social media as a news channel. Next to that, the potentially protective factor of optimism will be studied and included as a moderator between incidental news exposure and anxiety.

Building upon existing research two research outcomes were predicted. First of all, *it was predicted that individuals who are highly exposed to news on social media, without the intention to do so, report higher levels of anxiety compared to those with low incidental news exposure*. Next to that, *it was expected that for individuals who are high in optimism the anxiety-inducing effect of the negative news would decrease*. A visualisation of these hypothesised relationships is displayed in Figure 1.

Figure 1

Model of the Hypothesised Relationships
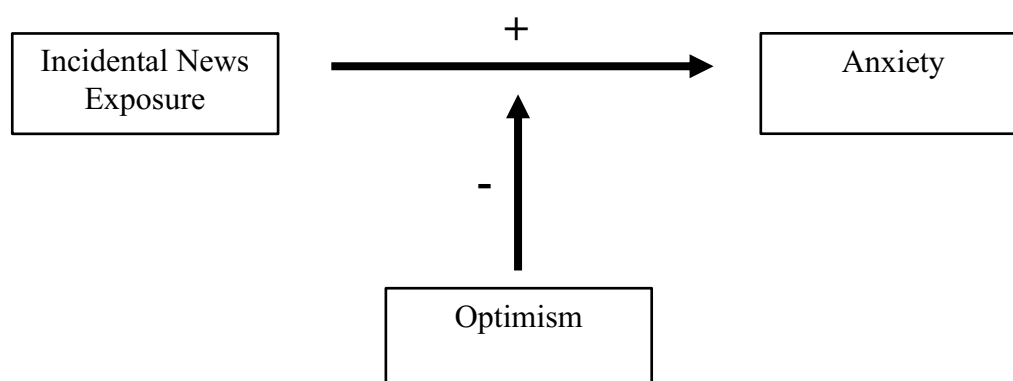
Methods

Design

The current study employed a cross-sectional survey design to study the relationship between incidental news exposure, anxiety, and optimism. Incidental news exposure was treated as the independent variable and anxiety as the dependent. The third variable optimism was tested to be a moderator between these two variables.

Participants

To recruit participants for this study convenience sampling, as well as snowball sampling, was applied. By making use of the Test Subject Pool System (SONA) of the University of Twente, through which students from the university can gain credits by participating in studies, participants were recruited for the study. In addition to that, the participation link was shared on social media. Friends and family were also encouraged to share the survey with their friends and families. Inclusion criteria for the study were that the participants had to be at least 18 years old and had to have sufficient English skills. As the study was conducted with an online questionnaire internet access via a smartphone, laptop or computer was required as well. There were no further inclusion or exclusion criteria besides these.

In total, 399 people took the survey, however, only 327 completed all the relevant questionnaires for this study and were thus included in the analysis. From the final sample, 224 were female, 100 male, and 3 identified as non-binary. The participants' ages ranged from 18 to 44 ($M = 22.06$, $SD = 3.31$). In the sample, 35 different nationalities were represented, with the majority from Germany (127), Lithuania (102), and The Netherlands (33).

Materials and Measures

This study was part of a bigger research project, consisting of three individual studies with different research questions, but all relating to incidental news exposure. Data collection was done with one big survey and therefore some questionnaires were not relevant for this study. In the following part, only the questionnaires relevant to this study are described. The survey was designed with the online platform Qualtrics (https://www.qualtrics.com).

Demographics

At the beginning of the questionnaire demographic questions concerning gender, age and nationality were asked.

Social Media Use

To get an overview of how much time participants spent on social media platforms, six items from the Pew Research Center were used (Barthel et al., 2022). Participants were asked how often they visit different social media apps or platforms. On a four-point Likert scale (1 = "Never", 4 = "Often") social media use was assessed for six different platforms (Facebook, YouTube, Twitter, Snapchat, Instagram, and WhatsApp) (see Appendix A).

Incidental News Exposure

Based on previous research incidental news exposure was measured with six items. Participants were asked how often they encounter news online without actively looking for news (Barnidge & Xenos, 2021). On a seven-point Likert scale (1 = "Never", 7 = "Very often") participants had to indicate incidental news exposure for six different types of social media channels (e.g., Facebook, Instagram, YouTube, etc.) (see Appendix B). The scores on these six items were averaged and used as an indicator of the independent variable incidental news exposure. The reliability of these six items is good, as indicated by a Cronbach's alpha of 0.90 (Barnidge & Xenos, 2021). In this sample, the reliability was 0.49.[1]

Anxiety

To measure the participants' level of anxiety a short version of the State Trait Anxiety Inventory (STAI) was administered (Zsido et al., 2020). The STAI is a self-report measure for anxiety, which originally consists of 20 items, however for feasibility reasons a validated short form of this test was used in this study. The short version consists of two scales with five items each, one scale (STAIS-5) to measure state anxiety and the other scale (STAIT-5) to assess trait anxiety. An example of an item of the state anxiety scale is "I feel nervous", for the trait scale an example would be "I worry too much over something that really doesn't matter". For both scales, participants had to answer on a four-point Likert scale (0 = "not at all", 3 = "very much so") (see Appendix C). All the ten item ratings are summed up resulting in a total score between 0 and 30, with higher scores being an indication of higher anxiety levels. The reliability for both scales is excellent, indicated by a Cronbach's alpha of 0.86 for the trait scale and 0.91 for the state scale (Zsido et al., 2020). With an alpha of 0.86, the total scale also showed good reliability in this sample.

Optimism

The Life Orientation Test – Revised (LOT-R) was used to measure optimism (Scheier et al., 1994). The scale consists of 10 items, three of those assess optimism, three others pessimism, and the other four serve as filler items. Participants answered on a five-point Likert scale (0 = "strongly disagree", 4 = "strongly agree") (see Appendix D). The total score of this scale is between 0 and 24, where a higher total score indicates higher levels of

---

[1] Reasons for the unreliability of the scale in this sample might be that the six items that measured incidental news exposure for different social media platforms were internally unrelated. As Cronbach's alpha calculates the reliability by means of internal consistency and it is certainly possible that there are inconsistencies between incidental news exposure on different social media platforms, Cronbach's alpha turned out be low.

optimism. The reliability coefficient (Cronbach's alpha) of the scale is 0.68 (Glaesmer et al., 2012). In this study, the reliability of the LOT-R was questionable with an alpha of 0.66.

Procedure

Before starting the data collection ethical approval was requested from the Ethics Committee of the University of Twente. By receiving ethical approval (#220375), it was ensured that all ethical guidelines and responsibilities were followed during the study. After this had been obtained, the survey was uploaded to the study platform SONA and the link for the survey was shared via social media.

At the beginning of the questionnaire, participants received an introduction about the study, which included the aim of the study, eligibility criteria, the participants' rights, and the researchers' contact details. This was followed by a request to give consent. The first questions concerned the demographic data of the participants. As a next step, the participants were asked about their social media use and incidental news exposure on social media. Following this, the different questionnaires for the involved variables, in the case of this study the short version of the STAI and the LOT-R, were administered in random order to avoid unequal distribution of missing data due to dropout of the study.

The set-up of the survey made it impossible to skip questions, therefore participants had to answer every item. In the end, the participants were thanked for their participation. Then, the survey was finished.

Data Analysis

All the collected data was exported from Qualtrics and imported into the statistical software SPSS, which was used for the statistical analyses. Before starting with the actual analysis, a few changes had to be made to the variables at hand. The six items measuring social media use were summed and divided by six to get one variable, namely "social media use", for further analysis. The final variable that indicates incidental news exposure was calculated by summing up each participant's scores on the six items and then dividing this by six. A variable for the participant's anxiety level was created by summing up the scores of both state and trait anxiety scales. The variable for optimism was calculated by summing up the three items for optimism with the reversed ratings of the three items for pessimism, the four filler items were not scored.

To explore the data regarding gender and age frequency tables were used. Then, descriptive statistics, in the form of means, standard deviations, and minimum and maximum were calculated for social media use and incidental news exposure. Furthermore, means,

standard deviations, and minimum and maximum were computed for both anxiety levels and optimism. To explore the relationship between the four variables at hand, Pearson correlation coefficients were calculated. The reliability for the short version of the STAI and the LOT-R was estimated by calculating Cronbach's alpha using the statistical software SPSS.

Both hypotheses were tested by performing a moderation analysis. In this model incidental news exposure was used as a numeric predictor variable and the anxiety variable as an outcome variable, optimism was included as a third variable and was tested to be a moderator. It was examined whether an increase in incidental news exposure leads to an increase in anxiety level and if this effect is weaker when optimism levels are higher. First of all, the linear assumptions of normality and homoscedasticity were tested. Normality was assessed by looking at the histogram of the residuals and homoscedasticity was checked for by making a scatterplot with the residuals on the Y-Axis and incidental news exposure and optimism on the X-Axis. As two predictor variables are included in the model, multicollinearity had to be checked as well. This was done by looking at the variance inflation factor (VIF) values, which need to be below 10.00 to rule out multicollinearity between incidental news exposure and optimism. For the moderation analysis version 4.0 of the PROCESS macro extension by Andrew Hayes was used (Hayes, 2017). Model 1 was chosen for the analysis, as this performs a simple moderation analysis.

Results

Descriptive Statistics

The descriptive statistics for the variables social media use, incidental news exposure, anxiety, and optimism are displayed in Table 1. Next to that, the correlations between the main variables are given in the table. From the Pearson Correlation analysis, it was revealed that there is a significant correlation between incidental news exposure and social media use, as well as between optimism and anxiety. For the other variables, no significant correlations were found.

Table 1

Descriptive Statistics and Correlations for the Main Variables

| Variable	Minimum (Scale Minimum)	Maximum (Scale Maximum)	N	Mean (*SD*)	1	2	3	4
1. Social Media Use	2 (1)	4 (4)	327	2.83 (*0.42*)	-			
2. Incidental News Exposure	1 (1)	6 (7)	327	3.80 (*0.99*)	0.39**	-		
3. Anxiety	0 (0)	27 (30)	327	11.15 (*6.11*)	-0.04	0.07	-	
4. Optimism	2 (0)	24 (24)	327	11.81 (*4.17*)	0.37	0.03	-0.4**	-

Note. SD = Standard Deviation

** p <.01.

   When looking at the different social media platforms and comparing the means of incidental news exposure between these it becomes clear that the participants encounter the most incidental news via photo-sharing websites, like Instagram or Pinterest ($M = 4.64$, $SD = 1.84$). This is closely followed by social networking websites, like Facebook ($M = 4.59$, $SD = 1.88$), and video-sharing websites, for example YouTube ($M = 4.48$, $SD = 1.69$). From the data of this study, the lowest incidental news exposure happened via Microblogging websites ($M = 2.87$, $SD = 1.96$). The average amount of incidental news exposure per social media platform is displayed in Figure 2.

Figure 2

Bar Chart Depicting the Mean of Incidental News Exposure for the Different Social Media Platforms
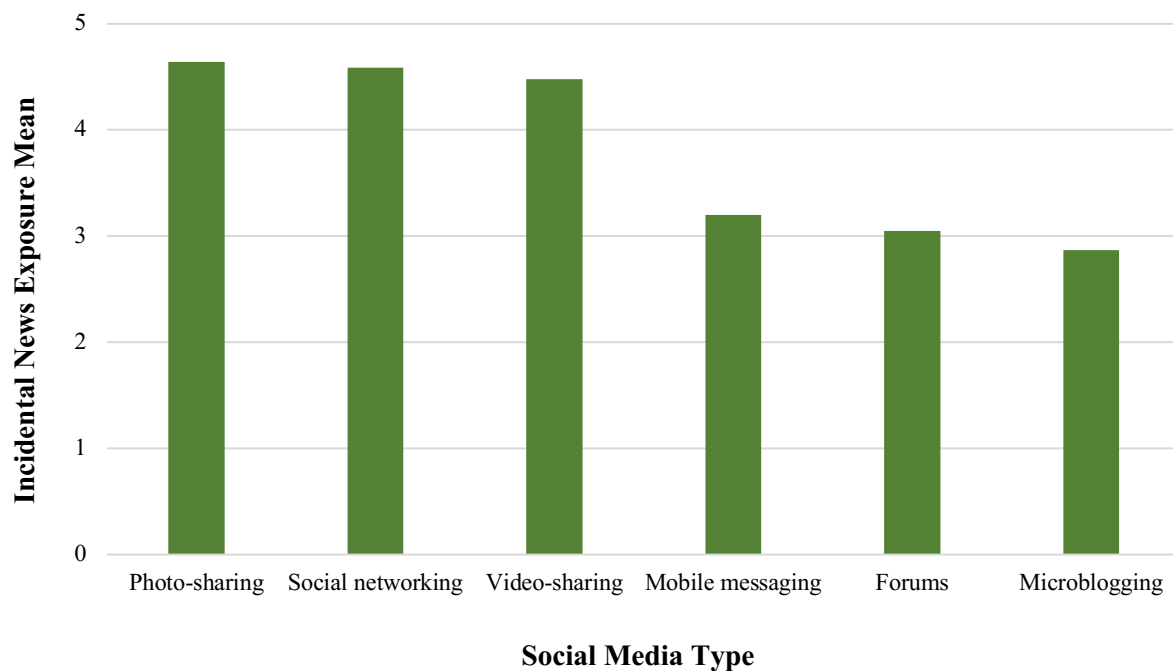
Incidental News Exposure, Anxiety and Optimism

The relationship between incidental news exposure and anxiety was analysed by running a moderation analysis. For the model, the assumptions of normality, as well as homoscedasticity were both met (see Appendix E). As all the VIF values were lower than 10.00 multicollinearity could also be ruled out.

The specific results of the moderation analysis that was run with the PROCESS macro extension are given in Table 2. According to the moderation model, the effect between incidental news exposure and anxiety was found to be non-significant (see Table 2). Thus, there is no relationship between incidental news exposure and anxiety present in the model. As a next step, the effect of optimism on anxiety was examined. For this effect the model showed significant results, meaning that optimism is related to anxiety as an independent variable (see Table 2). Higher scores in optimism are related to lower scores in anxiety. In addition to that, the moderating effect of optimism on the relationship between incidental news exposure and anxiety was tested with this model. The model showed that optimism significantly moderates this relationship (see Table 2). The overall moderation model was also found to be significant, predicting 17.65 % of the variance in anxiety levels, $F_{(3, 323)} = 23.08$, $p < .001$. However, since the model showed no significant main effect between the

independent and the dependent variable, this moderation can be considered a crossover interaction.

Table 2

Moderation Analysis for the Moderating Effect of Optimism on the Relationship between Incidental News Exposure and Anxiety

	b	SE	t	p
Constant	11.13	0.31	36.18	< .000
Incidental News Exposure	0.52	0.31	1.66	0.09
Optimism	-0.61	0.07	-8.04	<.000
Incidental News Exposure X Optimism	0.15	0.07	2.08	0.04

When looking at the SPSS output for the conditional effects of the independent variable incidental news exposure on anxiety for different levels of optimism, the results showed that only for high levels of optimism the effect was significant (see Table 3). The exact values for the conditional effects are given in Table 3. A visualization of the results can be seen in Figure 3 which shows the relationship between incidental news exposure and anxiety moderated by optimism in a graph.

Table 3
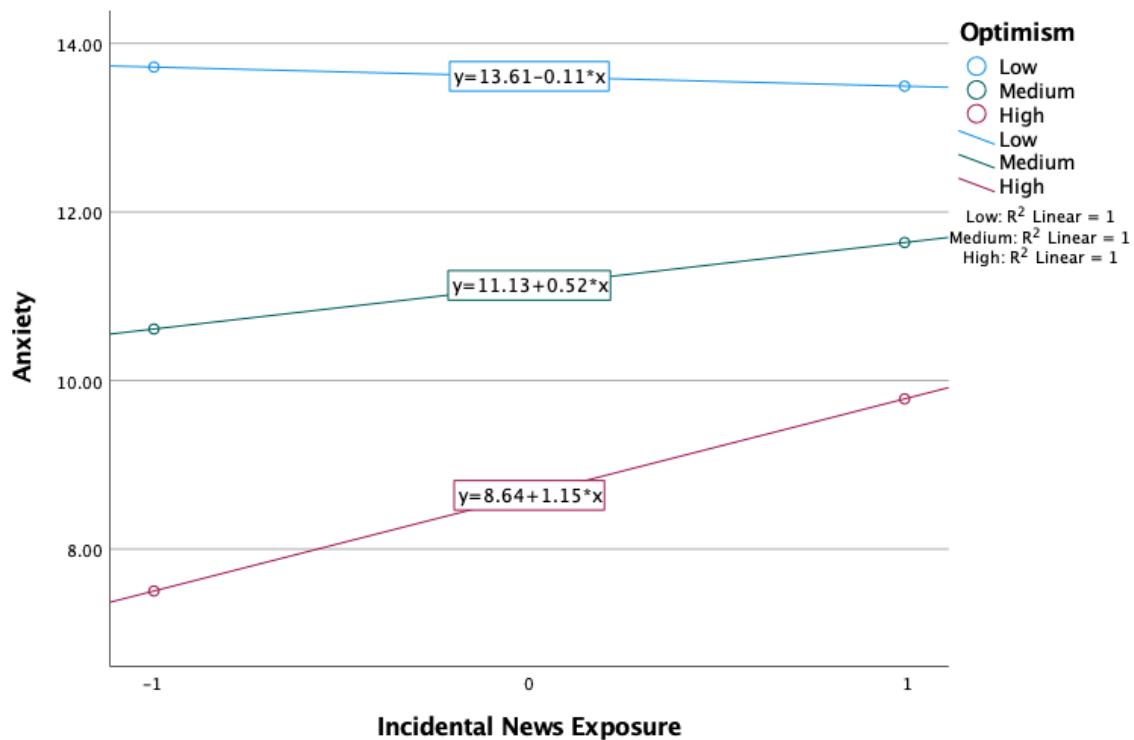
Conditional Effects of Incidental News Exposure for Different Levels of Optimism

	b	SE	t	p
Low	-0.11	0.43	-0.26	0.79
Medium	0.52	0.31	1.67	0.1
High	1.15	0.44	2.63	0.01

Figure 3

The Relationship between Incidental News Exposure and Anxiety for Different Levels of Optimism

Note. Incidental News Exposure was centred and -1 indicates low exposure, 0 medium exposure and 1 high exposure.

Concludingly, the model revealed no relationship between incidental news exposure and anxiety, meaning that there is no main effect between the independent and the dependent variable. However, the model showed a significant relationship between optimism and anxiety and a moderating effect for high levels of optimism was found in the model.

Discussion

The overall purpose of this study was to investigate the relationship between incidental news exposure on social media and anxiety and to examine the potential moderation effect of optimism in this relationship. More specifically, it was checked if the expectation, that participants who are highly exposed to news on social media without actively looking for news, experience more anxiety, holds. Next to that the hypothesis that highly optimistic people are buffered from this negative effect, was tested in this study.

From the study, three main findings emerged. First of all, the hypothesis that people who are highly exposed to news on social media when using the platform for non-news-

related purposes experience higher levels of anxiety was not supported by the results. The relationship between incidental news exposure and anxiety was non-significant, which means that incidental news exposure had no effect on anxiety. The second finding of this study showed that there was a significant moderation effect for high levels of optimism. This effect was found to be positive, which applied to the variables means that with increasing incidental news exposure anxiety increases, for high levels of optimism. This being the case, the results in fact contradicted the second hypothesis, and the expectation that for highly optimistic people anxiety decreases with increasing incidental news exposure had to be rejected. Since the moderation model as a whole was found to be significant it can be inferred that incidental news exposure, moderated by optimism affects anxiety. Lastly, the results of this study revealed a significant negative relationship between optimism and anxiety. It was found that higher levels of optimism are associated with lower levels of anxiety.

Interpretation and Implications of Results

The finding that incidental news exposure on social media is not significantly related to an individual's anxiety level was contrary to the expectations made beforehand. A study conducted by Bodas et al. (2015) could show that negative news exposure is directly related to an individual's anxiety level, more specifically more negative news were found to be associated with higher levels of anxiety. Therefore, the results of this study were unexpected in light of prior research (Bodas et al., 2021; de Hoog & Verboon, 2019). However, it is important to notice the difference between many of these previous studies, which investigated news exposure in general and not specifically incidental news, and the present study. As the present study examined the association between incidental news exposure on social media and anxiety, it might be the case that news that are encountered unintentionally are unrelated to anxiety. Even though it was reasonable to assume that incidental news exposure might impact an individual's anxiety level, from the data of this study it was revealed that these two variables are not associated with each other. In support of these results are the results of a study with a comparable sample size, which could also not find a significant direct relationship between news exposure and anxiety (Bunn & Farmer, 2021). From Bunn and Farmer's (2021) study and the current study, the controversy and inconsistency in the research surrounding this topic become clear, which emphasises the need for further studies on the phenomenon of incidental news exposure.

A plausible explanation for the non-existent relationship between incidental news exposure and anxiety in this study is the possibility that news content on social media, that

was not actively searched for, is not given any attention, and is simply ignored by the user. This was also found in a study by Goyanes and Demeter (2020), which revealed that people often do not read through the news posts and do not even click on them. Given that people do not pay specific attention to news posts it makes sense that a person's mental state is not affected by this in any way. If this was also the case for most of the participants in this study, it explains why there was no relationship found. The idea that incidental news content is ignored by users would lead to the conclusion that these kinds of news are irrelevant to study since they do not affect the user in any way. However, based on the results of this study this claim cannot be made without further research backing up on it.

 Although there was no main effect between incidental news exposure and anxiety, the data revealed a significant moderation effect of optimism. More specifically there was a significant moderation effect only for high levels of optimism, meaning that the effect of incidental news exposure on anxiety was notably influenced when optimism is high. For more optimistic people incidental news exposure had a stronger impact on their anxiety level compared to those individuals who are less optimistic. It could be seen that in people who reported low levels of optimism, anxiety levels were higher in general and in that case, incidental news exposure did not lead to significant changes in anxiety. However, for those who were very optimistic, increasing incidental news exposure was associated with a significant increase in anxiety. This finding in fact contradicts the second hypothesis. Based on prior research it was expected that optimism could protect people from experiencing anxiety induced by negative news exposure. For example, Yu et al. (2015) could show that optimism could buffer people from anxiety caused by rumination and worrying. Yet, the results of this study showed no such protecting effect of optimism.

 Based on these results two interpretations can be made. First of all, it could be the case that for people who are already anxious and less optimistic, news exposure has no additional impact on their anxiety level, as the level is already high. Supporting this claim is the idea of defensive pessimism, which is a coping mechanism that helps people deal with anxiety (Norem, 2008). For the results of this study, this implies that people who were low in optimism and thus higher in pessimism, adopted defensive pessimism to regulate their anxiety levels. For that reason, anxiety did not increase further with increasing incidental news exposure.

 The finding that for highly optimistic people, increasing incidental news exposure led to a stronger increase in anxiety seems contradictory at first. However, it might be the case that the highly optimistic people were unrealistically optimistic and were thus more affected

when being unintentionally confronted with negative news on social media. Unrealistically optimistic people believe that they will be less affected in threatening situations compared to others and that they are immune to adverse events (Dolinski et al., 2021). It is possible that negative news exposure on social media posed a threat to their usually optimistic outlook, since these news confronted them with reality, and therefore resulted in an increase in anxiety as a response to this reality shock. Considering this, the results of this study demonstrated that optimism is not always beneficial, and that careful attention needs to be paid to the type of optimism that people employ.

Despite the fact that optimism did not seem to protect people from anxiety induced by incidental news, optimism was still significantly related to anxiety. The findings revealed that there is a significant correlation between optimism and anxiety as well as an independent relationship between optimism and anxiety. This supports the results of existing studies where it was found that people who are highly optimistic experience less anxiety (Vos et al., 2021). The same was the case in this study, meaning that those individuals who scored high on optimism reported lower levels of anxiety. This effect shows that optimism is a beneficial attribute for people's overall well-being, and it highlights the possibility of using optimism as a factor that can indeed protect people from anxiety. This being considered, interventions could, for example, make use of this effect, and by helping people to become more optimistic decrease their anxiety.

Strengths and Limitations

Although the findings of this study did not support the expected relationship between incidental news exposure and anxiety, there are strengths that this study holds. First of all, the sample size of 327 can be viewed as good. Calculations of sample sizes for moderation analyses revealed that for a significance level of 0.5 and a power of 0.95 the minimum sample size is 147 (Shieh, 2009). As the study was conducted fully online and there were only a few inclusion criteria the survey reached a lot of people. Another strength of this study is that the reliability of the STAI was found to be good, thus it can be assumed that anxiety was accurately measured in the sample.

Nevertheless, this research also has its weak points. One limitation of this study was the reliability of the LOT-R, which was administered to measure the construct optimism. It makes sense that the reliability was not good, since the scale had only three items that measure optimism, the other three items measured pessimism which are therefore not related to the optimism items, and the four filler items might have also been unrelated. As the

reliability of the scale was found to be questionable in this study it is also questionable if the scores from this scale were a reliable and valid tool to measure optimism in the sample.

Another possible limitation is the measurement of incidental news exposure. Considering the retrospective nature of the assessment of incidental news exposure, recall bias might have been an issue. Previous studies have shown that a lot of the time people are not able to accurately recall the amount of news they were exposed to (González-Bailón & Xenos, 2022). A recurring pattern that was found in recall-based assessments of news exposure was underestimation, meaning that individuals are exposed to more news than they report on afterwards. For this study, this could mean that participants encountered much more incidental news than they indicated in the questionnaire. Since incidental news exposure occurs unintentionally it might be even harder for the participants to recall every incident they were accidentally exposed to news. Therefore, getting a valid score that represents incidental news exposure is by definition extremely difficult.

Future Research

Considering these limitations of the present study, future research must address those and pay more attention to these aspects. First of all, it should be aimed at measuring optimism in a more reliable and valid way. Since the LOT-R is the most widely used scale for optimism and there are no scales that show better reliability, it might be an option to combine two or more scales to get a broader score for optimism. Having more items in a scale has the potential to increase internal reliability.

A further possibility for future research to get a more sophisticated insight into the relationship between incidental news exposure on social media and anxiety is to employ a different study design. To find out if individuals who are highly exposed to negative news on social media report higher levels of anxiety, an experimental study design could be used. As there are already existing experimental studies investigating the relationship between negative news exposure and negative emotional states, future research could build up on these studies and examine the effect that incidental news exposure has on emotional states, or more specifically on anxiety (de Hoog & Verboon, 2020). Keeping in mind the difficulties of measuring incidental news exposure, deliberate attention has to be paid to the assessment of this construct. One way of assessing incidental news exposure in a more sophisticated way is, for example, by making it an experimental condition. A study like this could be set up with two groups of which one receives incidental news on social media and the other group does

not. By having an experimental group and a control group, the potential effect that incidental news have on an individual's anxiety level can be estimated more accurately.

In consideration of the unexpected finding, that optimism did not protect people from anxiety induced by incidental news exposure but instead led to a stronger increase in anxiety for higher levels of optimism, future research should build up on this and investigate this more deeply. As introduced prior, it could be the case that unrealistic optimism might present a possible explanation for this finding. Therefore, it could be an interesting factor to look at in the future to get a better understanding, of how exactly optimism moderates the relationship between news exposure and anxiety.

Conclusion

This study could provide new insights into the relationship between incidental news exposure and an individual's anxiety level. From the results no significant relationship was found between incidental news exposure and anxiety, meaning that these two constructs appear to be unrelated. As this was one of the first studies investigating this specific relationship, there is still room for improvement, especially in the measurement of incidental news exposure. In contrast to the expectations that optimism has a buffering effect on the relationship between news exposure and anxiety, the opposite was found, meaning that for highly optimistic people, incidental news exposure led to an increase in anxiety. This finding opens up an interesting new research question for future research to investigate. In addition to that, this study could make a valuable contribution to the research field of optimism, by showing that higher optimism is associated with lower anxiety. This emphasizes the importance of optimism for an individual's psychological well-being. In practice, this knowledge could be employed to potentially decrease anxiety among people.

References

Ahmadi, M., & Wohn, D. Y. (2018). The antecedents of incidental news exposure on social media. *Social Media + Society*, *4*(2). https://doi.org/10.1177/2056305118772827

Arslan, G., & Yıldırım, M. (2021). Coronavirus stress, meaningful living, optimism, and depressive symptoms: A study of moderated mediation model. *Australian Journal of Psychology*, *73*(2), 113-124. https://doi.org/10.1080/00049530.2021.1882273

Barnidge, M., & Xenos, M. A. (2021). Social media news deserts: Digital inequalities and incidental news exposure on social media platforms. *New Media & Society*, 14614448211059529. https://doi.org/10.1177/14614448211059529

Barthel, M., Mitchell, A., Asare-Marfo, D., Kennedy, C., & Worden, K. (2022, March 13). *Measuring News Consumption in a Digital Era*. Pew Research Center's Journalism Project. https://www.pewresearch.org/journalism/2020/12/08/measuring-news-consumption-in-a-digital-era/

Bodas, M., Siman-Tov, M., Peleg, K., & Solomon, Z. (2015). Anxiety-inducing media: The effect of constant news broadcasting on the well-being of Israeli television viewers. *Psychiatry*, *78*(3), 265-276. https://doi.org/10.1080/00332747.2015.1069658

Bunn, R. R., & Farmer, A. S. (2021). Is ignorance bliss? The relationship between news exposure and anxiety levels in adults. *The New School Psychology Bulletin*, *18*(1), 38-54.

de Hoog, N., & Verboon, P. (2020). Is the news making us unhappy? The influence of daily news exposure on emotional states. *British Journal of Psychology*, *111*(2), 157-173. https://doi.org/10.1111/bjop.12389

Dolinski, D., Kulesza, W., Muniak, P., Dolinska, B., Węgrzyn, R., & Izydorczak, K. (2022). Media intervention program for reducing unrealistic optimism bias: The link between unrealistic optimism, well-being, and health. *Applied Psychology: Health and Well-Being*, *14*(2), 499-518. https://doi.org/10.1111/aphw.12316

Glaesmer, H., Rief, W., Martin, A., Mewes, R., Brähler, E., Zenger, M., & Hinz, A. (2012). Psychometric properties and population-based norms of the Life Orientation Test Revised (LOT-R). *British Journal of Health Psychology*, *17*(2), 432-445. https://doi.org/10.1111/j.2044-8287.2011.02046.x

González-Bailón, S., & Xenos, M. A. (2022). The blind spots of measuring online news exposure: a comparison of self-reported and observational data in nine countries. *Information, Communication & Society*, 1-19. https://doi.org/10.1080/1369118X.2022.2072750

Goyanes, M., & Demeter, M. (2020). Beyond positive or negative: Understanding the phenomenology, typologies and impact of incidental news exposure on citizens' daily lives. *New Media & Society*, 1461444820967679. https://doi.org/10.1177/1461444820967679

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Kardas, F., Zekeriya, C. A. M., Eskisu, M., & Gelibolu, S. (2019). Gratitude, hope, optimism and life satisfaction as predictors of psychological well-being. *Eurasian Journal of Educational Research*, *19*(82), 81-100. https://dergipark.org.tr/en/pub/ejer/issue/48089/608137

McNaughton-Cassill, M. E. (2001). The news media and psychological distress. *Anxiety, Stress and Coping*, *14*(2), 193-211. https://doi.org/10.1080/10615800108248354

Norem, J. K. (2008). Defensive pessimism, anxiety, and the complexity of evaluating self-regulation. *Social and Personality Psychology Compass*, *2*(1), 121-134. https://doi.org/10.1111/j.1751-9004.2007.00053.x

Park, C. S., & Kaye, B. K. (2020). What's this? Incidental exposure to news on social media, news-finds-me perception, news efficacy, and news consumption. *Mass Communication and Society*, *23*(2), 157-180. https://doi.org/10.1080/15205436.2019.1702216

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, *67*(6), 1063.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (2001). Optimism, pessimism, and psychological well-being. https://doi.org/10.1037/10385-009

Shieh, G. (2009). Detecting interaction effects in moderated multiple regression with continuous variables power and sample size considerations. *Organizational Research Methods*, *12*(3), 510-528. https://doi.org/10.1177/1094428108320370

Stainback, K., Hearne, B. N., & Trieu, M. M. (2020). COVID-19 and the 24/7 news cycle: Does COVID-19 news exposure affect mental health?. *Socius*, *6*, 2378023120969339. https://doi.org/10.1177/2378023120969339

Strauß, N., Huber, B., & Gil de Zúñiga, H. (2020). "Yes, I Saw It–But Didn't Read It…" A Cross-Country Study, Exploring Relationships between Incidental News Exposure and News Use across Platforms. *Digital Journalism*, *8*(9), 1181-1205. https://doi.org/10.1080/21670811.2020.1832130

Vos, L. M., Habibović, M., Nyklíček, I., Smeets, T., & Mertens, G. (2021). Optimism, mindfulness, and resilience as potential protective factors for the mental health consequences of fear of the coronavirus. *Psychiatry Research*, *300*, 113927. https://doi.org/10.1016/j.psychres.2021.113927

Yamamoto, M., & Morey, A. C. (2019). Incidental news exposure on social media: A campaign communication mediation approach. *Social Media + Society*, *5*(2), 2056305119843619. https://doi.org/10.1177/2056305119843619

Yu, X., Chen, J., Liu, J., Yu, X., & Zhao, K. (2015). Dispositional optimism as a mediator of the effect of rumination on anxiety. *Social Behavior and Personality: an international journal*, *43*(8), 1233-1242. https://doi.org/10.2224/sbp.2015.43.8.1233

Zsido, A. N., Teleki, S. A., Csokasi, K., Rozsa, S., & Bandi, S. A. (2020). Development of the short version of the spielberger state—trait anxiety inventory. *Psychiatry Research*, *291*, 113223. https://doi.org/10.1016/j.psychres.2020.113223

Appendix A – Social Media Use Items

Rating scale:

1 = never

2 = rarely

3 = sometimes

4 = often

How often do you use these social media sites or apps?

    a. Facebook

    b. YouTube

    c. Twitter

    d. Snapchat

    e. Instagram

    f. WhatsApp

Appendix B – Incidental News Exposure Items

Rating scale:

Seven-point Likert scale (1 = never; 7 = very often)

How often do you encounter or come across news when you have been going online for a purpose other than to get the news? Please respond by using the following scale from Never to Very often

    a. Online message boards or forums or mobile apps (e.g. Reddit or Digg)

    b. Social networking websites or apps (e.g. Facebook, Google+, MySpace, or LinkedIn)

    c. Microblogging websites or apps (e.g. Twitter or Tumblr)

    d. Photo-sharing websites or apps (e.g. Instagram, Flickr, or Pinterest)

    e. Video-sharing websites or apps (e.g. YouTube, Vimeo, or Periscope)

    f. Mobile messaging websites or apps (e.g. Snapchat or WhatsApp)

Appendix C – State Trait Anxiety Inventory (STAI) – Short Form

Rating scale:

0 = not at all

1 = somewhat

2 = moderately so

3 = very much so

STAIS – 5

A number of statements which people have used to describe themselves are given below. Read each statement and then answer with the number at the end of the statement that indicates HOW YOU FEEL RIGHT NOW, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best. Thank you.

1. I feel upset.
2. I feel frightened.
3. I feel nervous.
4. I feel jittery.
5. I feel confused.

STAIT – 5

A number of statements which people have used to describe themselves are given below. Read each statement and then answer with the number at the end of the statement that indicates HOW YOU GENERALLY FEEL. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel. Thank you.

1. I feel that difficulties are piling up so that I cannot overcome them.
2. I worry too much over something that really doesn't matter.
3. Some unimportant thoughts run through my mind and bothers me.
4. I take disappointments so keenly that I can't put them out of my mind.
5. I get in a state of tension or turmoil as I think over my recent concerns and interests.

Appendix D – Life Orientation Test – Revised (LOT-R)

Rating scale, items with (*) are reversed:

0 = strongly disagree

1 = disagree

2 = neutral

3 = agree

4 = strongly agree

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect"

answers. Answer according to your own feelings, rather than how you think "most people" would answer.

1. In uncertain times, I usually expect the best.
2. It's easy for me to relax.
3. If something can go wrong for me, it will. (*)
4. I'm always optimistic about my future.
5. I enjoy my friends a lot.
6. It's important for me to keep busy.
7. I hardly ever expect things to go my way. (*)
8. I don't get upset too easily.
9. I rarely count on good things happening to me. (*)
10. Overall, I expect more good things to happen to me than bad.

Appendix E – Visualisations of Linear Assumptions

Figure 1

Histogram Showing the Distribution of the Residuals of the Moderation Model
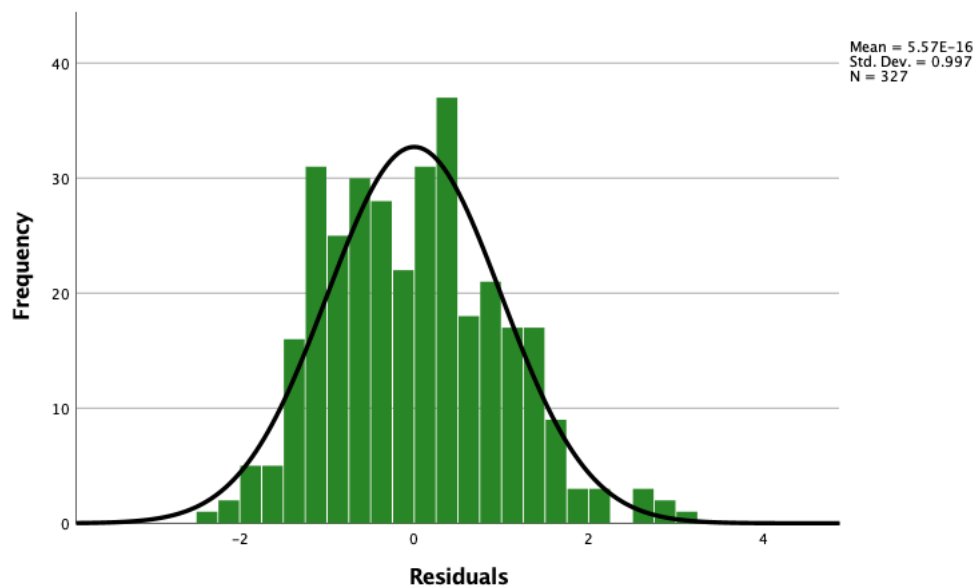

Mean = 5.57E-16
Std. Dev. = 0.997
N = 327

Figure 2

Scatterplot of the Residuals of the Moderation Model